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Rachel Simpson

Developing Creative Teaching Skills in Pre-Service Teachers: The Design and Testing of a Professional Development Programme

Abstract

Teaching is a dynamic interaction between teachers and students. Increasingly, teachers are required to respond to changing priorities in education and diverse needs of learners. Providing teachers with the opportunity to develop creative teaching as a competence, and recognise its value within their teacher identities, may enable them to respond to such challenges and thrive in current education systems.

This project investigated the optimal design of a creative teaching training package. Using an iterative Educational Design Research approach, the project focused on the design, implementation, evaluation and re-design of the creative teaching package, completed by three successive cohorts of primary education pre-service teachers, as part of a teacher training programme.

A phemonenographical research approach enabled an initial in-depth exploration of current understandings and practice of creative teaching (Phase 1 of the project). The resulting five categories of creative teaching were applied to the design of a creative teaching package (Phase 2 of the project), which was informed by a theoretical framework of transformative learning theory. The influence of the creative teaching package on professional developments was investigated through a mixed-methods analysis of pre-service teachers' responses and outcomes (Phase 3 of the project). Outcomes were applied to improve subsequent iterations of the creative teaching package. The potential sustainability of the creative teaching package's influence, beyond the training programme, was also explored.

The project's outcomes suggested that the creative teaching package influenced positively the professional developments of the pre-service teachers, regarding their developments of creative teaching skills and values. There were indications that these positive gains continued into the first year of teaching, and the competence of creative teaching had the potential to become embedded in teacher identities. Evidence also suggested that the training package improved as the iterations progressed. Ways forward for the project's theoretical framework and practical outputs were proposed.

Developing Creative Teaching Skills in Pre-Service Teachers: The Design and Testing of a Professional Development Programme

Rachel Simpson

A Thesis Submitted for the Degree of Doctor of Philosophy (PhD) in
Education

School of Education

Durham University

2025

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I give grateful thanks to Professor Douglas Newton and Professor Lynn Newton, for getting to know me, and realising that the theme of creative teaching would inspire me to undertake this 'delightful hobby'. Thank you for your wisdom and kindness through the six years – you both epitomise 'the creative teacher'.

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Abbreviations

AI – Artificial Intelligence

CPD – Continuing Professional Development

CPDK - Creative Pedagogical Domain Knowledge

CSB – Creative Self Beliefs

DfE – Department for Education (England)

ECT – Early Career Teacher

EDR – Education Design Research

IRR - Inter-Rater Reliability

IST – In-Service Teacher

NACCCE - National Advisory Committee on Creative and Cultural Education

OECD - Organisation for Economic Co-operation and Development

OFSTED - Office for Standards in Education, Children's Services and Skills (*England School Inspection Organisation*)

PGCE – Post-Graduate Certificate in Education

PISA - Programme for International Student Assessment

PLC - Professional Learning Community

PST – Pre-Service Teacher

PLC – Professional Learning Community

RQ – Research Question

UNESCO - United Nations Educational, Scientific and Cultural Organisation

Chapter 1: Introduction

1.1 The background and rationale of the project

A main aim of education globally is to prepare students to make productive contributions to society (OECD, 2018; OECD, 2024; Valtonen et al., 2021). This aim has remained consistent throughout the history of education; however, the teaching and learning processes and approaches to achieve it need continual review, to ensure that these reflect society's changing needs (OECD, 2024; OECD, 2025). Education policies worldwide are moving towards a focus on developing students' abilities to construct and apply their knowledge, in order to become innovative and informed problem-solvers of the future (Silva, 2009; Newton, 2017; Van Laar et al., 2020). This focus reflects recent shifts in society (and therefore education), particularly the advancements in digital technologies - including the place of artificial intelligence in education and the workplace - and the increasing need for sustainable development for future global prosperity (OECD, 2024; OECD, 2025).

There are challenges for teachers in achieving these educational aspirations - high-stakes standardised tests, linked to prescriptive curricula, continue to dominate many education systems globally, and the learning needs of students is becoming increasingly diverse (Keamy, 2016; OECD, 2025; Olivant, 2015). The pressures teachers are facing due to tensions in education priorities, and the necessity for teachers to adapt to rapidly evolving changes in education, are reflected in the concerning global issue of teacher recruitment and retention (NEU, 2024; OECD, 2025).

An in-depth focus on mechanisms to build teachers' capacities to adapt, and, to support this, their understandings of their professional role identities, could be considered timely. The current view of successful learning is beginning to prioritise knowledge application, and, accordingly, a teacher's role has moved away from being a knowledge-provider (Nias, 1993), and towards a learning activator (Hattie, 2012), constructing and leading purposeful learning experiences that develop students' decision-making skills (Scardamalia et al., 2012). Although both learning activators and knowledge providers require extensive subject knowledge, a learning activator's strengths are situated in using and modelling their own critical and creative thinking, and problem-solving skills, to activate these in their students (Coe et al., 2014; Hattie, 2012).

A consideration of these tensions could lead to the view that there is a crucial need to equip teachers to adapt to the changes in their roles, through timely and relevant professional development opportunities (Amponsah et al., 2021; Petar, 2024). Such training opportunities may enable and motivate them to respond to changes in education systems

with innovation, efficiency and satisfaction (Lucas, 2022; OECD, 2025). This project considers one aspect of a teacher's skill-set and role identity as a learning activator, by investigating the development of a teacher's creative teaching skills and values, within the context of their professional teacher identities. The brief introduction to creativity in education below presents an understanding of the key terminology used in this project, and why this focus on creative teaching is necessary for current education systems.

An introduction to creativity and creative teaching in education¹ There is a consensus that the early focus of creativity on the arts or a genius mind has been replaced by a more democratic view - creativity is now considered to be applicable to all areas of education, and people of all abilities (NACCCE, 1999; Newton, D., 2012; Newton, L., 2012). The idea that creative processes involve developing something which is new and of value (to either the creator or a wider audience), which successfully fulfils a purpose, is consistently discussed (Acar et al., 2017; Kaufman and Beghetto, 2009; NACCCE, 1999; Newton, D., 2012; Newton, L., 2012; Runco et al., 2005). An individual's imaginative thinking or behaviour is an important influence on the creative process, enabling a problem to be approached from a new perspective (NACCCE, 1999; Paek & Sumners, 2017). As this can be a novel experience, a balance is needed between exploring a variety of potential ways to solve a problem, and ensuring the purpose of the task is kept in sight. This highlights the important inter-connection between creative and critical thinking skills² (Ellerton & Kelly, 2021).

A focus on the processes involved in being creative, rather than the end product of that creative process, has moved the idea of being creative away from a set of skills demonstrated by outputs, and towards creativity being a competence (Craft et al., 2007; Davies et al., 2018). In the context of this project, the development of domain-specific creative thinking is important, with the domain of education being the aim (Kaufman & Beghetto, 2009).

Literature and research exploring creativity in education often discusses and investigates *teaching for creative thinking*, which considers ways in which learning experiences can be designed and led by teachers, to develop students' creative aptitudes and dispositions (Newton, D., 2012). The interest globally in this field aligns with the current need for students to contribute to the societies of the future as innovative problem-solvers (OECD, 2022; OECD, 2025). It is important to distinguish between this student-centred focus of teaching for creative thinking and *creative teaching*, which locates the development of

¹ This introduction to creativity in education is expanded in the Literature Review (Chapters 2 and 3).

² Critical thinking can be described in simple terms as reasonable reflective thinking, to support decision-making (Ennis, 2015).

creative thinking within a teacher's professional identity of teaching dispositions, skills and values (Henriksen, 2016; NACCCE, 1999). The latter does not necessarily develop the students' creativity, although strong links are likely (James et al., 2019). Despite the distinction, the two terms can be conflated or confused, potentially adding to the challenge of applying ideas about creativity into practice in education (Huang & Lee, 2015).

This project focuses on the latter - creative teaching. Creative teaching can be understood as teachers explicitly developing, practising and applying their creative thinking skills to plan, implement and evaluate learning experiences for students, and to adjust their teaching and learning experiences to respond to students' - often unpredictable – needs (Beghetto, 2017; Henriksen, 2016). Case studies of creative teaching indicate potential benefits for the teacher, including enabling successful responses to changes in education, and increased innovation, relevance and ownership of their teaching experiences, as well as benefits for their students (Cremin & Barnes, 2018; Henriksen, 2016). These benefits will be expanded in this project's Literature Review, in Chapters 2 and 3. Although research exploring the idea of creative teaching is gaining interest, studies in this field (for example, Henriksen (2016)) indicate that there are many questions yet to be explored. These questions include whether teachers can explicitly develop their creative teaching understandings, skills and values through professional development opportunities, alongside the other skills and knowledge that shape a teacher's professional identity and expertise. This gap in the research field leads to the aims of this project, explained in the next section.

1.2 The aims of the project and an introduction to the research questions

This project aims to investigate the perceptions and values of creative teaching in education systems, to inform the design and development of a training package for pre-service teachers, which will be trialled as part of a teacher training programme in England, U.K. The training package is designed to develop pre-service teacher's creative teaching skills, dispositions and values. It aims for creative teaching skills and values to become embedded in pre-service teachers' professional identities, and therefore sustained beyond the training phase.

Most curricula for teacher training programmes are led by education authorities (for example, a government or state), focusing on developing pre-service teachers' subject and pedagogical knowledge: what students should learn, how students learn, and ways to meet individual students' needs (for example, in England (DfE, 2019a)). Few teacher training programmes currently include an explicit focus on developing pre-service teachers' professional identities, values and transdisciplinary skills, including creative thinking skills,

problem-solving skills, and decision-making competences (Lucas, 2022)³. The training phase is viewed as an important and influential starting point for a teacher's professional development, and an opportunity for pre-service teachers to engage with transformative learning processes and develop an openness to transform their teacher identities and values in some way (Boyd et al., 2015). In this project, the term 'professional development' is understood to be teachers developing skills that provide the most effective teaching and learning experiences, alongside developing a 'teacher identity' which reflects teaching dispositions, attitudes and values. Professional development is applicable to pre-service teachers' developments during the training phase, given that the training phase is the formative starting point of a teacher's career. Pre-service teachers are then expected to progress to 'continuing professional development' (CPD) when they become in-service teachers.

A training package focusing on the growth of a pre-service teacher's professional identity – and the value of creative teaching skills and dispositions within this – could be considered appropriate, needed and timely, to prepare pre-service teachers to meet the current, and future, challenges of education systems, discussed above. The project aims to generate outcomes that may be valuable contributions to practice in teacher training systems⁴, both within the project, and through its dissemination.

To achieve this aim, this project will investigate the following research questions:

- How is creative teaching perceived by current pre-service and in-service teachers?
- How can a training package be designed and constructed, to enable PSTs to develop creative teaching skills and values?
- How did the creative teaching package influence the PSTs' professional developments (their creative teaching skills and values)?
- Were there indications of the sustainability of a creative teaching approach, beyond the training phase?

The project uses an iterative design approach (explained in the next section), to enable the creative teaching training package to be improved, and re-tested. Therefore, the following research questions will also be investigated:

- How can a training package be improved through re-design, to enable PSTs to develop creative teaching skills?

³ Similarly, there is little evidence of professional development opportunities for experienced teachers in the field of creative teaching skills (Lucas, 2022).

⁴ For example, over 25,000 pre-service teachers completed teacher training courses in England in 2023-24 (DfE, 2025).

- How did the improvements to the creative teaching package influence the PSTs' professional developments?

The next section provides an overview of how the project will be structured, to achieve its aims and address the research questions.

1.3 The structure of the project

To achieve the project's aims of developing and refining a creative teaching training package for pre-service teachers, and generating outcomes that may contribute to theoretical ideas and practice, an Educational Design Research (EDR) approach will be used (McKenney & Reeves, 2019). This EDR approach is in Figure 1.1⁵, which shows the three phases of the project.

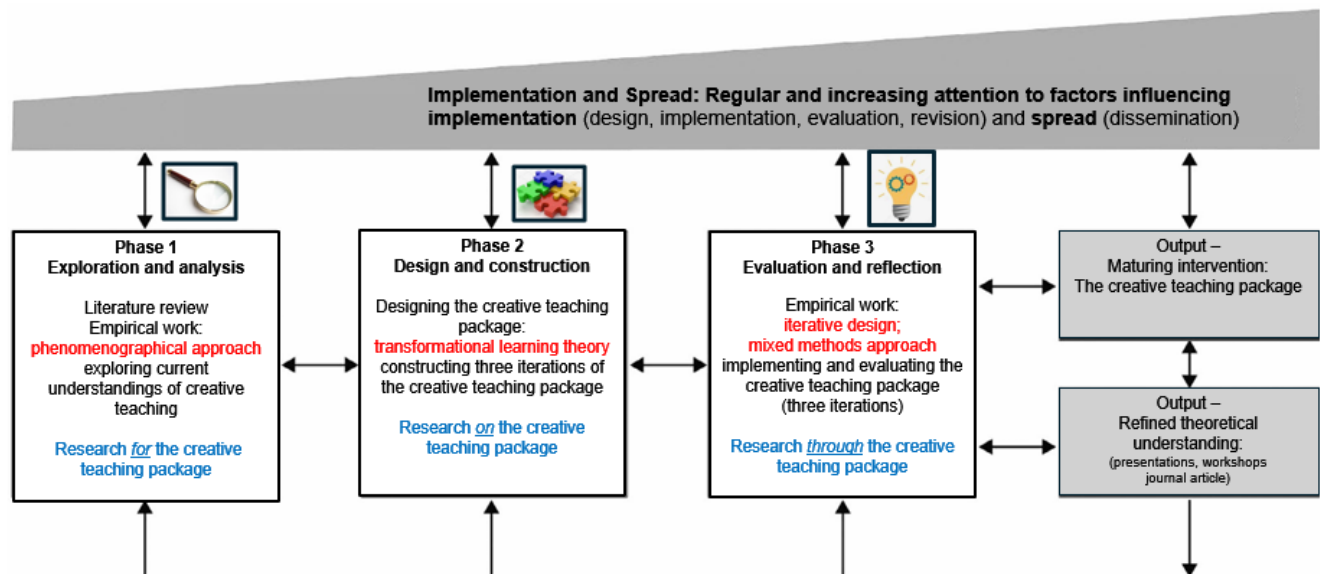


Figure 1.1 An extract from the project's EDR model, presenting an overview of the project

Figure 1.1 shows that *Phase 1* of the project focuses on research for the creative teaching package, through an exploration and analysis of the project's key themes. This comprises:

- an in-depth review of literature and research, to understand the historic and current position and ideas of the relevant themes;
- Phase 1 of the empirical work, focusing on current understandings of creative teaching in practice.

The project's Literature Review explores literature and research in the areas of creative teaching and creative teachers, teacher identities and roles, and adult transformative

⁵ The full EDR model for this project, and explanation, is in Chapter 5.

learning theory. This begins with a chronological study of the changing notions of creative teaching and the creative teacher, related to the education system (Chapter 2), with a review of literature that spans six decades, starting with the 1950s. Chapter 3 then considers more recent notions of creative teaching and the creative teacher, by reviewing literature spanning 2010-2019⁶. Both chapters aim to reveal 'lessons learnt', potential challenges to overcome and possible ways forward when considering the development of creative teaching as an explicit skill for pre-service teachers in current education systems. The Literature Review then focuses on the theme of developing a teacher's role identity, linking this to the ideas and principles of transformative learning theory, and competent decision-making skills (Chapter 4). This theme is discussed from the perspective of pre-service teachers potentially transforming their professional teacher identities, through the lens of the development of a creative teaching approach within their teaching roles. It considers the processes and qualities that might aid and sustain transformation of emerging teacher identities during the teacher training phase.

Research methods are clarified in Chapter 5, where the project moves into its empirical phase. The analysis of the literature in Phase 1 will be enhanced by empirical work, as the project explores current pre-service and in-service teachers' understandings and experiences of creative teaching (Chapter 6). The use of a phenomenographical research approach aims to enable creative teaching categories to emerge from the data in Phase 1, with categories of creative teaching being defined and compared with the key themes in the Literature Review.

Figure 1.1 shows that *Phase 2* of the project focuses on research on the creative teaching package, through the design and construction of a creative teaching package that aims to enhance the professional developments of pre-service teachers. Findings and evidence from Phase 1 will be applied to inform Phase 2 of the project, influencing the content of the package and mechanisms to optimise pre-service teachers' engagement with its themes.

The final phase of the project is *Phase 3*, which focuses on research through the creative teaching package. A mixed methods research approach will enable the evaluation of and reflection on pre-service teachers' outcomes taken from their completion of the creative teaching package, to refine and improve the training package for future use. The intention of measuring the pre-service teachers' responses to the creative teaching package as part of their real-world (training) setting, rather than as an isolated experience, aims to optimise its plausibility, and future sustainability (Cohen et al., 2018).

⁶ 2010-2019 is the decade immediately preceding the empirical work for this project.

Findings and discussion points for Phases 2 and 3 are presented together in an extended chapter (Chapter 7), due to the inter-connected iterative design. Aligning with the intentions of an iterative design process, three successive cohorts of pre-service teachers will complete the training package as part of their teacher training programme, and the package will be evaluated and improved after each iteration. Therefore, outcomes from Phase 3 will influence the re-design of the creative teaching package in Phase 2.

Chapter 8 considers main theoretical insights according to the project's processes and outcomes, and the project's outputs, including dissemination opportunities. This chapter offers insights that may support teacher educators in the design and use of training packages to develop pre-service teachers' creative teaching skills and values in the future, including the application of a transformative learning framework. It also presents adjustments made to the theoretical framework when applied to the project, due to the fluid EDR approach and contextual factors in which the project was situated.

Chapter 9 is the final chapter, concluding the project. This provides a reflection on the research aims, in the context of the completed project. It presents the project's practical and theoretical contributions to this field of research, and suggests recommendations for future projects undertaking similar themes. Unresolved dilemmas are considered, and questions are put forward for further research regarding the project's main themes.

1.4 Researcher's position

My professional interest in this theme stems from my own teaching and leadership experience in primary education in England, and my teaching and leadership roles on teacher training programmes for primary education pre-service teachers. My roles in education have enabled me to experience and observe how the number of priorities placed on schools has increased considerably over the last 25 years, and the tensions this has led to in practice, including the pressure of high-stakes test outcomes, data-driven government-led inspections and increasingly prescriptive curricula. Working in the last decade with pre-service teachers has led me to consider the implications of these challenges for their immediate teacher training experiences, and ways to enable them to develop professionally through their teacher training programmes, and maintain such developments. I chose the focus of this project to be primary education due to my own expertise in this area. The potential to apply the project's outcomes to other fields (for example, secondary education and higher education) is discussed in the conclusion.

Chapter 2: The Changing Notions of Creative Teaching and the Creative Teacher

A chronological and contextual presentation of the literature between 1950 and 2009

2.1 Chapter introduction including the Literature Review process

2.1.1 The aim of the Literature Review

The development of pre-service teachers' professional creative teaching skills and values is the theme of this project. As discussed in Chapter 1, this may be a way forward to enable teachers to meet the changing demands of their teaching roles, and the diverse needs of their students. Changes in societies inevitably have an impact on the education systems operating within them: ideally, education systems should be built upon previous successes and lessons learnt. Conducting a chronological study of the changing notions of the creative teacher, by reviewing historical as well as current literature and research, may reveal – for the development of creative teachers today - possible ways forward and potential challenges to overcome. Therefore, this Literature Review chapter aims to inform the design of a creative teaching training package for pre-service teachers, that would be developed in the empirical phase of this project.

The starting point of the 1950s was chosen for the Literature Review, as this was the beginning of post-war educational reform in England. Although the intervention of this project will be conducted in the context of teacher training in England, consideration of the creative teacher internationally, where possible, is important, as much can be learnt from international practice, and a reflection on cultural influences. How the teacher's role is viewed (by parents and students) and determined (by society's needs and the education systems in which they work) may influence the development of teachers' identities, and potentially their capacity to desire, develop and sustain a creative teaching approach. Therefore, in this chapter, the context of the education policies and practices, within which the examples of literature and research were situated, will be discussed at the beginning of each era.

The Literature Review for this chapter aimed to identify any chronological patterns and changes related to the notion of the creative teacher and creative teaching, by applying the following questions to defined eras between 1950-2009⁷:

⁷ The era of 2010-2019 is then considered in Chapter 3: The Creative Teacher 2010-2019: Creative Teaching with Intent

- What were the qualities of creative teaching and the creative teacher (and how were these demonstrated)?
- Why was creative teaching considered to be important (or not)?
- Were approaches suggested that enabled a teacher to develop and maintain their creative teaching skills?
- Were challenges identified for a teacher's creative teaching approach, and possible solutions proposed?

2.1.2 The Literature Review process

The time period of 1950-2009 was split into eras for the Literature Review, with the beginning of each era broadly marking significant changes to education systems. A brief outline of the chronology of the primary education systems (focusing on England, where this project's empirical work and the creative teaching package will be located, but also with international consideration) has been included.

A literature search for 'creative teaching' and 'the creative teacher' was conducted per era. Whilst being careful to avoid pre-determined assumptions of the outcomes, a judgement was made about the relevance of each piece of literature to the themes of this project. The judgement for inclusion of each publication was its relevance to the theme of creative teaching and/or the creative teacher (using the four questions listed above), according to the era. Literature sources were identified using the electronic search tools: Education Resources Information Centre (ERIC) and Google Scholar; reference lists in reviewed publications also led to other sources being included, where relevant. This approach aimed for an anthology of publications for each era (which is listed in Appendix A) rather than a highly selective systematic review.⁸ The theme of this project focuses on the teachers' creativity, and not the students'. Some literature confused the two, for example 'the creative teacher' was included in some literature titles, but then discussed in the publication as teaching that developed students' creativity, and these publications were discounted. This was particularly noticeable in the era of the late 1990s onwards, which was a time of significant focus on students' creativity in education (Craft, 2003).

To extend the literature search, emergent themes that were judged to be linked to the notion of creative teaching and the creative teacher were also pursued (for example, the 'open classroom' in the 1960s). The term 'creative' was broadened according to the understanding

⁸ The Literature Review approach differed to a systematic review, in which sources are scrutinised and selected according to rigorous criteria, because there was an expectation that the sources for this chapter's theme would be diverse, possibly few in number and of limited geographical locations, particularly in the early decades. (Torgerson, Hall, & Light, 2012).

of creativity in that era - this was considered carefully due to a lack of common agreement of the term in some eras. For example, 'imaginative' was a search term in the 1950s and 'innovative' in the 1990s, whilst being mindful of alternative interpretations (for example, some considered an imaginative approach to not come to fruition but remain at the ideas stage (Sawyer, 2012); innovation was considered to be creation at an organisational level (Amabile, 1998)). Although this project focuses on the primary phase of education, some literature was also taken from secondary and higher education. This alleviated the challenge of the limited data base of literature about the creative teacher in some eras, and also offered a wider perspective of the creative teacher.

Examples of literature are listed, for each era, in Appendix A, detailing the date and country of publication, the author, and a brief summary of the main theme. Appendix A illustrates that the literature examples in the early decades were mostly written by American authors. This aligned with the majority of research about creativity in education being led at this time by American scholars (for example, Joy Paul Guilford and Ellis Paul Torrance) (Sawyer, 2012). Examples from other countries have been included where available, but it is acknowledged that little was published about creative teaching beyond the U.S.A. and England, U.K. until the 1990s.

A final consideration when conducting the Literature Review concerned the style of academic writing and literature for each era: this tended to reflect how educational research developed historically. Aligning with the relative lack of educational research in the 1950s and 1960s, most of the literature at this time was autobiographical or biographical, with a writing style unique to each author and little reference to others' work (Delamont, 1987). Classroom-based observational research, and teachers' questionnaires, became more common from the 1970s, and this was reflected in this era (Galton et al., 1989). Most of the examples in the Literature Review in this chapter are small-scale case studies – vignettes - of one teacher in action, and it was evident in some examples that authors were suggesting that the creative teaching approaches being discussed were exceptions. Therefore, identifying patterns and drawing conclusions has been done with tentative caution.

2.2 Creative teaching and the creative teacher 1950-1964⁹

Before the 1950s, the traditional¹⁰ education system, in which the role of the teacher was largely viewed as transmitting knowledge to students, was dominant (Delamont, 1987). Waller (1932) argued that teaching deadened intellects and diminished personalities, with teachers being uncreative and routine-driven. Although this traditional teaching approach

⁹ A summary of key literature in education supports this section in Appendix A (Table A(i)).

¹⁰ Traditional teaching approaches are defined in Appendix B.

continued into the 1950s, this was a time of great change in the U.S.A. and England, as education systems needed to fulfil the demands of post-war economic growth and progress in technology (Resnik, 2006; UNESCO, 1957). It was also a key moment for the introduction of creativity in education – with leading American psychologist Joy Paul Guilford arguing for the value of creativity to society, and the need for more formal research into a previously partially understood field (Guilford, 1950)¹¹.

The rigidity suggested by Waller (1932) of traditional education methods appeared to conflict with a more progressive teaching approach¹² that was gaining momentum, advocated by Dewey (1959) and the Progressive Education Association (Simon, 2001). In England, the recommendations of the Hadow Report in 1935 (promoting students' experiential learning and curiosity in the primary classroom, rather than acquiring and retaining facts) aligned with Piaget's (1929) constructivist theory and discovery learning – ideas which were becoming more prominent at that time.

In the U.S.A., in the context of the Cold War and the National Defence Education Act of 1958, the creative approach of teachers was considered by some to be crucial in developing students' creative skills in tackling unpredictable challenges faced by society in the future, as they were potentially moving into a new era of democracy and freedom (Bond, 1959; Melby, 1956). This aligned with the themes of UNESCO's Education Conferences: as early as 1935 UNESCO emphasised that: 'the personality of the teacher is the decisive factor' (UNESCO, 1935, p.1) in enabling students to not only acquire knowledge but to apply it to the world around them. In the 1950s, three UNESCO reports (UNESCO: 1953a; 1953b; & 1958) emphasised the importance of developing teachers' training experiences, increasing their status and broadening the primary curriculum, supporting the view that 'the most important role in class work is undoubtedly played by the class teacher' (UNESCO, 1959, p.2). These UNESCO reports recommended teachers to be allowed more autonomy in curriculum planning and delivery and encouraged teachers' professional reflections. The release of these reports was timely given the global shortage of primary teachers in the late 1950s (UNESCO, 1979).

These were all positive indications of the development of greater autonomy for teachers in developing their teaching approaches. However, the idea of a progressive classroom in the 1950s, in both the U.S.A. and England, did not tend to be the reality for many teachers (Delamont, 1987). Streamed classrooms dominated in England, in accordance with the

¹¹At this time, Guilford (1950) was suggesting a focus on two types of creative thinking – divergent (generating multiple solutions) and convergent (generating a single well-defined answer).

¹² Progressive teaching approaches are defined in Appendix B.

tripartite system in secondary education and associated intelligence testing (Galton et al, 1989; Jackson, 1964). Although attempts were made to justify this approach as student-centred in primary education, claiming that the needs of each student were met due to the differentiated nature of a streamed classroom, the traditional teaching methods of didactic teaching (listed in Appendix B) dominated (Galton et al, 1989; Simon, 2001).

The literature search for this era revealed relatively few sources discussing creative teaching and the creative teacher, compared with later eras. Where referenced, discussion about creative teaching tended to be brief, usually in the context of this being a prerequisite to developing the creative student - who was considered a naturally gifted individual at that time (Sawyer, 2012). The few specific examples of literature focusing on creative teaching are listed in Appendix A (Table A(i)). Discussions about creative teaching in this era consistently referred to creative teachers with individual and unique personalities. Most of the literature did not discuss teachers constructing ideas with colleagues; instead, teachers with a creative approach worked independently, and this aligned with common practice in education in this era (Eisner, 1958). To achieve a creative teaching approach, the teacher was thought to have confidence in his or her abilities, derived from self-analysis and self-development, which enabled transformation of role and identity (Hartley, 1951). Pursuing interests beyond the classroom, thus providing personal enrichment, was considered important for a creative teacher's development, reflecting a teacher's determination for self-improvement (Hobelman, 1957; Ingram & Kilmer, 1958; Strickland, 1955; Wendt, 1961). This, in turn, was considered to have a positive effect on the students (Hobelman, 1957; Ingram & Kilmer, 1958). Through a social constructivist¹³ perspective, the reciprocal opportunities of the teacher-student relationship were also recognised, emphasising the importance of the classroom environment in enabling the developments of a creative teaching approach, through reflection on the outcomes of unique teacher-student interactions (Wendt, 1961).

In this era, there seemed to be differing opinions about how others viewed a creative teaching approach, and these opinions tended to focus on the individual (the teacher) and their personalities. In the U.S.A., Hobelman - perceiving creative teachers as highly engaging individuals - discussed the potential popularity of creative teachers with students and parents, whilst cautioning that their creative personalities could arouse colleagues' mistrust (Hobelman, 1957). Chasman (1954) agreed that being a creative teacher was not

¹³ Social constructivism can be briefly understood to be social processes influencing individual thinking (Vygotsky, 1978; Mercer, 2013).

without challenges regarding the perceptions of others. His self-report of the creative teacher was based upon a personal experience in a U.S.A. High School. In response to unsatisfactory student progress, Chasman (1954) was 'compelled' (p.78) to design and enact an inter-disciplinary approach, enabling students to interpret English lesson content by engaging with other media. His observation of a 'handful of sceptics' (p.78) amongst otherwise enthusiastic students may have been negated when he discussed the extremely positive effect the experience had on their final outcomes. Chasman's (1954) example of the creative teacher in action was the only evidence from this era where other colleagues supported the creative teacher (he involved the head of art, albeit in an instructional role rather than in the creative planning process). Both Chasman (1954) and Holbelman (1957) acknowledged the enormous effort and energy being a creative teacher required, with Holbelman (1957) stating: 'some of us might not want to be creative teachers' (p.161).

Syngg (1960) suggested a further possible challenge. He considered that creative teachers tended to view knowledge as being incomplete (stimulating their desire to discover more), strengthening potential conflict with the still-dominant traditional methods of teaching in this era. Adopting a creative teaching approach in this time therefore needed to be worthwhile. This may have reflected the view of the teacher with a creative teaching approach as having a strong passion for teaching, with self-improvement, perseverance and elaboration being commonly recognised traits (Hartley, 1951; Hobelman, 1957; Wendt, 1961). This perseverance was demonstrated in a further example of a creative teacher in action, provided by Hartley (1951), in Figure 2.1.

'[A] young teacher in her first year told me of her determined effort to get her students to experience and feel and think individually, in a situation in which they were accustomed to try to think and to feel and to do what was expected of them. In a moment of despair one day she said, "The trouble is you always look at everything from just one point of view - the accustomed one. I think it might help if you looked at the world upside down for a change!"

And before their startled response could organize into revolt, she swept them all out into the fields that surrounded their little school and demanded that they lie flat on the grass, and look and listen and feel, and not get up until they had experienced something they never had before, however minute or unimportant it might be.

"But what would the principal and the other teachers have thought had they looked out and seen your class lying in the field!", I exclaimed out of long-established respect for educational proprieties and traditional values.

"Oh, I was sure I could explain to them what I was doing and why,' she said. "So I wasn't worried."

(Hartley, 1951, p.9-10)

Figure 2.1 An example of a creative teaching approach from Hartley (1951)

Both Chasman's (1954) and Hartley's (1951) examples demonstrated the teachers' creative responses to the critical incident of students not progressing their ideas. Both teachers also acknowledged frustration as a trigger and the authors considered their courageous dispositions in enacting unique and unexpected ideas. Hartley (1951) described the teacher as feeling 'untrammelled' (p.5) - perhaps aided by Forslund's (1961) idea of a teacher with a creative teaching approach possessing 'child-like individuality' (p.79). However, it is unlikely that this quality was common in the early 1950s when Hartley's article was written, considering the dominance of traditional teaching approaches.

Although Hartley's (1951) and Chasman's (1954) examples are situation-specific, demonstrating creative responses of individuals working in educational contexts, both authors focused on general terms when describing the teachers' creative approaches, mostly related to each person's natural disposition towards creativity (e.g. imaginative, passionate, determined). Bond (1959) attempted to study more specifically the skills of creative teachers¹⁴. He rated 32 traits (one being creativity) considered relevant to the professional development of 855 U.S.A. pre-service teachers (training for elementary and secondary age phases). The results indicated that those in the participant group who identified as creative teachers (n=245) rated more highly for initiative, resourcefulness in teaching and planning skills compared with those who did not identify as creative. Interestingly, the less creative group was considered more successful at '[seeing] the relationship of his field to all fields' (p.11), with Bond suggesting that creative teachers may become more immersed in the focus topic and less aware of the wider context. Bond acknowledged that a causal relationship could not be concluded, and his proposal that teachers who demonstrated a creative approach were superior in their teaching ability to those who did not, was also not validated with specific examples of more creative teachers and less creative teachers in action.

2.3 Creative teaching and the creative teacher 1965-1974¹⁵

'The right to education' dominated this period (UNESCO, 1970, p.2). Internationally, this was reflected in the Civil Rights Act (1964) and Education Acts in the U.S.A., and UNESCO

¹⁴ Bond's (1959) study was the sole publication in this era that could be considered to be a research study.

¹⁵ A summary of key literature in education supports this section in Appendix A (Table A(ii)).

reports during this era (UNESCO: 1968; 1970; 1971; 1973). Parents had increased aspirations for their children, and family life was becoming less autocratic (Baughman and Eberle, 1965). With progressive methods in education developing in the U.S.A., Baughman and Eberle (1965) discussed the changing role of the teacher in the newly designed 'open classroom' (p.387), a classroom system promoted by Kohl (1969). In this era, American psychologist Ellis Paul Torrance was at the forefront of creativity research (Torrance, 1970). Torrance argued for the importance of creativity in schools in the U.S.A., connecting creativity to learning, and devising tests to measure creative thinking (Torrance: 1966; 1969; 1970).

In England, with the onset of comprehensive education in secondary schools, primary schools began to abandon streamed classrooms. Underpinned by Piaget's (1929) theory of stage development and discovery learning, the Plowden Report focused on individualised, child-led learning experiences and group work in primary classrooms (DES, 1967). This was consistent with the ideals of the open classroom and a progressive teaching approach. Craft (2003) defined this period as the 'first wave' of creativity for children – at least in the early years (p.144). This shifted the focus from creativity being a quality of the rare genius, to a more democratic view of creativity for all (Sawyer, 2012). Lytton (1971) considered that this focus on creativity was a timely 'revolt against the threatening mechanisation of man and society' (p.113).

Galton and colleagues (1989) highlighted increased autonomy given to teachers to implement recommendations from the Plowden Report (DES, 1967), and discussed this as an opportunity for teachers to develop innovative practice. Some considered that this was a promising time to enact creative teaching approaches (Peters, 1973), although such an approach continued to be viewed as complex and time-consuming (Romey, 1970).

Literature in this era continued to discuss teachers' experiences as integral to developing their own creative teaching approaches (Opulente, 1965). In the U.S.A., Baughman and Earle (1965) stated that a creative teacher would cyclically experiment, innovate, and sometimes fail, implying self-confidence and determination. This was elaborated by Romey's (1970) discussion of the processes the creative teacher underwent:

- '1. A period of mental labour and deep involvement in a problem: This may involve a seemingly fruitless struggle with some aspects of an out-of-the-way part of the problem.
2. An incubation period: The idea is dropped for a while to see if anything will hatch.
3. A period of illumination: the "Ah-ha!" period.

4. A period of elaboration and refinement of an idea.'

(Romey, 1970, p.4)

Romey (1970) suggested that the creative processes above occurred for the teacher at both the planning stage and in-action in the classroom, reflecting both Vygotsky's (1978) ideas regarding social influence and The Plowden Report's aim of individualised learning experiences for children (DES, 1967). Romey (1970) listed eight areas of activity potentially undertaken in a creative teaching approach (e.g. 'creativity in lesson planning; creativity in questioning strategies') (p.6), suggesting that a teacher could be creative in different ways and moving the notion of the creative teacher into a more teaching-specific domain:

'Creativity is the ability to combine ideas, things, techniques, or approaches in a new way. This ability must be thought of from the point of the person who is actually doing the creating. Thus, if you, in your teaching situation, invent a technique that you have never used before and have never read specifically about for handling a situation, you are being creative, even though some other teacher may have previously used this technique.'

(Romey, 1970, p.4)

Romey's example demonstrated that, in this era, the discussion of the notion of the creative teacher moved away from solely discussing the personality traits of a creative teacher (i.e. what a creative teacher was) to how to achieve a creative teaching approach. This focus was also evident in Rowen's (1968) work as an American tutor of pre-service teachers. In common with others at this time in the U.S.A. (e.g. Opulente, 1965), Rowen compared the development of creative teaching skills to the skill development of an actor. Inspired by training undertaken by actors, Rowen described a workshop for teachers as following the 'Creative Method'¹⁶ (Rowen, 1968, p.47). Rowen considered that all teachers could develop a creative state of mind, by achieving a heightened awareness of, and response to, their environments.

At this time, the idea of creative teaching seemed to be becoming more inclusive, with some considering that all teachers were naturally creative as curriculum developers (Romney, 1970). However, Rowen (1968) presented one teacher's dilemma in developing this competence, by highlighting a common perspective of creativity belonging to arts-related subjects:

¹⁶An explanation of the Creative Method and examples are explained in Appendix C.

[Taken from a teacher's log, before a creative method workshop] 'I would be glad to get what you describe from the class, if possible, but I think I am not creative myself. I have no special ability in art or music or writing, so I feel limited. I would feel safer if the course were taught in a more conventional way.'

(Rowen, 1968, p.50)

Although Opulente (1965) also viewed creative teaching as a teacher's performance with the quality of great insight, in contrast to Rowen, Opulente's article considered creative teachers to be rare and gifted individuals, and did not emphasise the students' responses as being integral to a creative teacher's developments. Opulente viewed a creative teacher as one 'in whom the life of the subject lives' (p.89), and this perspective may have reflected his perspective as a university lecturer with specific subject expertise.

A common theme in the literature of this era was that educational systems' increased emphasis on developing creative learners required creative teachers as sources of inspiration (Baughman & Earle, 1965; Romey, 1970; Rowen, 1968). However, cautions such as Lytton's (1971) - teachers' skills needed to be developed for successful curriculum reform – appeared to have not been heeded. Examples of training to develop creative teaching approaches, such as Rowen's (1968), appear to be isolated. Due to cuts in education funding globally, there were few training opportunities for teachers in the development of students' creativity or a progressive teaching approach (Simon, 2001). Nias (1993) discussed that for many teachers trained in a traditional approach, the Plowden Report's (DES, 1967) view of the teacher's role – as facilitators to guide students in the construction of their own learning - challenged their understanding of the teacher-student relationship, as well as pedagogical requirements.

In this context of educational reform, supportive colleagues and leaders were considered integral to the success of a creative teaching approach (Lennie, 1972). Although Gregorc discussed creative teachers maintaining creative approaches in leadership positions (whilst cautioning that gaining leadership experience might be a prerequisite to demonstrating creative leadership), Hahn considered that supportive and creative school leaders were not always the case (Gregorc, 1973; Hahn, 1968).

In the Australian education system, Lennie (1972) considered the importance of teachers considered to be less creative working alongside more creative teachers, with different but complementary strengths. This reflected Lennie's contrast of creativity with common sense, with 'both of these generally not occurring in the one person' (Lennie, 1972, p.32), and this point will be discussed in the next chapter. Whilst heeding Nias' (1993) warning that teachers in this era were reluctant to debate different pedagogical approaches, Lennie's

(1972) idea that collaboration between teachers with a diverse range of professional identities could be considered forward-thinking and necessary for a school community to thrive.

2.4 Creative teaching and the creative teacher 1975-1987¹⁷

With concerns globally about variations in education - within national systems and between countries – standardisation became a priority in this era (UNESCO: 1975; 1977). In the U.S.A., open classrooms had largely disappeared by 1976, and teaching methods became more prescriptive (Henley, 1987). There were indications that the move towards prescriptive curricula was not common to all countries. The Ministry of Education in Russia (then U.S.S.R.) published an article which considered the advantages of a more creative teaching approach (Slastenin, 1975). This focused on teachers using their creative skills to solve problems and may have been reflected in Russia's educational reform in the mid-1980s which, with reference to teaching and learning, 'emphasised the teacher's role in the innovatory process' (Mitter, 1987, p.48).

In England, concerns were raised regarding the consequences of the Plowden Report's (DES, 1967) implementation in schools. Bennett's (1976) study of traditional versus progressive teaching methods condemned progressive approaches. Although his questionnaire-based method was criticised due to inflexible definitions of progressive and traditional approaches (Delamont, 1987), his results were considered to have influenced Callaghan's Ruskin Speech¹⁸ in England in 1976 (Galton et al, 1989). This speech reflected the unease of parents and politicians about the variation of teaching and learning in schools (Desailly, 2015; Silverwood & Wolstencroft, 2023).

The ORACLE research that followed, using systematic observations of practice in 58 primary classrooms in England between 1975-1980, concluded that the terms traditional and progressive were overly simplistic, with most teachers demonstrating aspects of both (Galton et al., 1989). Concerns of the progressive approach were also eased by Her Majesty's Inspectors' (HMI) survey of 542 primary schools in England: with the teachers categorised as 75% traditional, 5% progressive and 20% both (DES, 1978). Despite critics' concerns of progressive approaches (e.g. Bennett, 1976), primary classrooms in practice appeared to reflect more traditional approaches, with a dominance of didactic teacher talk and surveys concluding teachers' inexperience and unease with collaborative group work undertaken by

¹⁷ A summary of key literature in education supports this section in Appendix A (Table A(iii)).

¹⁸ England's Labour Prime Minister James Callaghan gave The Ruskin Speech on 18th October 1976 in Ruskin College, Oxford. This speech was a pivotal starting point for subsequent debates and policy regarding changes to the nature and purpose of education in England (Silverwood & Wolstencroft, 2023).

students (Bealing, 1972; Delamont, 1987). This reflected a main problem of the Plowden Report (DES, 1967): teachers were not given training about how to enact the progressive ideas with large classes (Galton et al., 1989). Accordingly, HMI concluded that progressive methods should only be used by exceptional teachers (DES, 1978).

Although Craft (2003) acknowledged that the inadequate implementation of the Plowden Report (DES, 1967) cast doubt on this era being called 'the first wave' of classroom creativity (p.144), she attributed future research into creativity in education to the progressive ideals of the Plowden recommendations. Nevertheless, with the move towards standardised and measurable education systems in England and the U.S.A., it was perhaps unsurprising that the outlook for teachers to develop a creative teaching approach was considered to be bleak at this time (Galton et al, 1989; Henley, 1987). A glance at some of the titles in Appendix A (Table A(iii)) indicates the conflict (e.g. Reitman's *Daring to Make Teaching an Art*; Pollard's *A Model of Classroom Coping Strategies*, and Henley's *Something is Missing from the Education Reform Movement*). Teachers' stress and 'burn-out' (Reitman, 1986, p.137) were common themes for discussion in the literature reviewed (e.g. Kyriacou, 1986; Pollard, 1982). This stress was attributed to the forthcoming change in teachers' roles, and the expected demands of the next education reform (UNESCO, 1975; Wicksteed & Hill, 1979). Further conflict was raised by Fullan (1985), who discussed that the success of reforms in education depended upon stable pre-conditions – unlikely in England considering the negative view of education systems in the late 1970s (Delamont, 1987).

Nias's interviews with teachers in 1974 and 1976 concluded that teaching was a huge self-investment, with the professional and personal identity entwined. In the U.S.A., Litt and Turk (1985) warned that teachers would need to reduce their creative teaching desires to align with school leaders' requirements. Going further, Reitman (1986) discussed that a teacher demonstrating creative behaviour may risk his job: 'Creative deviations from appropriate role behaviour may well result in termination from the teaching position, sometimes accompanied by blacklisting.' (p.140). Henley (1987) claimed that instead of waiting to be removed, creative teachers were leaving the profession. Wicksteed and Hill's (1979) warning - that systems that were too routinised would threaten the creative teacher's integrity - may have been realised for some in this era.

Despite these concerns, there was some continued advocacy for a creative teaching approach. In the U.S.A. Reitman (1986) focused on the authenticity of a creative teacher, although his suggestion for achieving this – allowing schools to become places of experiment and unpredictability - was unlikely in systems increasingly dominated by prescriptive teaching methods. Although others agreed, this may have been viewed as a

backwards move to the progressive movement (Henley, 1987). Similarly, although Chamberlin and Bergman's (1982) discussion of a creative teacher's qualities (e.g. risk-takers, independent, open-minded) and Woodward's (1986) advocacy of unpredictable classroom outcomes as part of a creative teacher's approach, aligned with ideas from earlier literature, these ideas now appeared to be discordant with current educational priorities.

Recognising that a compromise would be needed, others considered strategies that would enable a creative teacher to cope with this move towards standardisation and accountability, namely by establishing routines that then allowed time for the teacher to develop creative content (Galton et al, 1989). Yinger's (1979) small-scale case study of one teacher in the U.S.A., identified by colleagues as creative (although the definition of this creativity was unknown), explored the mental processes undertaken by the teacher when planning lessons. The author claimed the importance of a creative teacher using familiar classroom management routines, allowing the teacher's focus to be on creative content planning.

Overall, this era between 1975-1987 saw education reforms and a move towards greater prescription in teaching, which continued to dominate in the next era.

2.5 Creative teaching and the creative teacher 1988-1998¹⁹

In the context of further social and economic changes experienced globally at the beginning of the 1990s, educational reforms were happening in many countries between 1988-1998, although in different ways (Graf, 1997). Some countries (for example Japan, India and Russia) were considering more progressive teaching approaches, whilst others (for example England and the U.S.A.) were promoting increasingly more prescriptive curricula (Apple & Jungck, 1992; Osborn & Broadfoot, 1992; Rajput & Walia, 1992; Sato et al., 1993; Slattenin, 1989). In this era, there were also differing views of creative teaching internationally.

As teaching for students' creativity was regaining momentum, promoted by UNESCO (UNESCO, 1992 & 1996), some countries outside the U.S.A. and England showed interest in developing teachers' creative teaching skills to complement students' developments of creativity. For example, researchers in India discussed the importance of enabling primary education teachers to use their creative abilities (Rajput & Walia, 1992). In Russia, recommendations for teacher training continued to emphasise the importance of teachers' creative actions (Slattenin, 1989). In Japan, Sato et al's (1993) study justified a focus on the professionalism, autonomy and creativity of teachers – which had not been a focus historically in Japan. This study compared the thought processes of expert teachers to novice teachers, concluding that teachers' development of 'professional wisdom' (p 100) was

¹⁹ A summary of key literature in education supports this section in Appendix A (Table A(iv)).

enhanced by creative approaches to decision-making. Sato et al. (1993) stated that creative thought processes were demonstrated by expert teachers but not by novices, due to their limited classroom experiences, and proposed the development of professional wisdom in teacher training by applying creative problem-solving techniques to solve case studies. Such development of professional wisdom may alleviate the issue identified by Csikszentmihalyi (1996) regarding the contrasting tensions that the development of creative competences may lead to for an individual (including: responsible-irresponsible; ambitious-selfless; competitive-cooperative; risk-security).

In Western countries in the 1990s, educational reforms continued to move towards standardisation of systems as social inequality in education was increasing, despite attempts to improve this (e.g. Switzerland - Graf, 1997; U.S.A. – Barrell, 1991; France - Osborn & Broadfoot, 1992). In England, a National Curriculum was implemented by schools in 1990 as part of the 1988 Education Act (DES, 1989). Despite UNESCO's recommendations, developing students' creativity was not a priority in the National Curriculum (Desailly, 2015; UNESCO, 1992; UNESCO, 1996). Similarly, although the National Curriculum did not discuss teachers' pedagogical approaches, its prescriptive requirements were considered a challenge for the development of a creative teaching approach (Woods, 1995). Some considered the primary National Curriculum to be a prescriptive overload of subject knowledge and associated objectives (Waugh, 2015), reflected in the Dearing Report (1993). However, a return to a more traditional approach to teaching was evident, when teachers' approaches became the government in England's focus in a report advising whole class teaching and less topic work, and later the introduction of the highly prescriptive National Literacy and Numeracy Strategies in 1998 and 1999 (Delamont, 1987; DES, 1992; Waugh, 2015). Coupled with the introduction of standardised tests in primary schools in 1991, Local Management of Schools (in 1991) and the establishment of OFSTED (from 1992 onwards), the business-model approach to schools led to challenges for teacher recruitment and retention (Waugh, 2015; Williams, 1995).

Ownership and relevance of teaching materials and strategies were commonly identified benefits of a creative teaching approach throughout earlier decades (e.g. Hartley, 1951; Romey, 1970; Rowen, 1968; Woods, 1995). However, the desire of primary teachers in England for shared responsibility in the decision-making processes concerning educational reforms, discussed by Wicksteed & Hill (1979), seemed to have not been considered in the development of England's National Curriculum. Campbell (1991) suggested that teachers felt the National Curriculum had affected their creative opportunities, as well as their opportunities to adjust their teaching according to students' responses, whilst Philips (1991) considered the threat to teachers' autonomy and individuality.

Despite Hargreaves' (1994) summation of the government in England's attitude towards teachers being 'in need of firm guidelines, strict requirements and evaluative shocks' (p.xiv), others discussed the vast range of individual primary education teachers' responses to the reforms, from low morale due to the pressure of an overloaded curriculum and associated assessment, to identifying new opportunities to develop professional skills (Campbell, 1991; Nias, 1993). Woods' (1993) opinion that: 'The most striking feature of teachers' responses was that they accepted it.' (p.4), might be explained by the following quote from one head teacher: 'We're making the National Curriculum part of what we want to do.' (Nias, 1993, p.151), which resonates with teachers using innovative skills of adaptation.

Although it appeared counter-intuitive for creative teachers to be able to survive such an intensified system (Campbell, 1991), Woods' (1995) case studies of 12 teachers (all deemed creative due to their demonstration of innovation, risk-taking and adaptive responses to unexpected situations) considered this to be possible if a creative teacher was willing to work within constraints – such as the National Curriculum in England. Woods' (1995) cases demonstrated that the success of a creative teaching approach depended upon a great depth of subject knowledge, collaborative support from like-minded colleagues, and extensive time to plan lessons. For survival in intensified systems, thorough lesson planning was now seen as essential (Woods, 1995). Contrary to earlier findings in Bond's (1959) study, Barrell (1991) considered a creative teacher to be viewing the wider picture of knowledge development – crucial for Woods' (1995) creative teachers cases, who were demonstrating a cross-curricular planning approach.

Woods' (1995) focus on teachers' collaboration to survive education reforms - 'together they are a potent force' (p.165) – was also emphasised by UNESCO (1996) and recognised in a Primary School Staff Relationships Project with six schools in England (Nias et al., 1989). Nias (1989) discussed using each teacher's skills to maximise colleague collaboration whilst preserving individuality. In Woods' case study examples, the creative teachers survived, but did they thrive? Woods (1995) admitted that teachers may leave the profession if they could not adapt enough to reforms, and the extent of such adaptation, according to Nias (1993), may be a self-investment too far.

Although Woods (1995) warned that teachers could lose their spontaneity with more prescribed curricula, Barrell (1991) discussed the importance of creative teachers' in-class adjustments of lessons to incorporate students' responses, termed 'mobility' (p.336). This was exemplified in Hill's (1993) vignette in Figure 2.2, which demonstrated that a teacher's creation-in-action response was likely to occur for teachers with a creative disposition, sometimes regardless of the curriculum's requirements.

'Part of an activity for the children was for each to draw a spider web of white on a piece of blue construction paper. Soon children were at tables, desks, on the floor stirring expanding concentric circles on their papers with the white crayons. One boy, David, sat motionless at a desk with paper before him, crayon in hand and his eyes tracking left to right, left to right, as he stared straight ahead.

Carol passed David in her crossing of the room and touched him gently on the shoulder. David continued with eyes tracking for almost a minute. I wondered why she didn't do something! Make a move! Then I saw her bending down to talk to a child with her back to David and she peeked between her arm and side to see what he was doing.

A few seconds later she was beside him humming a tune and the cartoon scene of Pooh Bear and the honeybees rolled into my head. Carol then knelt down on her knees and whispered in David's ear. His eyes stopped tracking, he tilted his head to listen, and he looked down at the paper. Carol continued to whisper, then she touched his back gently, rose, and moved away.

David's eyes began to track left to right more quickly and at last the crayon began to move. The crayon began to engineer a light and airy set of lines that built into a beautiful spider web. David never crouched over his arm and hand, but he seemed to be watching and not directing the work. His product was creative and subtle, very different from many of the stirred spirals with X's marked through them which other class members prepared. [After the lesson] We recounted this to Carol and she could not remember. Was she aware of how long David had been readying himself? What about her sense of timing? What had she whispered to David? At last, she drew out of her memory the gist of their secret. She had asked him something like this, "If your crayon were a spider, how do you suppose it would draw its web?" How had she thought of that? When? She did not remember.'

(Hill, 1993, p.217)

Figure 2.2 An example of a creative teaching approach from Hill (1993)

Similarly to Woods' (1995) conclusions, Hill (1993) discussed the value of colleague support in sustaining a creative teaching approach – in Hill's example a colleague observed and then led a post-lesson discussion. This strengthened the reflection process, by raising to the teacher's consciousness the spontaneous decisions she had made.

The vignette in Figure 2.2 illustrates Hill's (1993) model in Table 2.1, based on Maslow's ideas (1970). This considered creative teachers reaching the stage of demonstrating high levels of competence, whilst often using intuitive judgements unconsciously (Stage 4 in Table 2.1 is demonstrated in the vignette).

Table 2.1 Hill's model of competence and consciousness, based on Maslow (Hill, 1993; Maslow, 1970)

	Incompetence	Competence
Consciousness	2: Conscious Incompetence A personal awareness of incompetence: one who knows that one does not know.	3: Conscious Competence An awareness of competence: one who is skilled and is conscious of being skilled; great effort required.
Unconsciousness	1: Unconscious Incompetence An unawareness of incompetence: one who does not know what one does not know.	4: Unconscious Competence A combination of unawareness and competence: one who demonstrates mastery and skilfully uses intuitive judgement through stylised and personalised actions and thought. Judgments are correct and habitual but may not be easily reconstructed.

2.6 Creative teaching and the creative teacher 1999-2009²⁰

At the beginning of the 2000s, education systems in primary schools in England were continuing to become more prescriptive. The Primary Literacy Strategy and Numeracy Strategies were underway, alongside financial input for booster classes for under-attainers, to support attainment in standard tests in English, mathematics and science, and the introduction of foundation subject-specific schemes (Desailly, 2015; Waugh, 2015). With claims of England being one of the most politically controlled education systems in the western world (Grainger et al., 2004), Burnard and White (2008) warned that such centralised pedagogy 'potentially diminishes teachers' creative space' (p.669). Although high performing schools were given more autonomy in decision-making, little evidence was found to show what this looked like in practice (Burnard & White, 2008). Consequently, teachers' low motivation was reported, with the inevitable consequence of a teacher retention crisis (Burnard & White, 2008).

In potential conflict with increasingly prescriptive systems, this period was seen as the 'second wave of creativity' for education (Craft, 2003, p.145), particularly in England due to

²⁰A summary of key literature in education supports this section in Appendix A (Table A(v)).

the government's support of the influential National Advisory Committee on Creative and Cultural Education (NACCCE) report's recommendations, focused on the development of students' creative thinking skills (NACCCE, 1999). Students were expected to develop the capacity to generate new ideas and their problem-solving skills, due to ever-increasing demands in the economy (UNESCO, 2001, 2004 & 2008). NACCCE (1999) defined creativity as: 'Imaginative activity fashioned so as to produce outcomes that are both original and of value' (p.30), and viewed every day or 'little c'²¹ creativity as a transdisciplinary thinking skill (Craft, 2001), with emotional and well-being benefits, as well as practical outcomes. The NACCCE report discussed the importance of teachers using their creative teaching skills, defining creative teaching as, 'using imaginative approaches to make learning more interesting, exciting and effective' (NACCCE, 1999, p.102), although it did not provide specific examples of this. In England, a problem-solving focus was reflected in the inclusion of creative thinking in the NACCCE report and the revised National Curriculum, and later in the government's Excellence and Enjoyment Report (DfES, 1999; DfES, 2004). Furthermore, the introduction in 2002 of a nine-year long large-scale government-funded 'Creative Partnerships' programme, following the NACCCE report, indicated that England could potentially be leading the way regarding the development of creativity in education (Burnard & White, 2008). Other countries were showing some interest in creativity in education, and there was evidence of an inquiry-based learning approach in international education curricula (such as the International Baccalaureate (Dickson et al, 2018)); however, 'the discourse rarely [going] beyond rhetoric' appeared to be a common view of embedding creativity in education systems at this time (Burnard & White, 2008, p.670),

Despite the advances of creativity in education in England being recognised, there were challenges for teachers in England regarding the government's requirements for creativity in schools (Desailly, 2015). Teachers were required 'to be creative and innovative' whilst 'focusing on raising standards' and using 'tests, targets and tables to help every child develop his or her potential' (all DfES, 2003, p.3). In an attempt to achieve this balance, some schools moved towards a more creative curriculum, although the publication of resources to support this (e.g. The IPC, 2003; Creativity: Find it, Promote it: QCA, 2005, referenced in Desailly, 2015), and associated training for teachers, meant this was also in danger of being standardised, potentially jeopardising its integrity (Desailly, 2015).

²¹ Kaufman and Beghetto (2009) later developed this distinction further into a Four C model: **mini-c** - creating something that is not original but is new to the creator; **little-c** or everyday creativity - creative ideas are used to develop thinking that is of value to others; **pro-c** - creativity at a professional level with the creator demonstrating many years of deliberate practice and training; **big-c** – creative geniuses, celebrated for their life-changing advances due to their use of creative imagination.

Burnard and White's (2008) comparative discussion of England and Australian education systems raised concern for teacher retention in both countries, due to the impact of high performativity pressures on teachers' creativity. This was echoed in other literature of this decade (e.g. U.S.A. - Sawyer, 2004; U.K. - Jeffrey & Craft, 2004). With a focus on 'transformative professionalism' (p.676), Burnard and White (2008) recommended that increased professional autonomy, opportunities to taking risks and creative collaborations were needed to develop teachers' creative teaching competences. These recommendations were echoed by others (Grainger et al, 2004; Jeffrey & Craft, 2004). However, Sawyer's (2004) recognition of the challenges of risk-taking for teachers in an increasingly high-stakes environment indicated that this may be unlikely.

Nevertheless, interest in the creative teacher continued to develop internationally in this era. With the second wave of creativity emphasising the importance of students developing their creativity through interactions with other students and their teachers, there was an increase in literature focusing on how to train teachers to develop their creative teaching skills (Craft, 2003). Studies conducted with award-winning teachers in Taiwan (Hornig et al., 2005) and pre-service teachers in India (Sen & Sharma, 2009) highlighted the importance of accounting for the cultural context when both defining and enacting a creative teaching approach, and the potential limitations of this. Sen and Sharma (2009) also advised that the development of creative teaching should be integral to teacher training programmes, rather than an addition. Drawing upon their experiences of education systems in Canada and China, Hargreaves and Lo (2000) raised a main consideration to this: approaches in teacher training needed to be compatible with the current practice found in schools, to enable pre-service teachers to enact their creative skills.

In Grainger and colleagues' (2004) case study of teacher educators working in teacher training in England, the researchers justified their intervention for pre-service teachers - explicitly modelling creative teaching approaches - by stating that the development of a teacher's creativity should not be left to chance. This case study implied that creative teaching could be taught, using an approach of pre-determined strategies, as well as all teachers having the capacity to be – or become - creative. Unlike Rowen's (1968) earlier training approach which focused on teachers developing a creative mindset through heightening senses and emotions, with an opportunity to then enact these skills, the approach in Grainger et al's (2004) study was more transmissive, with teacher educators explicitly modelling skills deemed to be those of a creative teaching approach, such as contextualisation and use of metaphor. Whilst possibly conflicting with earlier ideas of a teacher' creative spontaneity (e.g. Hartley, 1951), this more formulaic approach to developing creative teaching approaches could be justified as potentially protecting teachers'

vulnerability in the current education system which was not conducive to experimentation and mistakes (Desailly, 2015). Grainger et al (2004) did not indicate whether all pre-service teachers were receptive to this approach, or not, or whether they then applied it to classroom contexts.

The idea of creative teaching being a performance in the 1960s (Opulente, 1965; Rowen, 1968) was updated in this era by Sawyer (2004). With his caution of the notion of performance implying a scripted lesson (which was the case for many teachers in the U.S.A. in the 2000s), he instead took the view of teaching being an 'improvisational performance' (Sawyer, 2004, p.12). This idea implied a shift of focus from the creative teacher working as an individual (e.g. Opulente, 1965) to the co-construction of ideas influenced by the environment around the teacher, aligning with Vygotsky's (1978) views of social constructivism. However, Sawyer (2004) expressed concern for the creative teacher due to the high demands of this skilful role as 'ever-present facilitator' (p.18). In common with Woods' views in 1995, and aligning with Sawyer (2004), Jeffrey and Craft (2004) advocated a whole-school collaborative approach to develop a teacher's creative teaching competences. Their small-scale case study of one early years' setting in England focused on the immersion of all students and teachers in a creative and collaborative approach to teaching and learning. Although Jeffrey and Craft (2004) stated that the teachers worked together to 'act creatively' (p.82), details of these actions and the mechanisms required to enable creative colleague collaboration were not discussed. To take this idea forward, it would be important to know if any teachers had been reluctant to use a creative approach, and - if so - the strategies that had supported them.

Aligning with literature from earlier decades, a teacher's strong subject knowledge was considered to be a key contributor to the success of this creative teaching approach in all of the examples of creative teaching listed in Appendix A (Table A(v)) for this era.

2.7 Emerging themes and patterns about the changing notion of creative teaching and the creative teacher

The following discussion considers themes and patterns that emerged from the Literature Review. Whilst being cautious about judging historic literature through a present-day perspective, some more recent literature sources are referenced, to help to construct an understanding, pertinent to this project, of the emerging themes.

The decades reviewed in this chapter spanned from 1950-2009. During this time, education systems globally experienced great changes, particularly from the mid-1970s, as many countries (e.g. U.S.A. and England) moved towards developing standardisation and

accountability in education. As this change had implications for creative teaching, the discussion below will refer to the early decades (1950-1974) and the later decades (1975-2009), where this is appropriate, in the context of four main themes that emerged in the Literature Review:

- the aims of creative teaching;
- the individuality of the creative teacher;
- the transformation of the creative teacher;
- attitudes towards creative teaching and the creative teacher.

2.7.1 Theme: the aims of creative teaching

NACCCE's (1999) components of a creative act – novelty and appropriateness – were considered in most of the creative teaching examples reviewed. There were also indications of the potential benefits of a creative teaching approach for the teacher, regarding their levels of satisfaction and well-being, as well as possible benefits of a creative teaching approach for the students (particularly those deemed creative learners), of increased engagement²² and creative thinking. It could be suggested that the balance and implications of novelty, appropriateness and satisfaction changed over time for a creative teacher, and these changes will be highlighted in the following discussion.

Throughout the decades, the literature demonstrated creative teachers' novel experiences. In earlier decades this was usually a new experience for the teachers based on their creative ideas, compared with later decades when the novelty was linked to designing activities within the constraints of a given curriculum. Throughout the decades, there were examples in the literature of the development of teachers' creative ideas, in response to interactions in the classroom (for example, Hartley, 1951; Hill, 1993).

The idea of the appropriateness of a creative act needs to be viewed in the teachers' educational contexts. A common theme in most of the literature reviewed regarding a main aim of a teacher's creative approach was to take action and achieve an outcome, rather than generating ideas only. Within the eras when traditional education systems dominated (e.g. early 1950s), a teacher's creative approach and disposition was considered a challenge at best, and sometimes inappropriate. Stronger alignment was recognised between a creative teacher's approach and progressive education systems (e.g. in the late 1960s). In the later decades, creative teaching moved towards intentional aims, emphasising the value and

²² In the context of this project, engagement can be understood as increased motivation, development and application of subject knowledge, and understanding of ideas (Darby, 2005).

appropriateness of the creative teaching acts, to fulfil both the role of the teacher and the needs of the students.

In the early decades, the creative teacher's satisfaction was viewed as their key purpose – for those teachers who were innately creative, their creative needs were satisfied through their creative actions (if they could survive the education system). The creative teacher's satisfaction came into question in the later decades, when many countries' curricula became more prescriptive. There were suggestions that some teachers applied their creativity to enable the adaptation of their teaching approaches. However, although teachers' adaptations were considered essential for their survival in prescriptive education systems, the degree of satisfaction and fulfilment for a teacher's use of a creative teaching approach could be questioned. Of the three components of creativity, satisfaction may be considered the least essential in the creative act itself. However, when considering the issues of teacher retention that were evident in the literature - and MacKinnon's (1978) claim that creative people are less likely to achieve when required to conform – a focus on teachers' satisfaction becomes more important.

2.7.2 Theme: the individuality of the creative teacher

An individualism focus of a creative teacher was evident in the literature of earlier decades, when creative teachers usually worked in systems in which they were mainly accountable to themselves (Sawyer, 2012). However, a more sociocultural perspective, with novelty, appropriateness and satisfaction being judged by others deemed suitably knowledgeable, could be applied to later decades when teachers' actions became highly accountable.

MacKinnon (1978) identified the following traits in creative people: intelligence, independence, openness, autonomy, intuition and curiosity. In early decades, these traits were identified, with the teachers' interests outside the classroom considered to be a crucial source on which to base imaginative ideas for creative teaching. In later decades, the teachers' personal interests were referenced less, perhaps due to increasingly prescriptive curricula requiring more decision-making about how to teach the content rather than what the content would be. Similarly, in early decades a creative teaching approach saw teachers tending to construct and enact ideas independently, whereas in later decades a creative teaching approach was more likely to be a collaborative development of activities (with colleagues who were either similarly creative, or with different, ideally complementary skills). The latter aligns with Vygotsky's (1978) social co-construction of ideas, and Sawyer's (2012) suggestion that social cultural influences mean that creativity cannot be wholly individual for value to be achieved.

This shift of a creative teaching approach from an individual to a collaborative endeavour accords with Amabile's (1998) definition of innovation as: 'the successful implementation of creative ideas within an organisation' (p.126). However, a collaborative approach required negotiation and compromise (Stoll & Louis, 2007). Although this may have risked the creative teacher's satisfaction in their creative actions, given the standardisation and high-stakes accountability that had developed in many education systems, working with others was possibly an essential part of a creative teacher's adaptation.

2.7.3 Theme: the transformation of the creative teacher

The transformation of pre-service teachers into teachers with professional identities and values that include creative teaching skills is an important consideration in this project. This focus raises the question: can all teachers potentially transform into teachers with creative teaching skills and values? Overall, most authors across the decades considered a teacher's creative approach to be a great personal investment in time, energy and effort. Consequently, passion, perseverance and determination were identified as essential qualities, alongside a willingness to take risks and learn from mistakes. In most examples, a creative teacher demonstrated self-awareness and self-analysis, as well as strong subject knowledge.

In the 1950s-mid 1960s, the literature mostly considered a creative teacher to be a rare individual, with innate creative qualities. This aligned with the general belief in the 1950s that creativity was fixed at birth and could not be taught (Parnes, 1993). Accordingly, in the early decades, some of the literature suggested that a teacher was either creative, or not. However, this notion of creativity being fixed changed, and Torrance (1972) concluded that training could improve people's creativity (Weisberg, 1993). Teachers undertaking training to develop their creative teaching skills has been discussed (e.g. Grainger et al., 2004; Rowen, 1968), and these teachers were not necessarily selected for strong creative traits. This suggested that all teachers could undertake training and potentially be successful in the development of their creative teaching approaches (or at least be introduced to the idea of creative teaching). Regarding the focus of training for creative teaching, examples from the 1960s focused on a teacher's transformation, initiated by the individual developing a creative state of mind (although barriers to this transformation were discussed). This contrasted with later discussions, with skill-based training developing creative teaching approaches (although there was little detail of the nature of these skills in the reviewed literature).

A challenge raised for training aiming to develop a creative teaching approach was the use of artificial situations in training contexts (e.g. Grainger et al., 2004). Critical incidents are often needed to trigger the transformation process (Woods, 1993) – in the context of this

project, transforming into a teacher who is skilled in their use of a creative teaching approach, and values it. In the decades studied, critical incidents were highlighted in examples of creative teaching located in real-world contexts. These were unpredictable in nature given the unique context in which each one occurred - and without a single obvious solution, thus supporting the need to develop a teacher's creative problem-finding²³ responses, as well as being problem-solvers (Sawyer, 2012). Most literature reviewed considered the teachers' developments of creative approaches, in response to unique classroom interactions, thus requiring a real-world context. The description in early decades of creative teaching being a performance was developed in later decades, when the teacher's performance became an improvisation, according to their interactions with students' responses (Sawyer, 2004). The refinement of a creative approach, to align with the environment in which it is intended to be enacted (i.e. the classroom), may be integral to the transformation of a pre-service teacher into a creative teacher.

Literature (e.g. Sato et al., 1993) raised the challenge for pre-service teachers' transformations – they may lack professional intuition due to their limited teaching experiences. This accords with the emphasis on the essential quality of wisdom to inform judgements and subsequent decision-making (Craft, 2006; Craft et al., 2007).

2.7.4 Theme: attitudes towards creative teaching and the creative teacher

Vocabulary used in the literature gave indications of the attitudes of and towards the creative teacher in each era. Examples are shown in the table below to illustrate that some of the terms changed (although these lists are not exhaustive):

Table 2.2 Examples of the changing vocabulary used to describe the creative teacher

Early decades	Later decades
individual	collaborative
imaginative	innovative
self-confident	strategic
determined	a survivor
passionate	adaptable
courageous	reflective
immersed	improviser
inspirational	strong professional judgement
strong subject knowledge	strong subject knowledge

²³ Sawyer (2012) defined problem-finders as people who consider 'ill-defined problems' (p.90), with the problem's environmental context being integral to generating solutions, compared with an understanding of problem-solvers who tackle a well-defined problem.

The vocabulary in Table 2.2 reflects the different emphases of the literature: in the early decades this often focused on the creative teachers' affective qualities, compared with a focus on behavioural qualities in the later decades.

Throughout the decades, there were some contrasting attitudes towards the creative teacher and a creative teaching approach. In the early decades, the literature tended to present the creative teacher as an engaging, often gifted, individual. Indications of others' (e.g. colleagues) mistrust and the need for creative teachers to prove their effectiveness gathered momentum in the later decades. Regarding a creative teacher's perception of self, the high self-beliefs discussed in relation to most creative teachers in earlier decades appeared to diminish in later decades, potentially due to external pressures of education reforms, and increasingly accountable education systems. Success for a creative teaching approach in the later decades seemed to depend upon working with like-minded colleagues - particularly school leaders. With an increased interest in creativity in education in England from the late 1990s onwards, a creative teaching approach appeared to be viewed more positively, if used within the parameters of the prescribed curriculum, and if creative teachers could account for their actions.

2.8 Conclusion to the chapter

Creativity is understood to be a focus on novelty, whether this is in terms of something new to the creator or new to others, applied to a context and to serve a purpose. Therefore, gathering literature and identifying patterns in the field of teachers' creativity between 1950-2009 was fascinating and challenging, given that every creative teacher may be different. The summaries of the literature for each era provide specific examples of the creative teacher and creative teaching approach, whilst attempting to identify any patterns where relevant, and apply this to the educational system which was operating at that time. The four themes of aims, individuality, transformation and attitudes of a creative teacher and creative teaching were identified, and emerging patterns put forward with caution, given that this appears to be a little-researched area in the decades studied.

This chapter aims to inform the design and implementation of this project's intervention (the creative teaching training package) for pre-service teachers. The specific examples, or vignettes, describing creative teachers in action in their classrooms may be particularly useful, with the autobiographical examples often being the most revealing, regarding successes, motivation, and challenges for the creative teacher and a creative teaching

approach, albeit in a unique educational context, and mostly through one person's perspective.

There were strong indications that understanding how to become a creative teacher, and who can become one, changed over time. This change could be attributed to changes in society and educational contexts, as well as more well-founded knowledge about the nature of creative thinking. Examples of creative teachers were found in each era, despite education reforms that sometimes appeared to discourage this. This may suggest that creative teachers are determined and adaptable, although perhaps only up to a point. Over time, perceptions of the teacher's role changed, in accordance with curricula and pedagogical reforms, and this will continue to be discussed in the next chapter, focusing on the decade 2010-2019. Responsible development of creative teaching approaches will need to be considered in the design of a creative teaching training package, to ensure these approaches align with the parameters of current education systems.

Whilst conducting this Literature Review, questions arose and many dilemmas are, as yet, unresolved. For example, the origin of a teacher's creativity was rarely evident in the examples; this is relevant to this project's focus on transformational processes. A further area not discussed in the literature was whether creative teachers were continually demonstrating a creative approach in the classroom, or whether this was more or less appropriate in different circumstances.

These summary points will be a focus in Chapter 3, in which the view of the creative teacher and creative teaching in the next decade (2010-2019) is discussed, and the exploration of emerging patterns and themes from this chapter is built upon, to inform the design of the creative teaching training package.

Chapter 3: The Creative Teacher 2010-2019: Creative Teaching with Intent

3.1 Chapter introduction including the Literature Review process

Chapter 2 considered the changing notions of creative teaching and the creative teacher across six decades, ending with a discussion about a perceived ‘second wave’ of creativity (Craft, 2003, p.145). This second wave was influenced by the publication and application of the NACCCE report, in which teachers’ creativity, alongside their students’, came into focus:

‘Young people’s creative abilities are most likely to be developed in an atmosphere in which the teacher’s creative abilities are properly engaged.’
(NACCCE, 1999, p.90).

The NACCCE report suggested that a creative teaching approach could be demonstrated by all teachers, with the phrase ‘properly engaged’ indicating purposeful, thoughtful and intentional creative teaching. Although the NACCCE report was produced in England, it had international influence. Reforms in education were continuing globally in the decade 2010-2019, with pedagogies to develop students’ creative thinking skills being identified by many countries as an aspect for consideration in education. These developments and reforms will be discussed in this chapter, in the context of possible implications for the professional development of teachers’ creative teaching skills and values.

The focus for this chapter on literature between 2010-2019²⁴ that discusses teachers developing and using an *intentional*²⁵ creative teaching approach is appropriate, to gain the current perspective of creative teaching, and to inform the design of the creative teaching package for this project. Underpinning this discussion is an understanding of the term creativity in this decade. Acar et al (2017) reviewed many definitions of creative thinking and agreed that the creative process is the development of something new and of value (either to the creator or a wider audience), which successfully fulfils a purpose, and includes an element of satisfaction. With this understanding of creativity in mind, the potential for an intentional creative teaching approach to serve two purposes will be considered: a teacher’s use of a creative teaching approach for professional and personal gain (such as increased

²⁴ The end of this time period (2019) aligns with the date when the first iteration of the creative teaching package was designed. Notable themes that emerged in relation to this project between 2020-2023 (the time period of the three iterations of the creative teaching package) have also been summarised in Appendix D, to ensure the design of a creative teaching package continued to be relevant.

²⁵ *Intentional* creative teaching focuses on creative thinking skills that may be deliberately practised, developed and applied by teachers to solve problems in their education settings.

motivation, engagement, success and satisfaction), and a teacher's use of a creative teaching approach to develop the creative thinking skills of students.

For this chapter's Literature Review, reports and documents from leading global education organisations were analysed, to gain an understanding of the potential value and status of creative teaching in education systems in this decade. Examples of evidence of creative teaching in practice were also explored, to support a discussion of the potential benefits, challenges and ways forward. Ronald Beghetto – a leading researcher in the field of creativity in the U.S.A. – identified a potential challenge regarding evidence of creative teaching: he suggested that teachers' in-lesson creativity was occurring but rarely captured in this decade (Beghetto, 2017). Beghetto pointed out that little research had been conducted into creative teaching: what it involved, how it could be developed, and its possible impact on teachers and students, beyond vignettes, small case studies and surveying teachers' attitudes (Beghetto, 2017). The lack of empirical research may have been because creativity was not embedded in classroom practice, despite its increased focus in many governments' policies internationally (Ahmadi et al., 2019) - an issue that will be discussed further in this chapter. Therefore, the literature sources of examples of creative teaching are mostly teachers' self-reported acts of creativity, or their perceptions of creativity gained through interview evidence (for example, Cheung & Leung, 2014; Henriksen, 2016). Professional sources were also analysed, including teachers' reference books (for example: Desailly 2015) and education-related reports (for example, Cachia et al., 2010; James et al., 2019; OFSTED, 2010; Vincent-Lancrin et al., 2019).

Specific vignettes taken from professional education literature of creative teachers in action during this decade will be presented, to illustrate main discussion points about a creative teacher's approach, although, as explained in Chapter 2, whilst informative, these cannot be treated as strong empirical evidence. However, these may provide useful examples of practice to inform the creative teaching package, if caution is applied by considering each example carefully (for example, the validity of the sources). In common with Chapter 2, it is important to consider the contextual factors (for example: society's needs, cultural influences, educational policy and educational practice) when reviewing the literature discussing creative teaching, enabling the validity of strategies aiming to develop creative teachers' competences to be evaluated. This is particularly relevant to this chapter due to the increased interest globally in the idea of creativity in education in this decade, with literature being considered from all continents (except Antarctica). A specific focus will be given to creative teaching in England, to align with the purpose and the geographical location of this project's creative teaching package.

3.2 Creative teaching and the creative teacher 2010-2019

3.2.1 Educational policies and priorities in this decade

Reforms in education were significant in the discussion of the creative teacher from the 1950s to 2009 in Chapter 2, particularly in England and the U.S.A., where much of the literature originated. Developments in education continued globally between 2010-2019, with many reforms advocating teachers' use of creative teaching approaches to develop students' creative attitudes and skills. The common justification for this increased focus on creativity in education was to equip increasingly diverse student populations to contribute to the future economic prosperity of their countries, in which technological advances had a growing role (Cachia et al, 2010; OECD, 2018). For example, in Canada, the importance of creative teachers enabling students to make contributions to an 'innovation economy' was discussed (Reilly et al., 2011, p.533). Similarly, Denmark focused on developing students' creative attitudes and skills to improve economic productivity (Tanggaard, 2011). Countries in Asia were also moving away from a tradition of rote learning and towards the development of problem-solving skills – justified in Hong Kong as addressing the demands of globalisation (Cheung & Leung, 2014) and similarly in Singapore, where students were being encouraged to develop entrepreneurial attitudes (Ng & Lin, 2014). Enhanced problem-solving and decision-making, linked to students' creative thinking skills, was also emerging in Africa, for example Ghanaian educators were considering the inter-connectedness of three elements of creative pedagogy: teaching for creativity, creative teaching, and creative learning (Amponsah et al., 2019; Lin, 2014).

If the purpose of education in this decade was to equip students to be successful in their futures in an increasingly complex world, by equipping them to be wise and informed problem-solvers and decision-makers, then the justification for policymakers to focus on developing students' creative thinking skills in education reforms made sense (McCormick, 2010; Newton, 2017; Tirri et al., 2016). A shift in this decade towards students developing creative habits of mind²⁶ and applying these to problem-solving situations alongside their subject knowledge, was considered to be a way to equip students to respond successfully and productively in future situations of uncertainty (Henriksen & Mishra, 2018; Lucas, 2016; Sternberg, 2017). Students' development of creative thinking was viewed as a skill to

²⁶ An example of a creative habits of mind model was developed by The Centre for Real-World Learning based at University of Winchester, UK., commissioned by the UK-based organisation Creativity, Culture and Education, and later used to explore creativity in schools by the OECD (Vincent-Lancrin et al., 2019). The five habits were: imaginative, inquisitive, persistent, collaborative and disciplined (Lucas, 2013).

enhance engagement in deeper learning experiences²⁷ which, in turn, could contribute to raising educational standards (Davies et al. 2014; Mehta & Fine, 2015).

These purposes for developing students' creative thinking skills aligned with the United Nation's Sustainable Development Goal 4 (SDG4)²⁸, which focused on high quality education and life-long learning for all, and the potential for future employability, well-being and contributions to society (United Nations, 2016). SDG4 introduced a breadth of skills focus, discussing a broad range of competences for students that moved beyond literacy and numeracy, complemented by the introduction in 2018 of a World Creativity and Innovation Day, which focused on creativity and innovation from a problem-solving perspective (United Nations, 2016; United Nations, 2017). An analysis of education policy documents for 102 countries revealed that creative thinking was one of the four most frequently documented skills for students to develop, alongside communication, critical thinking, and problem solving, with creative thinking being mentioned by 72 of the countries reviewed (Care et al., 2016). This focus on broader skills was also prominent in the World Economic Forum's model of 21st Century Skills for life-long learning, citing creativity as a main competence that enabled students to approach complex challenges (World Economic Forum, 2015). Similarly, the Center for Curriculum Redesign, in the U.S.A., included creativity as an essential skill for students' development in its Four-Dimensional Competencies Framework (Center for Curriculum Redesign, 2019).

Although Care et al's (2016) report presented a positive view of increased educational agendas for developing students' creativity, it concluded that few countries were consistently including these broader competences in vision statements and curriculum documents, and more guidance was needed for pedagogical practice and assessment. The report also acknowledged its own methodological limitations, including diverse definitions of creativity. Nevertheless, there was evidence in a few countries' national curricula that creativity in education was being prioritised in this decade. For example, Australia's new curriculum in 2010 focused on critical and creative thinking as main competencies for student development, with a practical model for implementation in schools (ACARA, 2017). In Scotland, students' creativity was fundamental to the philosophy of the Scottish Curriculum for Excellence, also introduced in 2010, which included resources to enable a shared understanding of creative thinking and pedagogical approaches, alongside a network of collaboration and support for teachers and school leaders (Education Scotland, 2013). As

²⁷ Deeper learning experiences are discussed in this context as extended problem-based learning opportunities, and include collaborative cross-curricular learning activities, aiming to develop student agency (Mehta & Fine, 2015).

²⁸ The UN's Sustainable Goal 4 states: 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' (United Nations, 2016, p.5).

with all curriculum reforms, challenges were acknowledged and ways forward discussed for these new curricula, in particular ways to integrate broader skills with knowledge and subject-focused aims (Gilbert, 2019).

In England, a revised National Curriculum document was launched in 2014 (DfE, 2013). Although some viewed it as strongly subject knowledge-focused (Desailly, 2015), the broader purposes of study for each subject in primary education included the development of students' creative thinking, for example asking 'perceptive questions' in history (DfE, 2013, p.188) and pursuing 'scientific enquiry' in science (DfE, 2013, p.154). Creativity was explicitly referred to in both the general aims of the National Curriculum document: to 'engender an appreciation of human creativity and achievement' (DfE, 2013, p.6) and specifically in five of the eleven primary education subjects (including non-arts subjects), for example: 'mathematics is a creative and highly inter-connected discipline' (DfE, 2013, p.99). Such curricula aims provided clarity that creative thinking skills were applicable across subjects, whilst heeding the caution that creative thinking needed to be considered within the constraints of the discipline, and potentially as a tool to challenge those constraints (Newton, L., 2012; Rowlands, 2011). Aligning with education reforms in other countries, preparing students for roles as educated citizens in later life was explicit in England's National Curriculum document. A focus on students' creative thinking skills could be relevant to achieve this aim, when considering this as a way to prepare students for unpredictable problem-solving situations (Beghetto, 2018a).

In the latter part of the decade, a 'balanced and broadly based' curriculum (DfE, 2013, p.5) across all eleven subjects in primary state schools in England became a focus in OFSTED inspections (OFSTED, 2018). Innovative curriculum design was considered essential to achieving this, although such innovations were not reflected in the national league tables for primary education that were dominated by the standardised testing of English and mathematics. The recurring challenge of mechanisms to assess skills that were not subject-specific may be one explanation of this absence in high-stakes testing systems. This dilemma of assessment of creative thinking skills was dominant in education systems in this decade, although some assessment attempts were emerging (for example: a habits of mind model to assess creativity – Lucas, 2016; use of self-reporting scales - Silvia et al., 2012).

Although education systems in many countries were focusing on the benefits of a creative teaching approach in this decade, there were challenges for embedded and sustained creativity in education, indicated by the title of Mullen's (2019) book 'Creativity Under Duress'. In addition to assessing creativity, other challenges that accompanied this increased focus on students' creative skills were explored by the Centre for Educational

Research and Innovation at the OECD, including developing effective pedagogies (Vincent-Lancrin et al., 2019). An outcome of Vincent-Lancrin et al's study was the advocacy of rubrics to support creative thinking models, aiming for a shared understanding of creativity (between students and teachers), and to optimise its relevance to classroom learning experiences through application of creative thinking skills (Vincent-Lancrin et al., 2019).

For teachers, it was likely that new - or adjusted - teaching approaches would be required to meet the needs of curricula that integrated broader competences - such as creative thinking skills - with subject knowledge goals. Globally, a teacher's role had changed from being a knowledge-provider to a learning activator, designing relevant learning experiences (often with imaginative use of resources), that required students to make knowledge-based decisions (Hattie, 2012; Newton & Newton, 2019; Nias, 1993; Scardamalia et al., 2012). The development of creative teaching skills was considered to be both a possible approach to enable teachers to adapt to their new roles and an opportunity to model creative thinking skills to students, thus enhancing students' creative behaviours (Lin, 2014; Mehta & Fine, 2017; NACCCE, 2009).

Internationally, there was increasing interest in creative teaching approaches; this appeared – in part - to be a reaction against education systems dominated by the prescriptive content and teaching methods of earlier decades. For example, U.S.A.-based literature referred to an over-use of textbooks (Sawyer, 2012), and in Hong Kong traditional teaching methods of instruction and transmission were prevalent before this decade of education reforms (Cheung & Leung, 2014). Despite technological advances in the developments of the purposes for and uses of artificial intelligence, a continued emphasis was placed on the importance of teachers as decision-makers, using a combination of creative and critical thinking to achieve this (Bakhshi et al., 2015). Therefore, teaching was considered to be a creative profession in this decade. In the context of pre-service teachers, creative thinking was gaining momentum as a desirable graduate attribute globally across all disciplines in higher education (Bridgstock, & Cunningham, 2015). However, teacher training programmes globally, including in England, were not required to include a focus on creative thinking (either the students' or teachers') (for example, DfE, 2019a); instead, this depended upon each teacher training provider's values and priorities.

Despite a perceived focus on greater creativity in education, the issue of a continued emphasis on high-stakes national testing systems was raised in most literature related to the creative teacher in this decade (for example: EU27 countries (Cachia, et al., 2010); Denmark (Tanggaard, 2011); U.S.A. (Holloway, 2019; Olivant, 2015) and Canada (Reilly et al., 2011)). Concerns were also reported in countries without national school inspections and tests, such

as Finland, with claims of conflicts between progressive ideals and a 'managerialist culture' (Moate, 2011, p.256). Teacher recruitment and retention remained a global issue in this decade, with the main reasons discussed being workload, a lack of Continuing Professional Development (CPD) for early career teachers, and a reasonable work-life balance (Buchanan, 2010; DfE, 2019b; Mampane, 2012; Mansfield & Beltman, 2014; Sutchter et al. 2016). Whilst acknowledging that the complexity of such retention issues are beyond the scope of this project, the development of creative teaching skills was viewed by some as a possible way forward to increase a teacher's satisfaction in the profession. This satisfaction could be the result of a focus on the intrinsic motivators for creative teachers: the development of curiosity and use of ingenuity, leading to emotional satisfaction, as well as the potential contributions towards a teaching approach that could develop students' creativity (Rowlands, 2011).

In England, the emphasis in this decade on primary schools being able to include topics of their choice by designing their 'own programme of education' (DfE, 2013, p.5) implied an opportunity for teachers to develop their own teaching approaches. However, despite the National Curriculum document stating that primary schools had autonomy in designing bespoke curricula, inter-school competition for funding through student numbers meant that students' performances in national tests for English and mathematics, reflected in league tables and OFSTED inspections, continued to be a dominant focus (Waugh, 2015). Waugh's idea of 'restricted autonomy' (2015, p.29) perhaps summarises the situation for teachers in primary education in England in this decade, alongside other countries with dominant national testing systems and public rankings of schools. The continuation of assessment-driven educational policies may also account for Lucas' (2022) view that: 'creative thinking [was] largely invisible in the English National Curriculum' (p.22) during this decade, despite the increased references to creativity in England's National Curriculum documents.

Most literature that raised challenges of a creative teaching approach referred to the need for institutional change, although this could be seen as a conflict with some cultural traditions. For example, in Cheung and Leung's study (2014), Hong Kong Chinese pre-school teachers were able to identify the characteristics of creative teachers commonly found in western studies, but only 16% of the 564 teachers surveyed considered themselves to be creative teachers. The researchers identified a dilemma between the country's traditional teacher-centred approach and the teacher's self-efficacy in developing and enacting their own creativity. In contrast, Cachia et al's (2010) research - using data from the 27 European Union countries - concluded that 95% of the 7659 teachers surveyed

agreed that all teachers had a capacity for creativity, although this was not an approach embedded in daily teaching.

The development of teachers' understanding of creative teaching emerged as a key issue for some in this decade. For example, although teachers in Canada were expected to be creative, the development of a teacher's creativity – its meaning and purpose - was not reflected in professional guidance documents (Reilly et al., 2011). Similarly, despite claims of creative teaching being encouraged in Denmark, both the components of creativity and the school's role in supporting this were not apparently clear to teachers (Tanggaard, 2011). In Portugal, Morais and Azevedo's (2011) research provided an example of Tanggaard's (2011) concern: a misunderstanding of teachers' creativity was reflected in their questionnaire-based study of 576 Portuguese teachers. When asked about their understanding of creative teaching, many mistakenly thought it included an absence of routine.

To enable teachers to develop creative teaching approaches successfully, lessons in this decade could be learnt from the issues with creativity in education presented in earlier decades, discussed in Chapter 2. For example, although progressive classrooms and student-centred learning approaches were advocated in the 1960s, these methods appeared to be exceptional rather than commonplace. A main reason for this was the lack of CPD for teachers, to aid their understanding and implementation of progressive methods. The recognition of teachers' CPD to develop a creative teaching approach was discussed in most 2010-2019 literature; this advised CPD to support teachers' development of a creative approach, by reflecting upon real examples of the creative teacher in action, both in the classroom and for the planning and evaluation processes (for example Amponsah, 2019; Cachia et al., 2010; Huang & Lee, 2015; Morais & Azevedo, 2011). However, in-depth explanations of the content of this CPD, and its specific purpose, were lacking, as well as examples in practice, with a focus on attendance rather than its effectiveness (Hughes, 2019).

With the idea of intentional creative teaching gaining interest in this decade, such CPD opportunities would be vital to alleviate the possible negative effects of a creative teaching approach, referred to as the 'dark side of creativity'²⁹ (Cropley, 2010, p.1). The moral responsibility of creative teachers was an important consideration, suggesting that a creative teacher could make decisions responsibly by applying 'wisdom in practice' (Beghetto, 2017, p.561) when problem-solving, by incorporating extensive knowledge and multiple

²⁹ A dark side of creativity refers to the use of creative thinking skills with the deliberate aim of causing harm (Cropley, 2010).

perspectives whilst teaching in the classroom. Similarly, for students' creative thinking to achieve a positive result, teachers needed to consider Sternberg's (2010) idea of teaching wisdom in the classroom to develop moral attitudes³⁰ that informed creative thinking.

Ways forward for many of these challenges regarding creative teaching in this decade were discussed in the Durham Commission on Creativity and Education Project Report³¹ (James et al., 2019). The report's inclusion of definitions distinguishing between creativity, creative thinking and teaching for creativity helped to move a potentially abstract concept towards more concrete processes that could be embedded in schools' curricula. The report also strongly advocated the development of creative collaboratives – networks of practitioners and schools to support each other and gain different perspectives in Professional Learning Communities (PLCs). PLCs between schools were considered to be an opportunity to be exposed to new ideas, experiences, and multiple perspectives (Stoll, 2015). The potential advantages of PLCs will be discussed further in the review of creative teaching examples later in this chapter.

In summary, education reforms in this decade - nationally and internationally – appeared to suggest an intentional focus on teachers' skilled application of creative teaching approaches to develop innovative curricula. These curricula aimed to meet the requirements of a statutory National Curriculum (or similar), within a broader context-focused curriculum, which included enhancing students' creative skills and attitudes. A further purpose of creative teaching was to equip teachers for the crucial requirement of being able to adapt to change successfully and thrive in their roles. However, the discussion above of education systems' contexts globally demonstrates that there were conflicting pressures that jeopardised the fidelity and integrity of a creative teaching approach. These contexts will be considered in the following discussion that explores examples of creative teachers' approaches and strategies in this decade, aiming to offer suggestions to alleviate the dilemmas presented above.

3.2.2 Qualities of the creative teacher and examples of creative teaching 2010-2019

In this decade, teaching was acknowledged globally as a problem-solving act, which aligned with the belief that most teachers were demonstrating creative qualities in classrooms every day (Beghetto, 2017; Henriksen, 2016; Reilly et al, 2011; Tanggaard, 2011). A teacher's in-

³⁰ An example of using wisdom to develop moral attitudes when applying creative thinking skills could be asking students to consider why they might be trying to improve a product, and whether new designs are always better than old or current designs.

³¹ Creative teaching advances, in relation to the Durham Commission report's recommendations, will be included in the overview of literature between 2020-2023, as this aligns with the timing of the report's impact.

lesson creativity was viewed as ongoing and unpredictable, requiring an improvised response, dependent upon students' reactions to tasks. This was complemented by a more disciplined aspect of a creative teaching approach – identified as innovative lesson-planning based upon reflective evaluations and contextual knowledge of students (Beghetto, 2017). When put together, the idea of 'disciplined improvisation' (Beghetto, 2017, p.558) suggested that a teacher's creative approach could be operating on two levels: spontaneous in-class responses emerging to support students' needs (improvisation), combined with a more disciplined creative approach when pre-planning lessons. Beghetto (2017) emphasised that a creative teacher's reflections on previous practice (either their own or others') were essential to the creative approach when both planning and facilitating the lesson, alongside extensive subject and pedagogical knowledge (Coe et al., 2014).

A teacher engaged in an improvised creative approach through ongoing in-class responses provided a different perspective of creative teaching to that of Danish teachers interviewed by Tanggaard (2011). These teachers considered that a creative approach involved 'breaking the rules' (Tanggaard, 2011, p.225) of the school's designated curriculum and was suited to more in-depth projects, undertaken in thematic weeks (for example, Lofthouse et al., 2011; Ummah et al., 2019). Such sporadic, project-based creative teaching may have challenged the aim for creativity to be embedded within a teacher's identity. In contrast, there was support for creativity being part of a teacher's everyday approach, by considering that teachers should adjust their previous work to make it more creative, developing new ways for a teacher to think and act, rather than rewriting ideas (Beghetto, 2018a). Beghetto termed this 'lesson unplanning' (Henriksen & Mishra, 2018, p.544), allowing space in a lesson for student autonomy whilst still achieving the lesson criteria.

In this decade, an increased focus on students' creativity was reflected in U.K. publications designed to support teachers with this (for example: Desailly, 2015; Newton, L., 2012; Pickering, 2017). An aspect that gained prominence was the use of creative teaching strategies to develop students' creative thinking skills, usually incorporating a process of articulation and reasoning (for example: Grigg & Lewis, 2018; Lucas & Spencer, 2017; Wegerif, 2010). An example of this is demonstrated in the 'Odd-One-Out' vignette in Figure 3.1.

'A primary teacher in England wanted to find out what her students aged 5 and 6 already knew about animals' features and classification. She put 3 pictures of animals on the board in a triangle shape.

[Teacher's voice]

A frog, a duck and a hen. Which could be the odd one out and why?

The hen Stephanie? Because...? Of course, it doesn't live in water, does it? That's a good reason. The other two live in and around water.

Can anyone think of another reason why the hen is the odd one out?

Yes Susan, that's another good reason – it does not have webbed feet. The frog and the duck are similar because they both have webbed feet.

Another reason?

The hen because it's facing the wrong way? What do you mean the wrong way, Robin?

Oh, I see it's facing the other way from the frog and the duck.

The frog is the odd one out is it Nathan, and what is your reason? Because it does not have a beak – and it is not a bird – that is good thinking – you are right, birds have beaks but frogs don't.

Feathers – it doesn't have feathers either, good one Paul. Birds have feathers too.

Have you got any ideas Mark? The frog? Why is that? Because it lays eggs?

But don't ducks and hens lay eggs too? Ahhh, but not in soft shells – I see what you mean. A frog's eggs are different from a bird's eggs, aren't they?

(Wegerif, 2010, p.91-92)

Figure 3.1 Odd-One-Out Vignette: use of open questions

The Odd-One-Out vignette demonstrated a teacher's creativity through disciplined improvisation in action: the disciplined creative thinking occurred when planning the lesson (for example, the choice of animals and the phrasing of the open question), and the improvised creative thinking was required by the teacher to lead the in-class dialogue with the students. The observer of the lesson noted that the teacher modelled creative thinking skills to her students, through the phrasing of her questions and responses³² (Wegerif, 2010). This could fulfil the intention of the teacher's creativity, in enabling students to develop their creative behaviours (NACCCE, 2009; Paek & Sumners, 2017). Wegerif (2010) and others (Grigg & Lewis, 2018; Lucas & Spencer, 2017) identified common features of these pedagogical strategies designed to enhance students' creative thinking skills: re-usable structures; no single correct solution; encourages dialogue and articulation, and flexibility (applicable to different ages and subjects). Wegerif (2010) also considered that such creative teaching strategies could change the nature of subject knowledge. As demonstrated in the Odd One Out vignette, although creative thinking tools were often simple in design, the potentially unpredictable answers they generated in each unique

³² Regarding student 'Robin' in the Odd-One-Out vignette, the teacher's creative teaching strategy allowed him to give an answer that was unrelated to the intended learning objective. To optimise the learning experience, the teacher's response could have ensured that Robin felt his answer was relevant in this instance, but would not always be correct (she could have helped him to understand this by flipping the picture, to orientate the hen the same way as the other animals).

classroom environment were likely to challenge teachers' improvised creative responses and shape the learning experiences (Beghetto, 2017; Lucas & Spencer, 2017; Paek & Sumners, 2017).

Henriksen's (2016) research into creative teachers' 'transdisciplinary thinking' (p.212) supported the proposal for teachers to develop a creative approach by changing their professional habits through both disciplined and improvised creative teaching (Beghetto, 2018a). Her in-depth interviews with seven award-winning teachers in the U.S.A. (all deemed to demonstrate original and innovative teaching approaches) explored the creative habits of mind possessed by these teachers, attempting to identify teaching skills which crossed disciplinary boundaries and age phases. By adapting earlier work of Root-Bernstein (2003) and Mishra et al (2011), Henriksen's (2016) model suggested that teachers developed a creative approach by combining the following seven habits of mind³³: observing, patterning, abstracting, embodied thinking, modelling, play, and synthesising (these terms are defined in Appendix E). An essential aspect of the development of these habits of mind for creative teachers was the connection between their actions and emotions, with the teachers' desires to be creative professionals being a key motivation to their development of creative teaching habits (Henriksen, 2016). This resonates with Newton's (2016) consideration that purposeful use of creative thought may generate feelings of competence and well-being for the creators. The range of students' ages (Grades 1-12) and subjects taught (all subjects in elementary school and language, arts, science and mathematics in secondary education) by the teachers in the study indicated the potential suitability of these transdisciplinary skills to a range of educational settings.

Although Henriksen (2016) acknowledged that the teachers' self-reports of creativity may have been skewed towards discussing only the creative aspects of their practice, her study offered some insights into possible strategies for creative teachers of all subjects and age phases. The teachers in Henriksen's (2016) study agreed that the seven transdisciplinary habits or skills could be learned, practised and improved to develop their creativity, and it was evident from the examples of creative teaching in the study that these skills were considered interdependent. Alongside the notion of a creative teacher's use of disciplined improvisation, these seven creative teaching skills (marked in italics for ease of identification) are discussed below in the context of examples of creative teaching from this decade in England (the location of this project's creative teaching package). This discussion aims to explore the applicability of the seven skills to examples of creative teaching in this

³³ These habits of mind could also be referred to as skills, or competences, of creative teachers.

decade, and provide insights into ways forward for the design of the project's creative teaching package.

Observing (for example, of students' behaviours towards their learning experiences) was viewed as the starting point in developing teachers' creative habits, leading to *patterning*. A teacher in Henriksen's study explained the crucial connection between these two skills: 'If observation helps us gather information from the world, then patterning takes that information and connects it in meaningful ways.' (Henriksen, 2016, p.218). Henriksen's emphasis on the need for a degree of objectivity³⁴ when observing supported the idea of teachers' wisdom required to make responsible professional decisions (Beghetto, 2017; Craft et al., 2008). Although objectivity was identified as a potential challenge for teachers who would be immersed and personally invested in lesson situations, this was an issue which could be addressed in CPD opportunities with teachers, for example through peer discussion opportunities to develop one's perspective (Boyd et al., 2015; Nicol, 2014).

A teacher in Henriksen's (2016) study demonstrated how she created sequential lesson plans from a student's perspective, by using a *patterning* technique to ask a series of questions (Table 3.1, Example 1). Similarly, Desailly's (2015) focus on teachers in England suggested that asking a routine set of questions supported creative teachers with the 'disciplined' aspect of disciplined improvisation when designing lessons, shown in Table 3.1, Example 2.

Both examples in Table 3.1 demonstrated the flexibility of creative teachers, according to the students' contexts and needs, reflecting the importance of the relational teacher-student connection (Cremin & Barnes, 2018; Darby, 2005). Example 1 particularly suggested an empathetic, student-centred approach, exemplifying the transdisciplinary skill of *embodied thinking* (Henriksen, 2016). The success of this approach would rely upon accurate diagnostic assessment – gained through careful *observing* - to identify students' prior knowledge and misconceptions, and to understand the learning experience through the eyes of the student (Black & Wiliam, 2012; Hattie, 2012).

³⁴ Objectivity was defined in the study as: observing a situation as it is, rather than how it relates to the observer. This open-minded approach aimed for a teacher to assess a situation accurately (Henriksen, 2016).

Table 3.1 Examples of patterning to support a teacher's creative approach to lesson planning

Example 1 (U.S.A.)	Example 2 (England)
<p>'When I approach a topic, I start to chunk it out into what I would see as a flow from the viewpoint of an 11-year-old mind.</p> <p>What is it that they know and what is the foundation?</p> <p>How can I find out what they know about it?</p> <p>Where do I go from there?</p> <p>What's the way to make it relevant to their lives?'</p> <p>(Henriksen, 2016, p.218).</p>	<p>[questions the teacher asks when planning a topic]</p> <p>'What do I want the children to understand about the topic by the end? [prescribed learning objectives]</p> <p>What specific needs or interests does this class have that I should take into consideration? How will I make it relevant to them?</p> <p>What top three priority questions do I want them to investigate?</p> <p>What will the best opportunities be for: creativity, enquiry-based learning, problem solving, involving children in planning?</p> <p>What is the best order for things to happen in?</p> <p>What will my learning objectives be?'</p> <p>Desailly (2015, p.143)</p>

The examples in Table 3.1 demonstrated another aspect of a creative teaching approach widely discussed in this decade: providing students with an authentic and relevant context (Boyd et al, 2015; Cremin & Barnes, 2018). Returning to the idea of teachers in this decade working with 'restricted autonomy' (Waugh, 2015, p.29), the two examples in Table 3.1 indicated different types of restrictions: the students' starting points in Example 1 and the prescribed learning objectives in Example 2. The recognition that a teacher would be 'thinking creatively inside the box' (Henriksen & Mishra, 2018, p. 543), suggested that task restrictions or constraints needed to be acknowledged.

The 'Dogger' vignette in Figure 3.2 is a further example of *patterning* in a specific context, with a teacher in England working within the constraints of prescribed learning objectives.

'In a class of 7-year-olds, the [prescribed] curriculum content for the Spring term included:

- uses of everyday materials in science;
- a Design and Technology [D&T] unit on textiles involving sewing a glove puppet;
- an English unit on different stories by the same author;
- the SEAL [Personal, Social and Health Education] unit 'Good to Be Me'.

The teacher 'played' with ideas related to these topics. These aspects seemed relevant:

- Textiles as materials themselves. There are many different types and different properties.
- The D&T unit's learning objectives are about joining textiles by sewing. It doesn't have to be a puppet.
- The SEAL unit contains activities about worries.

It was the connection to worries that first triggered a mental link to the book *Dogger* by Shirley Hughes. [this story involves a child's loss of a favourite soft toy called Dogger]. Immediately certain connections and possibilities began to occur [for the teacher]. This led to the planning a unit of work which included:

- Investigating properties of materials: suitable for making toys; properties that soothed;
- Discussions about why a toy/blanket can be comforting in bed;
- How to deal with worries;
- Style, story content etc of Shirley's Hughes' books;
- Surveys about bedtime toys;
- Designing, making, and evaluating a soft toy that would help them to feel safe and not worry.'

(Desailly, 2015, p.141-142).

Figure 3.2 'Dogger' Vignette: A primary school teacher in England demonstrating cross-curricular planning

The example in Figure 3.2 illustrated a creative teacher's ability to *synthesise*, by making connections between learning objectives, subjects and students' interests. This cross-curricular approach to lesson-planning was evident in this decade both in national and international education settings (for example: Barnes, 2018; the International Primary Curriculum (IPC) (Fieldwork Education, 2019)). The intention of the teacher in the 'Dogger' vignette may have been to make sense of potentially disconnected, prescribed learning objectives, to satisfy her desire for an authentic learning experience. Using a real-world cross-curricular teaching approach potentially aligned with a responsible attitude towards creative curriculum design (Craft, 2006), although the 'Dogger' vignette exemplified the vast knowledge that was required by the teacher to achieve an in-depth, valid learning experience across the subjects.

A further vignette – 'Settlers' in Figures 3.3 and 3.4 – illustrated a challenge that some teachers experienced when aiming for authentic creative teaching experiences.

Following a class trip to a Viking museum, teacher David used a creative Mantle of the Expert approach (Heathcote, 2009) to enable students to represent groups of Viking

settlers. In role, the students debated where to build their settlement, using maps and other given clues. They had the opportunity to act in the roles of teachers, and to self and peer assess their contributions. David saw all students demonstrating high engagement and applying their knowledge and understanding from the museum visit to the task, and described the 'buzz' both he and they experienced.

(Adapted from Boyd et al, 2015).

Figure 3.3 'Settlers' Vignette: A role play approach (England)

In the 'Settlers' vignette, teacher David's use of a Mantle of the Expert³⁵ approach may have enabled 'possibility thinking'³⁶ for students (Clack, 2017, p.60), with open questions posed that have several answers and potentially uncertain outcomes (Grigg & Lewis, 2018). Many educators would have deemed David's lesson as successful, if success was measured according to the students' engagement and achievement of prescribed learning objectives (Wray, 2018). However, David's concern of the relevance of the experience to the students' lives was evident in his in-depth reflexive and empathetic response seen in Figure 3.4.

'However, as David left the school that evening, he passed the building site of a new supermarket being built near the school. He started thinking about the effect this could have on his students' lives; in particular, one family who owned the small grocery shop.

In David's commentary he said:

'It occurred to me that it was a silly place to put a superstore. I wondered if the lesson [I had taught today] was really about where things get built and who decides. Or maybe the lesson was about how communities and groups of people work together or against each other, and how tensions are resolved by human interaction. Above all, I worried that the children saw absolutely no connection whatsoever between the 'then' of the lesson and the 'now' of their lives.'

(Boyd et al, 2015, p.71).

Figure 3.4 'Settlers' Vignette (continued from Figure 3.3): A teacher's reflection on action (England)

David's use of *embodied thinking* was perhaps essential to achieving authentic, creative lesson-planning (Desailly, 2015) and aligned with the need for wisdom to approach creativity responsibly (Craft et al., 2008). In common with this example, the teachers interviewed in

³⁵ The Mantle of the Expert approach is a cross-curricular teaching approach, in which the students respond to a question or tasks in a given context (usually fictional), by adopting expert roles and contributing towards team outcomes (Heathcote, 2009; O'Neill, 2014). This approach was evident in other examples of creative teachers' work in this decade (for example: Gill, 2017; Simpson, 2017).

³⁶ 'Possibility thinking' can be understood as a mindset that is central to creativity, for example - a willingness to consider several possibilities in problem-solving situations (Clack, 2017; Grigg & Lewis, 2018).

Henriksen's (2016) study understood that creative teachers took risks and those risks could fail. Risk-taking was viewed as a common feature when acting in a creative domain (Sawyer, 2012), and Beghetto (2018b) emphasised the importance of a teacher taking 'beautiful risks', to nurture rich creative thinking opportunities for the teacher and the students. However, Reilly et al (2011) proposed that creative teachers experienced three main differences compared with creative individuals in other domains (such as arts and sciences): a strong interpersonal focus between the teacher and students; less control over their work due to set parameters, and fewer opportunities and less time to perfect their practice. These differences present challenges to the creative teacher's decision-making processes, and may justify a teacher's decision of when a risk would and would not be appropriate (Beghetto, 2018b; Cremin & Barnes, 2018).

The 'Settlers' vignette incorporated the Mantle of the Expert approach, which encouraged students to adopt specified expert roles (Heathcote, 2009). This role-play strategy was an example of *play* as a transdisciplinary skill of creative teachers; although – like David in 'Settlers' - teachers in Henriksen's (2016) study mostly referred to their students' use of play, rather than their own. In the 'Dogger' vignette in Figure 3.2, Desailly (2015) explains: 'the teacher 'played' with ideas' (p.142): the inverted commas placed by the author perhaps suggested a difference between children's and adults' play. Carruthers (2002) posited that adults' creative thinking may originate from childhood play experiences, through both handling 'imagined possibilities' (p.225) and creative experimentation. This playful approach could be considered apt for creative teachers to nurture in their own practice in this decade, evidenced in the imaginative approach demonstrated by the teacher in the 'Iguana' vignette in Figure 3.5:

'[Context of the lesson]: Diary writing gives children the opportunity to write with empathy. For children to understand the purpose of an animal's morphological and physiological adaptations, it can be useful - as well as highly engaging - for them to imagine they are the animal! What does the animal need to do in order to survive in its environment and how has its body adapted to accommodate these needs?

As part of a 'Living Things and their Habitats' study, children in Year 4 studied the marine iguana. The teacher, James, chose this reptile because he wanted to challenge the children's understanding of animal groups, by introducing them to the only marine lizard. He used a film clip of the marine iguanas in action, pausing the film at key points and asking the children questions, such as: "How did the marine iguana warm up its body before it dived into the sea?". The questions were discussed in pairs and then an answer was collaboratively written, in note form. Targeted pairs explained their answers to the

class and James modelled and checked for accurate scientific understanding, as well as highlighting good examples of concise note-taking. He also modelled and encouraged the use of metaphors, enabling children to explain their understanding from their viewpoints. James then planned a creative writing activity, allowing children to individually internalise and explain their understanding of how the marine iguana's physiological features and behavioural adaptations enabled it to swim underwater and why this was so important for its survival (to obtain its food source of algae). To enthuse the children with this task, they were asked to draft diary entries from a marine iguana's point of view; these would be used to inform an audience of younger children about the creatures. The use of metaphor was modelled and encouraged, to help the younger children to understand their explanations. For example, a child wrote: *"The sea was a freezer compared to the baking lava rock."*

The children used their initial notes to support their diary writing, enthusiastically explaining the importance of avoiding exhaustion by only staying underwater for ten minutes, and then violently releasing salt from their nostrils once back on land! Humour was used effectively, as children enjoyed creating the diary accounts to entertain younger children in the school. Formative peer review opportunities helped the children to edit and improve their own and others' work.'

(Simpson, 2017, p. 73-74)

Figure 3.5 'Iguana' Vignette: A creative teacher demonstrating an imaginative (playful) approach to lesson content (England)

The 'Iguana' vignette demonstrated the importance of a combination of the transdisciplinary skills for successful creative teaching. For example, *modelling*, *abstracting* (use of metaphor), and *embodied thinking* (imagining being another organism) contributed to achieving a *playful* approach. This example also indicated why strong subject and pedagogical knowledge continued to be an essential characteristic of creative teachers in this decade, enabling ideas to be played with when lesson-planning (Beghetto, 2017; Cremin & Barnes, 2018).

Adopting a *playful* approach may have helped to maintain a teacher's motivation (Carruthers, 2002). This could be particularly important in this decade as creative opportunities in education were mostly focusing on the interests and needs of the students, rather than those of the teacher (Cremin & Barnes, 2018). A joint teacher-student approach towards designing creative lessons may have provided a compromise, enabling an authentic process for the teacher and a meaningful outcome for the learner (Cremin & Barnes, 2018; Desailly, 2015; Pickering, 2017). The earlier example of a teacher's student-centred approach to lesson-planning in Table 3.1 (Example 1) was also evident in the 'Skoda'

vignette below in Figure 3.6, alongside indications of the teacher's authentic engagement and ability to *synthesise*.

'When discussing with her Year 2 class what they knew about a factory, Sarah realised that the children had never visited one, didn't know anyone who had worked in one, and had limited knowledge about what factories looked like or what their purpose is. Sarah started by using role play and hot seating and took on the role as a factory manager, and after some initial discussion about what might happen in her factory, she showed the video of her factory in action. This was actually the Skoda car advert, which showed a Skoda Fabia being made. The children then took on the role of factory manager and chose their own 'magical' product to make. Writing outcomes from this stimulus included: drawing and labelling plans of the factory; a production timeline; designing a poster to advertise the product; writing customer reviews of the product. The children were so engaged by the activities that they were keen to actually make the products. Although not an easy task, Sarah asked the children to bring the materials from home, and enlisted extra adult helpers to spend the day making a vast array of products. The children were also involved in assessing the outcomes. Sarah and the children wanted to continue the topic. She created a factory role-play area in the classroom, with a variety of construction and modelling activities, and opportunities to write lists and complete orders. Sarah invited visitors who worked in factories to talk to the children about their role and, in preparation for this, the children wrote questions in the style of informal interviews. The children visited a local factory, where they took photographs and made notes that helped them write recounts once they returned to school.'

(Gill, 2017, p.155-157)

Figure 3.6 'Skoda': An example of a creative teaching approach in Geography (England)

Although 'Skoda' had features in common with other vignettes of creative teaching examples (for example: a cross-curricular approach; strong teacher-student relationships, and strong subject knowledge), a further aspect was the teacher's openness to creation-in-action of lesson ideas, followed by flexible use of lesson time according to students' responses. This flexibility was identified as key to successful creative teaching, enabling both the teacher and students to achieve a satisfying outcome (Beghetto, 2018b). However, such flexibility was often restricted in practice due to the limitations on time and resources, and the constraint of accountability towards prescribed learning outcomes (Cachia et al, 2010; Desailly, 2015).

These challenges were typical of in-depth cross-curricular projects undertaken in schools in this decade, with solutions to challenges for creative teaching approaches depending upon

supportive school leadership that placed creative thinking at the heart of the school's educational vision and values (Fieldwork Education, 2019; Keamy, 2016; OECD, 2016). Opportunities for PLCs were increasing in educational settings globally in this decade and the development of creative partnerships between teachers working in PLCs within schools and between schools, implemented by school leaders, were considered a way to manage resource-intensive creative teaching approaches (James et al., 2019; Meirink et al., 2010; Stoll, 2015). The potential for PLCs to strengthen teachers' collaborative and empathetic skills complemented Craft's (2006) perspective of fostering creativity-with-wisdom, by considering the 'common-good' (p.343) rather than a self-centred creative approach. The peer support teachers gained by working in a PLC could also counter the challenge raised by Cropley (2010): that creative actions sometimes led to frustration, disappointment and initial failure, if creative teachers felt they were 'going against the crowd' (p.8) and the school ethos. Innovative use of technology was highlighted as a way forward regarding peer support in professional development for creative teaching, for example observing and analysing teaching episodes, and providing peer-to-peer feedback (Ahmadi et al., 2019). However, Meirink et al (2010) cautioned that cooperation rather than collaboration was often achieved in PLCs, due to high levels of teacher autonomy operating in individual classrooms. This could be alleviated by developing a shared understanding of the school's purpose as a learning organisation and creativity's place within this (OECD, 2016).

The recognition in this decade of creative teaching's relevance for all subject disciplines raised a question: could the transdisciplinary skills of creative teachers be applied in the same way to all subjects? Henriksen's (2016) transdisciplinary skills of *observation*, *patterning*, *play* and *synthesis* were evident in most subjects when analysing examples of the creative teacher in action in this decade. Interestingly, in Henriksen's (2016) study, examples of *abstracting*, *embodied thinking* and *modelling* were predominantly demonstrated by teachers of science and mathematics lessons (for example, the use of a long roll of paper to represent geological time or creating a scale model of the planets). Creative teachers' application of transdisciplinary skills could take into account Beghetto's (2017) proposal that teachers should develop 'Creative Pedagogical Domain Knowledge' (CPDK) (p.557) – explained as knowledge of a creative teaching approach specialised according to subjects, students and contexts. A creative teaching approach was recognised as applicable in all subjects taught in primary education in England in this decade if adjusted according to the nature of the subject (Newton, L., 2012), thus emphasising the relevance of CPDK. For example, students might extend mathematical knowledge by asking their own questions in the context of mathematical problem-solving (such as: 'What patterns/generalisations do I see?', Bolden, 2012, p.43) or creative thinking might be applied

to offer different, plausible interpretations of historical events (Blake & Edwards, 2012). A student's success was likely to rely upon the teacher's CPDK: the selection of a suitable creative teaching approach, in the context of both the knowledge of the nature of the subject (for example, how history is constructed and the possibility of different interpretations), and pedagogical knowledge to teach the subject (for example, the sequence of a lesson and scaffolds within it) aimed for purposeful creative thought rather than novel ideas only (Rowlands, 2011).

3.3 Emerging themes and patterns about the changing notions of creative teaching and the creative teacher (*a continuation from Chapter 2*)

The following discussion summarises the main ideas presented in this chapter, namely the intent and value of creative teaching in this decade; the creative thinking skills and strategies for teachers, and possible challenges and ways forward that may need to be considered when planning the creative teaching training package for this project. Ideas presented in Chapter 2 will also be drawn upon, to continue the discussion of how and why the view and values of creative teaching and a creative teacher changed during the decades, to reach its current point.

As discussions about the creative teacher moved through the decades, the early view (1950s and 1960s) of a creative teaching approach being suitable only for individuals with specific creative personality traits was replaced by the later idea (2000s onwards) - that all teachers may be capable of developing creative teaching strategies. This change implied a move towards the more democratic belief of all teachers potentially demonstrating creative approaches, at appropriate times. Accordingly, early examples tended to focus on creative teachers' spontaneous in-class responses, whereas in later studies a teacher's creative actions were considered more planned and intentional, possibly occurring before, during and after a classroom experience, at planned times. Although creative teaching through the lens of disciplined improvisation was a focus in 2010-2019, more examples documented disciplined rather than improvised creative teaching. This may have been because all teachers were expected to use their creative thinking skills to spontaneously adapt their teaching to in-class situations, with the use of disciplined creative teaching skills considered less common and potentially more interesting discussion points in literature.

The perceived value of an intentional creative teaching approach, influenced by reforms in education, has been discussed. It would make sense for the value of the creative teacher (a value judged by education policymakers, school leaders, students, parents, society and teachers themselves) to have increased during the two 'waves' of creativity identified by Craft (2003), firstly in the 1960s with progressive classrooms and then in the late 1990s

following the NACCCE report (1999). In 2010-2019, reforms globally were emphasising the importance of creativity in education for students, and the creative teaching approach that would facilitate this. From an educational policymaker's view, two main reasons could be proposed for the increased value in creative teaching: the value of creative thinking to solve problems as a key skill for improving economic prosperity, and the changes in methods for learners to acquire knowledge since the 1950s. A benefit from a school leader's perspective could be that creativity in education may be highly marketable for schools, with schools publishing curricula details to attract new students, as well as for information-giving purposes.

When considering the value of creative teaching for teachers and students, the examples of the creative teacher discussed in this chapter demonstrated two main intentions of a creative teaching approach: improved learning experiences for the students and improved job satisfaction for the teachers. Although most literature through the decades referred to the importance of teachers' creative approaches in the context of developing students' creativity, achieving a balance between teachers' satisfaction and students' development is crucial when considering the global issues of teacher retention. The examples of creative teaching in practice indicated the potentially complementary nature of the two. Regarding intentional benefits for students, a teacher demonstrating a creative approach may model - with wisdom - creative behaviours (such as possibility thinking, open mindedness and flexibility) to develop students' creativity, as well as increasing students' engagement by providing relevant and authentic experiences. Regarding intentional benefits for teachers, a creative teaching approach may increase teachers' motivation, as well as improving teaching skills such as asking open-ended questions and devising activities that would enable students to apply their subject knowledge to new contexts, thus achieving successful learning outcomes.

Strategies were discussed for the development of an intentional creative teaching approach. Henriksen's (2016) transdisciplinary creative teaching skills, and Beghetto's (2017) CPDK, suggest a move towards professional creativity. If teachers are equipped with transdisciplinary skills that develop creative behaviours, this may enable them to respond to a diverse range of educational problems successfully, such as government-enforced changes to curricula and assessment. Furthermore, primary education teachers are handling multiple subjects – whilst it is important for them to understand the nature of each subject (including purpose and subject knowledge goals), applying a set of transdisciplinary skills to achieve a creative teaching approach could be an efficient strategy.

If education reforms were directing teachers to develop a creative approach in this decade, then the validity of such an approach relied upon policymakers acting with the wisdom and

responsibility discussed earlier in this chapter. Historically, education reforms have resulted in some short-lived interventions; therefore, it could not be assumed that trends in education – including a creative approach to teaching – were based upon strong research-informed evidence that supported effectiveness. Instead, it was crucial for teachers to evaluate any creative approaches they may use, by considering the intentions of the approach: ‘Why is it necessary?’, ‘Who does it affect?’, and ‘What are the possible outcomes?’ This evaluation also needed to consider unintended outcomes of the creative act, including possible negative consequences and ways to minimise these. An example of a negative outcome could be the failure of a teacher’s creative approach to align with current practice in a particular school context, whether this is regarding colleagues’ attitudes, timetabling requirements or a school’s preferred teaching methods.

Every example of a creative teaching approach reviewed in this decade reflected a multifaceted, unique teaching and learning experience - unique regarding the teacher (for example: motives; behaviours, and resources available), the educational system in which they are working, and the students (for example, their learning needs). Whilst this uniqueness presented a challenge when attempting to generalise what constituted a creative teaching approach, the following creative teaching techniques were identified as being evident in most examples of creative teaching in this decade:

- Creative thinking devices (for example: problem-based learning activities; models/analogies);
- Transdisciplinary creative teaching skills;
- Use of open questions;
- Paired/group work (students working collaboratively with peers);
- Students in the role of teachers;
- Self/peer assessment.

These techniques, applied to both the disciplined and improvised aspects of PSTs’ creative teaching skills will be considered in the design of the creative teaching package.

3.4 Conclusion to the chapter

The reforms in education discussed in Chapters 2 and 3 resulted in a change to both the teacher’s role in practice and also society’s view of this role. Teachers were no longer being viewed as knowledge-providers, but instead activators of opportunities for students to develop their knowledge-processing skills and abilities to apply knowledge - creatively in some cases. When considering the extent and complexity of students’ future life choices that were evident in this decade, the application of creative thinking skills could enable them

to solve problems and make personal and professional decisions with success. A teacher's use of intentional creative approaches could help with this, by modelling creative thinking skills, as well as enabling teachers to adapt to the new demands of education purposes.

In this decade, there were indications that creative teachers' motives for creative teaching were deliberate and carefully considered, aiming for their creative actions to have value. There were examples of creative teachers demonstrating openness, innovation and an ability to adapt. However, this increased focus on creativity in education (for both students and teachers) conflicted with the culture of accountability and assessment-led systems that continued to dominate education systems globally. In this decade of accountability, the success of sustained intentional creative teaching practices relied upon well-developed, research-informed training opportunities for teachers, of which there was little robust evidence. Although these tensions were recognised and documented, solutions to prioritise and embed the use of creative teaching approaches remained inconsistent in education systems (Lucas, 2022).

Teacher recruitment and retention continued to be a global issue in this decade. Thus, a focus on a teacher's satisfaction and motivation, which may be improved through the development of a creative teaching approach, is relevant. This chapter indicates that a robust creative teaching package, as part of a pre-service teacher training programme, may be an essential training tool. However, the development of creative behaviours and actions is a complex process, requiring an in-depth understanding of what a creative teaching approach is, what it might look like in practice, and why this approach might be better, or not, than another approach. A creative teaching approach also has a level of risk attached (for example: the risk of failure; a teacher's investment of time, emotions, resources, and the quality and relevance of students' learning experiences). This risk needs to be managed by identifying it and then making necessary adjustments to minimise it – requiring a teacher's time and expertise.

This project aims to plan, deliver and evaluate a creative teaching package, that will enable pre-service teachers to develop and value a creative teaching approach. The Literature Review for this decade has indicated that the creative teacher package may be unique in its field, due to the lack of CPD in this domain, and lack of evidence-informed examples of creative teaching in practice. A teacher's role is continually evolving, in particular given the advances of technology and the potential impact of these developments on students' ways of learning. Preparing for changes in a teacher's role identity will be a main aspect for discussion in the next chapter, which will explore the themes of teacher identity and transformation in the context of the creative teacher.

Chapter 4: Developing Teacher Identities in the Context of the Creative Teacher: A Transformative Learning Experience

4.1 Chapter introduction

All graduate university programmes, including teacher training courses, desire their learners to transform in some way (Bryson, 2014; Ellis & McNicholl, 2015). In the context of teacher training, what do pre-service teachers transform from and into, what might the processes be to enhance their abilities and desires to transform, and why is transformation considered necessary for their future success? These questions are important to this project, which is exploring ways to enable pre-service teachers to develop their professional skills and values of a creative teaching approach, thus influencing their emerging teacher identities, because transformational processes may facilitate the formation of realistic yet aspirational teacher identities, in early stages of teachers' careers.

Previous chapters discussed both historic and recent developments in education of a creative approach to teaching. For policymakers, the aim of a creative teaching approach may be to develop the creativity of students; however, a creative approach also has potential benefits for the motivation of pre-service teachers, as well as the development of their teaching skills. The lack of evidence of a creative teaching approach being embedded in practice, discussed in Chapters 2 and 3, suggests that sustainable training programmes are needed for pre-service teachers to understand, and be motivated and able to use a creative approach when creating and activating learning experiences, for both their own and their students' gains. Consideration is needed of the engagement that this will require, in the context of transforming pre-service teachers' attitudes, skills and dispositions. This transformation aims to enable a creative teaching approach to be understood and trialled, including some self-evaluation of its effectiveness for each pre-service teacher. If there are positive outcomes of a creative teaching approach, it may then become embedded in a pre-service teacher's identity.

This chapter will explore the capacity for pre-service teachers to develop professionally, by integrating a creative teaching approach with other aspects of their emerging identities. An initial discussion of teacher identity will provide insight into the capacity for all pre-service teachers to develop creative teaching approaches, including considering how a teacher's identity relates to personality and role identity, and external influences on the development of a teacher's identity. The discussion will then focus on the development of pre-service teachers' creative teaching approaches, and the transformative processes that they may experience if this creative approach is to become part of their teacher identities. Adult

transformative learning theory will underpin the discussion, aiming to potentially offer a framework for the creative teaching package in this project.

Understanding a teacher's professional identity development and its potential impact on all aspects of a teacher's role is of increasing interest to education systems and policymakers. This interest is reflected in the growing number of publications discussing teacher identity (Kaplan et al., 2018). However, according to Hong et al (2018), research is under-developed into the formation of and influences on a teacher's identity, possibly due to the challenges presented by teacher identities being multifaceted. Whilst being aware of the issue regarding the 'diverse and often vague treatment' (Kaplan et al., 2018, p.71) of the concept of teacher identity, relevant literature regarding teacher identity and transformation has been discussed and applied, with caution, in this chapter to support the development of the creative teaching package.

Factors that may influence whether a pre-service teacher transforms by developing a creative approach, or not, will be considered in this chapter. These factors, and any issues that arise, will influence the design of the creative teaching package (discussed in Chapter 7). In common with Chapter 3, the focus for this chapter is on literature and research published up to 2019³⁷.

4.2 Teacher identity and the creative teacher

A teacher's identity encapsulates what it means to become, or be, a teacher. It can be explained as a multifaceted and fluid 'collection of personal roles, behavioural norms, and social and cultural expectations' (Newton & Newton, 2019, p.7). This is influenced by a teacher's beliefs (for example, beliefs of their own and students' roles), the value the teacher places on these beliefs (i.e. how much these beliefs are worth) and a teacher's experiences (Akkerman & Meijer, 2011; Halstead & Taylor, 2000). Although teacher identity is often expressed as a singular term, Boyd et al (2015) discuss teachers possessing multiple identities, depicted as interwoven strands shaped by both professional and personal influences, in the environmental context (explained as situated-located identity by Chong et al (2011)). Consideration of the professional, personal and environmental factors that influence the make-up of a teacher's identity is important, because a teacher's identity may bear upon both students' achievement, and on how teachers understand themselves and others, and respond to professional situations (Boyd et al., 2015; Hattie, 2012). It is

³⁷ 2019 aligns with the date when the first iteration of the creative teaching package was designed. Notable themes that emerged in relation to this project between 2020-2023 (the time period of the three iterations of the creative teaching package) have also been summarised in Appendix F, to ensure the design of the creative teaching package continued to be relevant.

unsurprising that a correlation has been identified between a strong sense of teacher identity and the likelihood of staying in teaching (for example, in Chong et al's (2011) questionnaire-based study of pre-service teachers in Singapore). Mansfield and Beltman's (2014) survey-based study in Australia considered 494 pre-service and early-career teachers' motivational professional goals for their teaching. Developing their teacher identities was the third most identified goal³⁸ (out of 18 goals) by the participants, with the research concluding that understanding and focusing on pre-service teachers' motivational goals, including teacher identity, supported teachers' retention in the profession.

In Chapters 2 and 3, the demands of education reforms for new teaching approaches indicated that a teacher's identity is considered to be malleable, and can be changed by education policymakers. In practice, it has been demonstrated that the components of a teacher's identity (shaped by core values) largely remain the same once this has emerged, been tested and redeveloped in the early stages of teaching³⁹ (Boyd et al., 2015). Instead, a teacher's identity could be considered as fluid, with some of the strands becoming more relevant in specific situations, and others less so, although a degree of harmony is required between the strands for the teacher to thrive (Boyd et al., 2015; Mansfield & Beltman, 2014). Accordingly, Huang et al's (2019) study⁴⁰ investigating creative role identity and self-efficacy on Chinese teachers' attitudes towards creative teaching, considered that different identities were dominant in different situations. Therefore, a pre-service teacher's identity may be created and recreated during the teacher training phase (and beyond) as the teacher may question 'Who do I want to become?' as he or she progresses from doing the work of a teacher to being a teacher (Alsup et al., 2018; Mansfield & Beltman, 2014; Olsen, 2008; Trent, 2011).

Pre-service teachers' formation of identities in their early stages of teaching is therefore potentially crucial to their future professional developments. Their relative inexperience of teaching at this stage could be an advantage in encouraging openness and vision as professional identities develop – they are less likely to be inhibited by former (failed or limited) experiences, focusing instead on aspirational goals (Root-Bernstein et al., 1993). The traits that would need to be developed to be a creative teacher may mean that pre-

³⁸ The top three goals in Mansfield and Beltman's (2014) study were: 1) gaining employment (identified by 236 participants); 2) continuing professional learning (identified by 194 participants); 3) developing teacher identity (identified by 160 participants).

³⁹ An example of this consistency was seen when progressive classrooms were introduced in the 1960s – most teachers did not alter their core beliefs in traditional teaching approaches (Simon, 2001).

⁴⁰ Huang et al's (2019) questionnaire-based study analysed survey responses from 167 kindergarten teachers in China (the researchers raised the potential issue with self-reporting i.e. the teachers' reports may not be consistent with their practice).

service teachers are 'practising at the edge of [their] abilities' (Boyd et al., p.14), as creative teaching may leave teachers open to risks of mistakes. The teacher training phase is often referred to as a time for pre-service teachers to make mistakes, provided that they learn from these (Joliffe & Waugh, 2017), although it may be considered that making mistakes is a life-long skill enabling development, and thus applies to teachers throughout their careers (Cremin & Barnes, 2018).

A main factor in the development of a teacher's identity is how a pre-service teacher views his or her professional role (Joliffe & Waugh, 2017). Chapters 2 and 3 discussed the changes to a teacher's role in the last six decades, as the teacher as knowledge-provider evolved into the learning activator, with a focus on designing purposeful learning experiences (Hattie, 2012; Norton & Hathaway, 2015). Relational aspects of the role have also changed, with students being viewed as active participants in their learning experiences, rather than adult-led learners (Craft et al., 2007). Accordingly, teachers require training that enables them to model decision-making competencies and purposeful, productive thinking skills (Newton & Newton, 2018). Teachers' identities therefore need to adjust according to these changes in roles, driven by education reforms and societies' views. However, indications were given in previous chapters of the struggle for those teachers who could not - or would not - adapt their identities to suit the changing demands of their professional roles.

An understanding of role identity theory may help to plan for these possible challenges, regarding the adjustment and re-evaluation of teacher identity when working with pre-service teachers to develop their creative teaching approaches. Role identity theory explores the influence of an individual's social roles ('a set of expectations tied to a social position' (Burke & Stets, 2009, p.114)) on the development of self. Role identity may then be formed by selecting attitudes to inform decision-making processes (Huang et al., 2019; Kaplan et al., 2018). During pre-service teachers' experiences and interactions with teacher educators, school colleagues, students and their own peers, they are likely to negotiate and adjust their role identities. These adjustments will be influenced by the identities and roles enacted around them, alongside environmental factors (Chong et al., 2011). Whilst these adjustments aim for a positive outcome (mainly, to improve the professional developments of the teacher and, in turn, the learning outcomes of their students), it is important to acknowledge that changes to role identities may sometimes have negative or detrimental results (Kaplan et al., 2018).

More specifically, Karwowski and Lebuda (2017) discuss *creative* role identity, regarding the significance a person gives creativity within their role. Relevant to this is the influence that

an individual's personality (explained as their unique behavioural dispositions) has on the development of creative behaviour (Feist et al., 2017). Pre-service teachers will have a vast range of influences that have developed their personal identities (including culture, ethnicity, and gender) before beginning their teacher training; within these different personalities, it is likely that some will identify as being more creative than others, and others less so (Olsen, 2008). Therefore, influences on personality should be considered when planning ways to help pre-service teachers to develop a creative teaching approach, and potentially see this as part of their identities. According to ideas presented by Oleynick et al (2017), the personality trait of 'openness/intellect' (p.9) is important. This is considered to be the 'core of the creative personality' (Oleynick et al, 2017, p.11), particularly openness to experience and uncertainty. As openness/intellect is viewed as 'cognitive exploration' (Oleynick et al., 2017, p.12) of the world through perception (openness) and reasoning (intellect), teacher educators may consider ways for pre-service teachers to develop cognitive processes relevant to this personality trait, to enhance their creative personalities. Resonating with the idea of possibility thinking discussed in Chapter 3 (Clack, 2017), Oleynick et al (2017) identify three ways to develop this trait: reducing latent inhibition (enabling consideration of ideas that others may believe irrelevant); developing the skill of identifying patterns and connections in complex environments, and divergent thinking (generating many responses – ideally creative).

Alongside cognitive exploration, Oleynick et al (2017) discuss the importance of motivational processes. The desire to be creative in professional and personal contexts aligns with earlier discussions (in Chapter 2) of a holistic view of a creative teacher, who is creative both inside and outside the classroom. Karwowski and Lebuda (2017) emphasise the positive influence of high 'creative self-beliefs (CSB)' (p.84) on motivation, persistence and confidence when using a creative approach. Personality may be a key influence on CSB (Asendorf & Aken, 2003). Karwowski and Lebuda (2017) also discuss strong creative self-efficacy as fundamental to developing CSB, explained as 'the extent to which the subject assesses his or her chances of managing creative challenges' (Karwowski & Lebuda, 2017, p.85). The view of creative self-efficacy focusing on an individual's *potential* is therefore a malleable attribute (developed with positive experiences of creative approaches), and this will be an important discussion point with pre-service teachers early in the creative teaching package.

The potential for a pre-service teacher's role identity to change is important in this project, although this may present challenges. For example, although the role of the teacher has moved away from knowledge-transmitter, some pre-service teachers may continue to hold this view, due to reasons including their own experiences of teachers at school or the

media's portrayal of teachers (Chong et al., 2011). Huang et al's study (2019) concluded that not all teachers who are creative in their personal identities are willing to teach creatively, citing the school climate and cultural traditions as being key to developing this value. Boyd et al (2015) also discuss that the perceptions teachers have of their own identities may differ from those enacted in the classroom, perhaps due to conflicts between personal and professional influences (for example, if a teacher is also a parent). Developing a shared understanding between the teacher educator and pre-service teacher of these potential limitations for the development of pre-service teachers' identities may help pre-service teachers to adjust, according to their unique contexts (Olsen, 2008).

Although the creative teaching package will aim for all pre-service teachers to understand and potentially develop creative teaching approaches, a balance will need to be explored with pre-service teachers, between developing their creative teaching skills and other professional demands that need to be met. Howard's (1998) emphasis on what the teacher does *not* do, as well as does do, will be another important discussion with pre-service teachers, resonating with a teacher's role as a decision-maker.

4.3 Transformative learning

Wisdom, in the sense of phronesis (practical decision making), is relevant to this project because pre-service teachers may be trained to develop this from the beginning of their teacher training experiences, by deliberating and justifying their actions and views, including the possibilities of rejection and redevelopment of ideas (Biesta, 2015; Chong et al., 2011). Reflections during and after critical incidents⁴¹ (both positive and negative experiences) may be catalysts for transformative learning experiences, leading to reinterpretation of teachers' roles and identity adjustments (Schon, 1991). Transformative learning can be understood to be: 'the process of using prior interpretation to construct a new or revised interpretation of the meaning of one's experience, in order to guide future action' (Mezirow, 1991, p.12). A main challenge for transformative learning theory is how commonly it is used to refer to learning instances (Hoggan, 2016). Aiming to alleviate this issue, Hoggan (2016) emphasises that transformative learning processes should result in 'significant and irreversible changes' (p.71), with a focus on depth, breadth and stability of the transformation.

Considering pre-service teachers' meaning perspectives (or frames of reference) through which they view the world is important when studying the development of teacher identity (Mezirow, 1990). For example, pre-service teachers may consider that a teacher's

⁴¹ Critical incidents were considered in previous chapters, for example in Chapter 2 - Chasman (1954) and Hartley (1951).

responsibility is to possess all knowledge, if this is how they viewed their former teachers, and such a perspective would need to adjust due to its inconsistency with current principles of effective teaching (Coe et al., 2014). Adjustment may occur by pre-service teachers changing their understanding of learning and teaching processes through new experiences, or learning about others' perspectives of a teacher's identity (Schutz et al., 2018). Cranton & Taylor (2012) believe that meaning perspectives may become 'ingrained in our psyche' (p.6) and resistant to change, as experiences can reinforce them (for example, the portrayal of teachers in the media), whereas Mezirow (2000) considers disorientating dilemmas as catalysts for transforming meaning perspectives – potentially leading to a revised world view.

Mezirow's⁴² extensive work in the field of transformative adult learning theory led to the 10-step process for transformative learning in Figure 4.1:

The steps of the process:

- 'Experience a disorienting dilemma
- Undergo self-examination
- Conduct a deep [critical] assessment of personal role assumptions
- Recognise that one's discontent and process of transformation are shared and that others have negotiated similar change
- Explore new roles, relationships and ways of acting
- Plan a course of action
- Acquire knowledge and skills for implementing one's plans
- Provisionally try out new roles
- Build competence and self-confidence in new roles and relationships
- Reintegrate into one's life with a new perspective.'

(Mezirow, 1995, p.50).

Figure 4.1 Mezirow's 10-step process for transformative learning

The transformation process in Figure 4.1 includes a social constructivist perspective (defined in Chapter 2), as knowledge is actively created and interpreted through personal experience and a social context (Kroth & Cranton, 2014). Mezirow (1995) considers that the success of the 10 steps depends upon three core elements:

- the centrality of experience;
- critical reflection;

⁴² American sociologist Jack Mezirow first proposed transformative learning theory in the 1970s. Publications include Mezirow, 1990; Mezirow, 1991; Mezirow, 1995; Mezirow 2000, and Mezirow & Taylor, 2009. There is consensus that this theory continues to be relevant, although adjustments and developments have been suggested (Schneppfleitner & Ferreira, 2021; Southworth, 2022) (discussed later in this chapter and in Appendix F).

➤ rational discourse.

There is some progression through the themes, because centrality of experience enables critical reflection and rational discourse (Mezirow, 1995). Knowledge of self is considered to be essential to the transformative learning process (Turner-Bissett, 2001), and this could be particularly applicable to steps 2 and 3 in Figure 4.1, when ideas will need to be either accepted or rejected.

Here, critical reflection is viewed as a mature adult skill because sufficient experience (successes and failures) is needed to enable reflection using rational discourse – explained as discussions that question assertions (Mezirow, 1991). Mezirow (1990) argues that it is an adult educator's responsibility to foster critical self-reflection. This skill can be understood to be: 'questioning the integrity of assumptions and beliefs based on prior experiences' (Cranton & Taylor, 2012, p.9) and 'contemplating alternative ways of thinking and living' (Brookfield, 1987, p.87). Successful transformation of teacher identities will also depend upon pre-service teachers understanding how their decisions are influenced by the limits of their meaning perspectives. These limits can be exposed by learning about other people's views, to reveal alternative perspectives (Kroth & Cranton, 2014). Engagement with Mezirow's (1995) three themes may develop the resilience⁴³ of pre-service teachers - by 'building agency instead of helplessness' (Kroth & Cranton, 2014, p.xiv), and deepening their understanding of others' perspectives.

Successful engagement for pre-service teachers in the 10 steps of transformative learning in Figure 4.1, in the context of developing creative teaching approaches, will rely upon their creative self-efficacy. This may develop with experiences of creative processes and performances, including important interactions with teacher educators, peers and external stakeholders (for example, school-based mentors) (Tierney & Farmer, 2002). When such interactions involve people who advocate a creative teaching approach, professional learning communities (PLCs) of constructive 'significant others' (Huang et al., 2019, p.58) may be the result⁴⁴.

The distinction between personal identity (one's view of self) and social identity (another's view of an individual) may help those pre-service teachers who are reluctant to consider a creative approach due to a lack of self-belief about their creative abilities. Discussion of their social identities may provide another's useful perspective (Woods, 1995). Aligning with the

⁴³ Resilience in this context can be described as adaptation within challenging circumstances (Beltman et al, 2011).

⁴⁴ Conversely, significant others who do not advocate or demonstrate creative teaching approaches and skills need to be acknowledged by teacher educators working with pre-service teachers.

earlier discussion about social influences on the development of teachers' identities, Huang et al (2019) concluded that a school's expectations of a creative teaching approach had a 'major effect' (p.11) on a teacher's creative self-efficacy. The socialisation pre-service teachers will experience when training in schools will be an important influence on the development of their teacher identities: attempts to transform these identities, such as incorporating a creative teaching approach, may become compromised and have to be negotiated according to the school's values and priorities⁴⁵ (Twiselton & Goepel, 2018).

Resonating with step 4 in Figure 4.1 (*'recognise that one's discontent and process of transformation are shared and that others have negotiated similar change'*), professional interactions between peers within a supportive and constructive PLC may enable pre-service teachers to be exposed to new perspectives, as well creating a social and performance expectation that provides 'efficacy validating information' (Huang et al., 2019, p. 59). This may persuade pre-service teachers of their creative competences. The principles of peer review - explained as peers reviewing and giving feedback of work in the same domain (Nicol, 2014) - could be applied to optimise the productivity of such peer-to-peer interactions. Research is gaining momentum into the benefits of supportive peer review processes, in developing the reviewer's skills, for example, reviewers gaining an understanding of quality by making evaluative judgements of others' performance, or gaining new perspectives on problem-solving by reviewing peers' approaches (Cho & MacArthur, 2011; Sadler, 2010). Emotional benefits are also considered, such as reviewers' increased resilience by identifying and supporting peers' mistakes or misconceptions and turning these into learning opportunities (Sims & Walsh, 2009). Gaining a deeper understanding of the feedback process as reviewers is considered a further benefit, with reviewers becoming more receptive to constructive feedback themselves (Nicol, 2014). Whilst understanding and minimising the potential issues of peer review (for example, seeking ways to optimise pre-service teachers' engagement and trust in the process), the use of peer review to develop self-review may strengthen creative self-efficacy and role identity, as extrinsic motivational factors present in a PLC may then increase intrinsic motivation (Huang et al., 2019; Simpson & Reading, 2019).

Mezirow's (1995) first step of transformative learning (Figure 4.1) suggests a disruption of the pre-service teachers' views of teaching, and this may 'stimulate uncertainty, ambiguity and doubt' (Cranton & Taylor, 2012, p.9). Building up openness as a personality characteristic, (and transdisciplinary skills such as playfulness) may enable confident participation in rational discourse opportunities - such as debates about the qualities of an

⁴⁵ Olsen (2008) recommends that teacher training programmes should include opportunities for explicit conversations with trainee teachers about contradictions in education systems.

effective teacher, what effective means, and how this relates to a creative teaching approach (Henriksen, 2016; Oleynick et al., 2017). The assumptions and conditions for successful rational discourse in Table 4.1 may be applied to the creative teaching package.

Table 4.1 Assumptions and conditions for successful rational discourse in transformative learning

Assumptions for rational discourse	Conditions for rational discourse
<p>'It is rational only as long as it meets the conditions necessary to create understanding with another; It is to be driven by objectivity; All actions and statements are open to question and discussion; Understanding is arrived through weighing evidence and measuring the insight and strength of supporting arguments; The primary goal is to promote mutual understanding among others.'</p> <p>(Cranton & Taylor, 2012, p.10)</p>	<p>'Have accurate and complete information; Be free from coercion and distorting self-deception; Weigh evidence and assess arguments as objectively as possible; Be open to alternate perspectives; Critically reflect upon presuppositions and their consequences; Have equal opportunity to question, refute, and reflect, and to hear others do the same; Be able to accept an informed, objective and rational consensus as a legitimate test of validity.'</p> <p>(Mezirow, 1995, p.71)</p>

Experience, critical reflection and rational discourse may not lead to transformation (Kroth and Cranton, 2014). Different reasons may account for this, including attitudinal (for example, a lack of a person's belief in the benefits of creative teaching). As motivators, teacher educators will need to consider their teacher-student relationship, in relation to pre-service teachers' different stages as adult learners: this may cover a broad range from tutor-dependent through to self-directed learners (Abela, 2009). Franz (2007) raises the concern that 'challenging assumptions through reflection in a publicly funded organisation can be risky and messy.' (p.9). Therefore, teacher educators pursuing the development of innovative approaches need to identify any tensions between the creative teaching package and the professional standards used to judge pre-service teachers' competences. In teacher training in England, a holistic view of the professional Teachers' Standards, discussed with all stakeholders working with the pre-service teachers, should support this, moving away from these being viewed as a checklist of skills (Boyd et al., 2015; DfE, 2021).

Possible limitations of Mezirow's model in Figure 4.1 need to be considered if it is to be applied to the design of the creative teaching package in this project. Transformative processes may not be as linear as the model suggests; therefore, some steps may need to be revisited or adapted to suit a creative teaching task (Franz, 2007). For example, pre-

service teachers may get to step 8 and decide that they need to develop their skills further to demonstrate securely a successful creative teaching approach, and therefore return to step 7. To maintain pre-service teachers' motivation, it will be important for them to view the development of their teacher identity (and within this their teaching approaches) as an iterative process (Boyd et al., 2015; Schutz et al., 2018). A further concern is the high level of cognition needed to engage with transformative learning (Merriam, 2004). This may be alleviated, in part, by well-planned input and modelling by the tutor (of both creative teaching and transformative learning processes), and also through interactions with peers who may be demonstrating stronger creative competencies. Bryson (2014) considers that it is the way that someone thinks that changes them – therefore, modelling needs to include the thought processes and not just the actions that underpin each step. The level of challenge for pre-service teachers also needs to be appropriate, to achieve a satisfying state of creative flow, leading to successful transformation (Csikszentmihalyi, 1997). Further potential challenges are linked to emotional aspects of transformative learning: for example, engaging in deep critical reflection can reveal hidden assumptions and associated emotions, which may be challenging for pre-service teachers to acknowledge and teacher educators to support (Franz, 2007; Kroth & Cranton, 2014). Teacher educators need to understand ways pre-service teachers learn, to develop meaningful professional preparation (Olsen, 2008).

Kroth and Canton (2014) discuss the use of others' narratives to model the transformation process, in the first instance. This may enable pre-service teachers to critically reflect on disorienting dilemmas, with a more objective view. The next step could be using autobiographical tools, for example creating diary entries (Ruohotie-Lyhty et al., 2018). As pre-service teachers become the focus of the narrative, they can choose the aspects of their professional lives to relate to both others and themselves, reinforcing the teacher identities they desire (Bruner & Weisser, 1991; Olsen, 2008). Such diary writing could be a powerful tool, involving imagination and emotions, and reflecting pre-service teachers' thought processes (Kroth & Cranton, 2014). This may also provide insight into the catalysts within the transformation process for each pre-service teacher.

Mezirow (1991) raises possible ethical concerns regarding interventions aiming to transform people's beliefs. This concern can be alleviated by focusing on developing skills needed to make competent choices when decision-making (Newton, 2017), rather than solely on a goal of transformation. Being open and transparent regarding the intentions of all aspects of a teacher training course and its curriculum may also help. Mezirow (2000) argues that understanding one's values, purposes and actions through critical reflection and discourse enhances decision-making, whether transformation is experienced, or not. Therefore, emphasising the choices pre-service teachers have in developing their identities will be

important, alongside equipping them to make choices competently to enable success (Newton, 2017). For example, some pre-service teachers may have an instinctive reaction to reject a creative teaching approach, believing that they are not naturally creative. A preliminary discussion about competent decision-making skills – including putting initial inclinations aside to allow conscious deliberation to take place - may enhance their openness to engage with less obvious possibilities for their future teacher identities⁴⁶ (Newton, 2017).

How might we recognise a person's successful transformation into a creative teacher? Kroth and Cranton (2014) consider that the transformed individual 'changes in noticeable ways' (p.3). The transformational steps in Figure 4.1 may be suitable for the creative teaching package for pre-service teachers, to help them to potentially become more creative in their approaches. However, the development of teacher identity goes beyond the teacher training phase, with Boyd et al (2015) considering that 5-8 years' teaching experience is needed for optimal teaching effectiveness. Previous chapters have also alluded to the transformation requirements being greater than on an individual basis, if a creative teaching approach is to be successful regarding the optimal impact on the teacher and students (for example, the transformation of school leadership teams, the whole school or education systems). This project's empirical work aims to consider the potential sustainability of the creative teaching package beyond the teacher training phase, and aspects of social transformation may need to be applied (Freire, 1970; Roberts, 2016).

An introduction to Mezirow's 10-step model of transformative learning processes (Figure 4.1), in its entirety, will be important at the beginning of the creative teaching training package. This will enable pre-service teachers to understand the transformative nature of a teacher training programme, and to consider the linear progression and value of each step, related to their understanding of their own transformation. However, given their early phase of training, the model may require some adaptations when used at the beginning of the training package, to allow pre-service teachers to engage with transformative processes from the outset. For example, a disorientating dilemma may be presented rather than experienced first hand, and some steps may be reordered to ensure sufficient pedagogical knowledge has been acquired to solve problems. These adaptations aim to support the progressional design of the tasks in the training package, and the iterative nature of the Educational Design Research approach, as pre-service teachers eventually move towards fulfilling the entire 10-step model as they progress through the course.

⁴⁶ An effective teacher training course should allow pre-service teachers to make decisions and choices and develop into teachers in different ways.

4.4 Conclusion to the chapter

The evolution of teachers' roles has led to a crucial need for teachers' identities to adapt to fit the current changing demands in education systems. Although developing a teacher identity is considered to be a large investment (Nias, 1993), due to the inevitable impact that becoming a teacher (rather than just doing a job) has on adjusting a personal identity, a well-considered teacher identity may be a crucial influence on sustaining a teacher's motivation and engagement in the profession.

Although a teacher's identity is likely to be malleable, influenced by personality, social and environmental factors, it can become more resistant to change as experience is gained. Therefore, enabling teachers to scrutinise aspects of their identities in early stages of training, by considering what, how, why and when different values, beliefs and skills develop, can be a crucial part of critical reflection for pre-service teachers. Practically, this requires discussions about how experienced, successful teachers consider their identities to influence their actions. It is likely that most pre-service teachers will experience challenges to their initial perceptions of how to fulfil a teacher's role. A secure understanding of self, to support emotional and intellectual engagement in decision-making processes, can help to overcome these challenges, thus strengthening resilience.

Values and self-beliefs that are developed through experience, critical reflection and rational discourse, are fundamental to the success of pre-service teachers. Opportunities can be maximised for the development of strongly defined and justified professional identities, by encouraging pre-service teachers to identify and question their assumptions and decision-making processes. The creative teaching package will involve pre-service teachers examining their developing identities and attempting to shape these, to suit both their professional demands and personal desires – a creative process itself, according to Albert (1990). The perspective and agency gained through pre-service teachers' actions and thought processes as peer reviewers may be an important factor in the development of pre-service teachers' creative self-efficacy. Teacher educators can influence this, by planning activities that aim to develop pre-service teachers' understanding of and engagement in creative teaching approaches, as well as the benefits of peer reviewing another's work.

For many pre-service teachers, their emerging teacher identities are likely to include a creative approach to teaching, if they have developed an in-depth understanding of the potential benefits to themselves and their students. They may then experience either the short-term use and evaluation of a creative teaching approach; or a long-term transformational life-change, if a creative teaching approach becomes embedded in a pre-service teacher's identity. There may be a diverse range of levels of transformation

achieved, from minor adjustments to teacher identities to more major shifts in world views. If a creative teaching approach is developed, it will be important to identify if other strands of pre-service teachers' identities are affected and need adjustment, to achieve a harmony that can be sustained throughout their teaching careers.

Chapter 5: Research Method: Contextualising the Project

5.1 Introduction to the chapter

This chapter considers the research method for the three phases of empirical work in this project, focusing on the selection of a research method that enables the research aims and questions posed in each phase to be achieved (Flick, 2018). Aspects of the research method outlined in this chapter will be expanded in Chapter 6 (Phase 1) and Chapter 7 (Phase 2 and Phase 3).

The chapter begins by listing and explaining the research aims and questions. In the research methodology section, the theoretical position is presented, regarding a constructivist ontology and a mixed methods approach. These methodological aspects are then reflected in the research design, comprising an overarching Educational Design Research model. Specific research methods are discussed for each phase of the empirical work - phenomenography and an iterative design research approach - and the complementary nature of these approaches is explained. Considerations regarding replicability, relatability and ethics are explored, alongside the strengths of the research method, and potential challenges that need to be planned for when conducting empirical work using an Educational Design Research approach.

5.2 Research aims and questions

5.2.1 Research aims

This project aimed to develop a practical and innovative solution to a complex problem, alongside refined theoretical ideas, as theories were tested in a real-world context (McKenney & Reeves, 2019; Simon, 1996). With this focus on both practice and theory, the project aimed for:

- **practical solutions:** by designing, implementing and evaluating a high-quality creative teaching package, which enabled pre-service teachers (hereafter known as PSTs) to develop and use creative teaching skills to enhance their practice, and to value a creative teaching approach as part of their teacher identities;
- **refined theoretical insights:** by exploring and understanding the current perceptions of creative teaching for PSTs and in-service teachers (hereafter known as ISTs), and also understanding the characteristics of a high-quality creative teaching package for PSTs, using a model of transformative adult learning theory.

These two main aims were addressed in the three phases of the project, which focused on three main research orientations: research for, on, and through the creative teaching package⁴⁷ (Jacobsen & McKenney, 2024).

Phase 1: Exploration and analysis (research for the creative teaching package) Phase 1 of the empirical work aimed to explore and understand current teachers' (pre-service and in-service) perceptions of the notion of creative teaching, in relation to the discussion in Chapters 3 and 4 of reviewed literature and research in this field. Data were collected and analysed, resulting in an evidence base comprising a rich description of the data set (Cohen et al., 2018). This research for the creative teaching package aimed to:

- provide an informed starting point for the design of the materials for the creative teaching package, by seeking the spectrum of creative teaching approaches;
- enable the creative teaching package to present different conceptions of creative teaching which, where applicable according to current teaching contexts, may suit PSTs' different emerging teacher identities;
- design learning experiences in the creative teaching package that related to the various understandings of creative teaching;
- help to identify, discuss and eliminate misconceptions and issues related to perceptions of creative teaching, by enabling PSTs to value and develop the most effective⁴⁸ creative teaching skills.

Phase 2: Design and construction (research on the creative teaching package)

Outcomes from the Literature Review and Phase 1 were applied to the design of a creative teaching package, aiming for activities that supported PSTs in developing creative teaching skills that benefited their professional developments as teachers and their teaching contexts. This research on the creative teaching package included applying Mezirow's (1995) transformative adult learning theory, which guided the construction, contents and implementation of the creative teaching package. The creative teaching package was completed by three successive cohorts of PSTs: data analysis outcomes of each iteration of the package informed the re-design of the subsequent iteration.

Phase 3: Evaluation and reflection (research through the creative teaching package)

Phase 3 aimed to investigate the potential benefits of the creative teaching package for

⁴⁷ Jacobsen and McKenney (2024) suggest that the nature of these different research foci will influence the research questions asked, research methodology used, and challenges presented. In this project, overlaps are expected, and planned for, between these three phases of research, because all phases contribute to the two main research aims.

⁴⁸ Effective creative teaching skills may be understood as those beneficial to teachers' professional developments, and students' learning experiences.

PSTs' professional developments, and the possibilities for improvements through redesign following each iteration, to address any challenges. Focusing on research through the creative teaching package, an iterative cycle of implementation and evaluation of the creative teaching package, as part of a teacher training programme for three successive cohorts of PSTs at one university, formed Phase 3 of the research. The outcomes of the evaluations informed the re-design of the creative teaching package (Phase 2).

5.2.2 The research questions

Research questions, related to specific objectives, were derived from the aims of the three phases. The research objectives justified collecting and analysing data and developing the evidence base (Cohen et al., 2018). The main research questions and objectives are outlined in Table 5.1.

Table 5.1 Research questions and objectives

Research questions (RQ) ⁴⁹	Objectives of asking the question
<i>Phase 1: Exploration and analysis (research <u>for</u> the creative teaching package)</i>	
RQ1a. How is creative teaching perceived by current pre-service teachers?	<ul style="list-style-type: none">-To elicit participants' perceptions of a phenomenon (i.e. the phenomenon of creative teaching).-To classify the perceptions of creative teaching according to commonalities and variations, and create categories of differing types of creative teaching.-To use the above to inform the creative teaching package, by understanding current perceptions of creative teaching, including any misconceptions that may need to be addressed.
RQ1b. How is creative teaching perceived by current in-service teachers?	
<i>Phase 2: Design and construction (research <u>on</u> the creative teaching package)</i>	
RQ 2: How can a training package be designed and constructed, to enable PSTs to develop creative teaching skills and values?	<ul style="list-style-type: none">-To investigate how Iteration 1 of the creative teaching package could be designed and constructed, to optimise the PSTs' professional developments through their engagement with its themes.

⁴⁹ The RQ numbers are not sequential in this table as the numbering relates to their chronological application to the project. This will be described in Chapter 7 (Figure 7.2), which illustrates the inter-connection between Phases 2 and 3.

Research questions (RQ) ⁴⁹	Objectives of asking the question
RQ 5: How can a training package be improved by re-design, to enable PSTs to develop creative teaching skills?	-To consider how the creative teaching package could be improved by re-design, for Iterations 2 and 3, to optimise the PSTs' professional developments through their engagement with its themes (connected to Phase 3, RQs 3 and 4).
Phase 3: Evaluation and reflection (research <u>through</u> the creative teaching package)	
<p>RQ 3: How did the creative teaching package influence the PSTs' professional developments? <i>Two parts:</i></p> <p>-RQ 3a) How did the PSTs develop their creative teaching skills?</p> <p>-RQ 3b) How did the PSTs develop their creative teaching values?</p>	<p>-To evaluate the potential beneficial influences of the different aspects of the creative teaching package on PSTs' professional developments of creative teaching skills and values.</p> <p>-To identify areas for improvement for the next iteration of the creative teaching package.</p> <p>-To use the outcomes of the evaluations to inform the re-design of the creative teaching package (connected to Phase 2 – RQ5).</p>
RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?	
<p>RQ 6: How did the improvements to the creative teaching package influence the PSTs' professional developments?</p> <p><i>Two parts:</i></p> <p>-RQ 6a) How did the PSTs' creative teaching skills improve?</p> <p>-RQ 6b) How did the PSTs' creative teaching values improve?</p>	-To evaluate the potential beneficial influences of the improved aspects of the creative teaching package, on PSTs' professional developments of creative teaching skills and values.
RQ 7: Were there indications of the sustainability of a creative teaching approach, beyond the training phase?	-To consider the potential sustainability of creative teaching skills and values for PSTs who had completed the creative teaching package, beyond the teacher training programme (after their first year of teaching), including possible challenges and solutions.

5.3 Research methodology

5.3.1 Theoretical positioning

Considering my theoretical position enabled me to understand the possible influences on the decisions I made when planning the research method for this project (Flick, 2018). My research approach reflected a constructivist ontology – with realities being constructed by individuals, multiple and subjective (Flick, 2018; Waring, 2021). For example, I considered creative teaching to be a socially constructed concept – in the context of this project this included the construction by authors of the points discussed in the reviewed literature, by the project's participants of their notions of and responses to creative teaching, and my construction as the researcher of an understanding of creative teaching, both historically and now (Flick, 2018)⁵⁰.

The notion of realities being 'mind-dependent'⁵¹ (Waring, p.18, 2021) also influenced my research method, for example when analysing data to construct categories of creative teaching that emerged from interviews with PSTs and ISTs in Phase 1. The plausibility of the knowledge that emerged from Phase 1 was tested through its incorporation into the creative teaching package, and the analysis of the PSTs' outcomes (Bryman, 2016; Cohen et al., 2018). Flick (2018) suggests evaluating the quality of the outcomes by examining the viability, explaining this as: 'the extent to which the picture or model permits the subject to find its way and act in the world.' (p.37). To make such a judgement in this project, an in-depth understanding was required of the context in which the modified concept of knowledge was applied, and the potential for this application (in this case - current and future education systems) (Besen-Cassino & Cassino, 2023). Acknowledging the social function of knowledge was an integral reason for the inclusion of an exploration into the sustainability of the outcomes of this project, gained through interviews with former PSTs a year after they had completed the creative teaching package (Flick, 2018).

The centrality of language in social constructivism (for example, how meanings are developed and influenced by social interactions) was also an important consideration when investigating, establishing and using terminology in this project (for example when naming and defining categories of creative teaching in Phase 1, and developing a coding system for

⁵⁰ It is likely that my position derives from my professional experiences: during my teaching career in primary education and higher education, I experienced (through a subjective lens) the complex network of influences and interactions that constitute teaching and learning, including the people involved and the context in which they were situated.

⁵¹ Waring (2021) explains mind-dependence as being how people's actions, utterances, and motivations are interpreted, to then become a social reality for the interpreter.

data analysis) (Cohen et al., 2018). This will be explained further in Chapters 6 and 7 when discussing the research design for the specific phases of the project.

5.3.2 Mixed methods approach

Data were collected in all phases of the project, and analysed using quantitative and qualitative methods (Cohen et al., 2018; Poth, 2023). This mixed methods research approach aimed to collect evidence on beliefs and effectiveness, and this aligned with the aims of the project – to develop a solution to a complex problem which had both theoretical and practical outcomes, and to provide opportunities for flexible methods within a responsive and iterative inquiry (Jacobsen & McKenney, 2024; Poth, 2023). The mixed methods approach was designed with pragmatism, with the research aims, questions and objectives driving the design and methods (Biesta, 2021). Quantitative methods enabled an exploration of emerging patterns in large data sets (for example, results from questionnaires) (Cohen et al., 2018). Results from data set analyses were then investigated using qualitative methods, to strengthen the evidence by eliciting in-depth data applied to an individual participant's context, and enable variations to be explored (Biesta, 2021).

5.4 Research methods

5.4.1 The overarching research approach: Educational Design Research

The diagram in Figure 5.1 presents an overview of the research method⁵² that was developed using an Educational Design Research (EDR) approach.

⁵² | distinguish here between methodology - the study of methods, and method - what was done in this context.

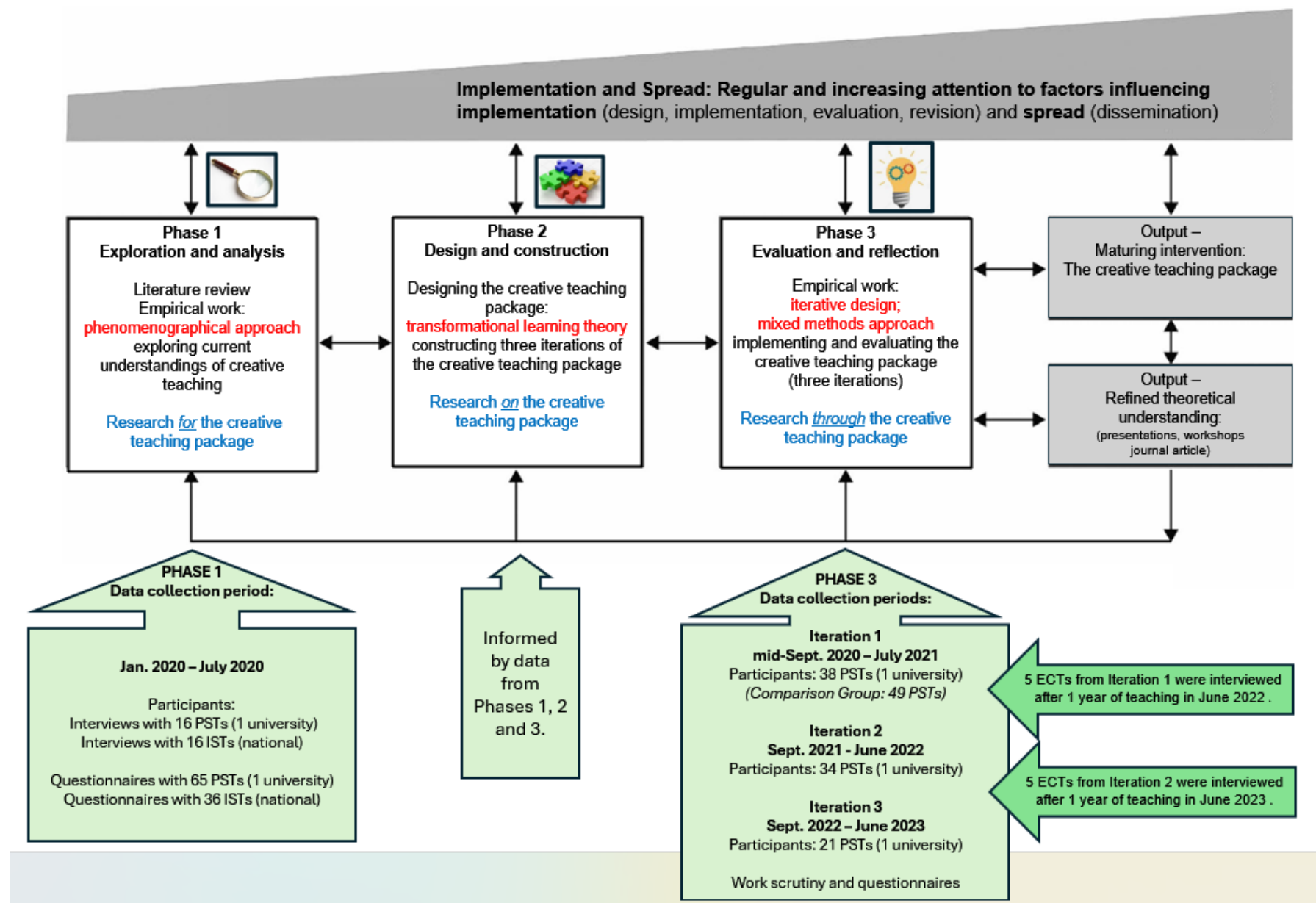


Figure 5.1 The overarching research approach: Educational Design Research (the diagram is an adapted version of McKenney and Reeves' EDR model (2019; 2020).

The overview of the research method in Figure 5.1 shows that principles supporting the EDR genre of inquiry were used to develop the three phases in the project (McKenney & Reeves, 2019). EDR relies on an in-depth understanding of the issue and an exploration of the complex networks of learning in authentic (as opposed to laboratory) settings, with some consultation with stakeholders (in this case PSTs and ISTs) (Jacobsen & McKenney, 2024; McKenney & Reeves, 2020). As demonstrated when discussing the project's aims in section 5.1, an EDR approach comprises two complementary yet distinct aims: practical solutions and refined theoretical insights. Given the large ambition of these two goals, EDR has been described as 'a complex and multifaceted endeavour' (McKenney & Reeves, 2020, p.84). Although EDR can be approached in a variety of ways, it has five essential features. Table 5.2 presents a summary of these features and their application to this project.

Table 5.2 Applying the five essential features of EDR to this project

Five essential features of EDR (McKenney & Reeves, 2019; 2020; Van den Akker et al., (2006)	Application to this project
A theoretical orientation	Theory was used to design the creative teaching package. The theoretical output aimed to make the following contributions to the field of understanding: <ul style="list-style-type: none"> ➤ The categorisation of types of creative teaching; ➤ The design and development work undertaken, by examining the three iterations of the creative teaching package.
Interventionist	The project aimed for change in the context of PSTs' professional developments (creative teaching skills and values).
Collaborative	Expertise and input were required from stakeholders (i.e. PSTs and ISTs) to inform the design and content of the creative teaching package.
Responsively grounded	The creative teaching package was shaped by an analysis of participants' responses and their evaluations, and the outcomes of the Literature Review.
Iterative	The creative teaching package improved according to the outcomes of an iterative cycle of design, implementation, evaluation, and revision.

The use of bi-directional arrows in the EDR diagram in Figure 5.1 reflects a key aim of the iterative research design for this project - to allow fluidity of the approach according to any

practical influences occurring in the project, and enable new viewpoints, and potentially new goals, to emerge (Bakker, 2018; McKenney & Reeves, 2020; Simon, 1996). A benefit of EDR's fluidity was that there was the opportunity to apply my own creative attitude and creative thinking skills, as the researcher, to each phase of the project, by demonstrating openness in decision-making processes and a willingness to solve problems that were unknown at the outset of the project, and consequently, to adapt (Beghetto, 2017; Oleynick et al., 2017; Poth, 2023). For example, Phase 1 of this project aimed to establish current understandings of the notion of creative teaching: this suggested that current notions - and potentially theories accompanying these notions - could emerge from the data that had not been realised previously, hence the necessity for an open-minded approach (Flick, 2018; Oleynick et al., 2017). Such creativity, coupled with a pragmatic approach with decisions based on evidence, aligned with the suggestion of the need for 'methodological pluralism' (Jacobsen & McKenney, 2024, p.2745) in EDR, given its intention as an iterative and responsive inquiry.

EDR's ambitious dual aim to build theory and innovate practice reflects the purpose of EDR, namely, to investigate a real-world problem in education and the complex variations that may influence it (McKenney & Reeves, 2019). For this project, five potential challenges of EDR were acknowledged and explored, with the aim to proactively address these within the design of the three phases of empirical work (McKenney & Reeves, 2020). These challenges and possible solutions are explained in Table 5.3.

Table 5.3 Potential challenges of EDR and mitigations within this project

Potential challenges of EDR (adapted from McKenney & Reeves, 2020)	Mitigations within this project
Conceptual – there is a risk of a lack of clarity of both the EDR process and the dual goals within the project, related to theoretical and practical outputs.	The EDR process was considered to be a useful tool to plan and present an overview of the project. Each step of the EDR model in Figure 5.1 is explained in its own right in this project. The theoretical and practical outputs are clearly stated as two distinct yet related goals, and attention is given to both in the project.
Methodological – the researcher requires the ability to navigate the flexibility and variety of research approaches necessary for a complex EDR project.	Although the three phases of the empirical work are related, the research design and approaches in each phase have been presented separately, to ensure the design matches the research aims for each phase. A range of quantitative and qualitative approaches to data-handling has been used with

Potential challenges of EDR (adapted from McKenney & Reeves, 2020)	Mitigations within this project
	skill and purpose, according to the context of the research questions.
Communicative – The complexity of EDR projects can present a challenge for an effective, linear communication of the outcomes and processes.	As above, the three phases of empirical work are related. Phase 1 is presented separately (Chapter 6), and Phases 2 and 3 are presented within the same chapter (Chapter 7) to illustrate their interconnection. Chapters 6, 7 and 8 focus on each phase's contribution to the outcomes of the project, and the value to both stakeholders and the wider field of education.
Political – EDR projects require a research design to be implemented in a real-world context or setting, to enact change. Challenges may arise in the setting to impede the implementation or progress of the project.	The real-world setting for the creative teaching package was selected as a place that was known by the researcher to be receptive to change, and had the capacity for change.
Researcher's Capacity - Several cycles and iterations of an intervention are required for an in-depth EDR project. The researcher's capacity and time has to be considered for successful completion of the project.	The project spanned six years (including four years of empirical work). This time scale provided the capacity for several cycles of the creative teaching package design, implementation and evaluation to be completed.

These potential challenges and planned mitigations were applied throughout the project, and are illustrated further in the research designs in Chapters 6 and 7.

5.4.2 The research design for each phase

A benefit of different possible approaches to EDR meant that the empirical work could be designed to maximise the strength of the project, regarding it meeting the research aims and its current and future relevance and application to real-world settings (Cohen et al., 2018; McKenney & Reeves, 2019). It is shown in Figure 5.1 that, although related, each phase of the empirical work was treated as a separate sub-project, with different research designs according to the needs of the research aims and questions for that phase.

5.4.2.1 Phase 1 exploration and analysis: phenomenography

Figure 5.1 states that a phenomenographical research design was used in Phase 1 of the empirical work. Phenomenography was used to address the research questions:

- RQ1a. How is creative teaching perceived by current pre-service teachers?
- RQ1b. How is creative teaching perceived by current in-service teachers?

Phenomenography is a qualitative research approach that identifies, categorises and describes the various ways in which concepts, or phenomena, are perceived and understood by individuals (Marton, 1986). This approach was developed within an educational research framework, with the focus on the relationship between the person and the phenomenon being integral to its aim to solve practical pedagogical problems, as well as providing new evidence or adjusted knowledge in the relevant research field (Marton, 1986; Marton & Booth, 1997; Stolz, 2020). Following the advocacy and development of phenomenography by Marton and colleagues from the late 1970s, (for example, Marton, 1981; 1986; Marton & Booth, 1997; Marton & Pong, 2005; Marton & Pang, 2008), this research approach is gaining popularity in social sciences as an ‘innovative research design’ (Tight, 2016, p.320; Stolz, 2020).

Phenomenography aims for an outcome of a series of categories of understanding within a structural framework (Marton, 1986). The phenomenographical approach is discussed in more detail in Chapter 6, suffice to say here that it requires qualitative data comprising in-depth participant responses, which are analysed to develop a limited number of descriptive category outcomes. Phenomenography was considered a suitable approach to answer RQ 1a and RQ 1b because these questions aimed to understand the current perceptions of creative teaching of PSTs and ISTs, with the anticipation that there may be some variations in these perceptions. Semi-structured interviews were conducted with PSTs and ISTs to elicit their perceptions of the notion of creative teaching. The categories were then tested with larger groups of PSTs and ISTs, to rate their plausibility. As stated in the objectives for RQ 1a and RQ 1b in Table 5.1, the purpose of establishing categories of perceptions was to use these in the design of the creative teaching package. The use of categories of understanding for this purpose aligned with Marton’s (1986) view of the usefulness of a phenomenographical view of learning, in enabling people (PSTs in this case) to realise that a concept can be perceived and thought about in different ways, and that their conceptions of a phenomenon can change. This research method for Phase 1 is expanded in Chapter 6.

5.4.2.2 Phase 2 design and construction: educational design research

Phase 2 of the project initially explored the research question:

- RQ 2: How can a training package be designed and constructed, to enable PSTs to develop creative teaching skills and values?

Figure 5.1 states that the design and construction of Iteration 1 of the creative teaching package were informed by research outcomes from Phase 1, and ideas taken from

Mezirow's (1995) transformative learning theory⁵³. Further data from semi-structured interviews with PSTs in Phase 1 were also analysed, to support the practicalities of the design.

After Iteration 1 of the creative teaching package had been completed by PSTs, evidence from Phase 3 (explained below), and any newly emerging ideas in literature and research, informed the adjusted designs of Iterations 2 and 3 of the creative teaching package, to answer the following research question:

- RQ 5: How can a training package be improved by re-design, to enable PSTs to develop creative teaching skills?

This research method for Phase 2 is expanded in Chapter 7.

5.4.2.3 Phase 3 evaluation and reflection: educational design research

Figure 5.1 shows that an iterative design and mixed methods approach was used in Phase 3 of the empirical work. This design addressed the research questions:

- RQ 3: How did the creative teaching package influence the PSTs' professional developments (creative teaching skills and values)?
- RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?
- RQ 6: How did the improvements to the creative teaching package influence the PSTs' professional developments (creative teaching skills and values)?
- RQ 7: Were there indications of the sustainability of a creative teaching approach, beyond the training phase?

A mixed methods approach was used to analyse each cohort of PSTs' written responses and evaluations to the creative teaching package tasks, structure and contents. This approach enabled the phenomenon of creative teaching to be investigated within its real-world context, alongside an evaluation of the creative teaching package (Cohen et al., 2018). An aspect of longitudinal design was incorporated, with semi-structured interview data collected from a group of former PSTs from Iterations 1 and 2, after one year of teaching, to explore the potential sustainability of creative teaching skills beyond the training course (Bryman, 2016).

The EDR approach aimed to provide evidence to investigate whether the creative teaching package was helping the PSTs to develop their creative teaching skills and values, or if

⁵³ Other theories were also considered, to inform the design of the creative teaching package. These are discussed in Chapter 7, section 7.2.2.

aspects could be improved. Data from pre- and post-tests were important in enabling this to be explored.

This research method for Phase 3 is expanded in Chapter 7.

5.4.2.4 The three phases: a complementary whole

Different research approaches were used, due to the distinct phases of the empirical work. Together, these approaches aimed to achieve a complementary whole (Marton, 1986). The phenomenographical approach in Phase 1 aimed to elicit a 'second-order perspective' (Marton, 1986, p.7), explained as describing an aspect of the world (the phenomenon) as it appears to people (Marton & Booth, 1997). This was enhanced by the iterative design approach which inter-connected Phases 2 and 3, which aimed to gain a first-order perspective by analysing the reality of the use of the creative teaching package by PSTs (Marton & Booth, 1997). The combination of research focusing on both the perceptions and realities of a phenomenon (creative teaching in this case) is advocated as a version of triangulation, as it provides opportunities to compare the two sets of evidence, and look for commonalities, patterns, and discrepancies, as well as minimising errors and bias (Cohen et al., 2018; Stolz, 2020; Vosniadou, 2013). Regarding the use of a mixed-methods approach in this project, it is acknowledged that combining quantitative and qualitative approaches can result in robust research designs, and is an accepted approach in EDR (Biesta, 2012; Gorard, 2013; Jacobsen & McKenney, 2024).

5.5 Replicability and relatability

This project focuses on the outcomes of the design, implementation and evaluation of a creative teaching package. In Phase 3, the creative teaching package was completed by three cohorts of PSTs, aiming to demonstrate that it is a replicable teaching tool in similar contexts. The project aims to provide evidence for an audience to evaluate according to the context provided, and consider its applicability to their own settings (Bassey, 1981; Bassey, 2001; Hamilton & Corbett-Whittier, 2013). Therefore, a focus on the relatability⁵⁴ of the project's outcomes is appropriate (Bassey, 2001). The trustworthiness of the evidence - needed to make a judgement of relatability - relies upon in-depth descriptions, a clear account of the research method and triangulation of evidence (Bassey, 1981; 2001). These aspects were all strengths of this project and will be expanded in Chapters 6 and 7, which

⁵⁴ Relatability can be understood as the degree of relatedness between knowledge gained in one context and its application to other contexts (Bassey, 1981; 2001). This notion is very useful in social science research where generalisation may be a challenging claim. Here, those in other contexts may take the findings and relate them to their own contexts, adapting and using them to fit own situations.

explain the measuring instruments for data collection, participant information, and procedures for data analyses.

5.6 Ethics

Ethical processes and practices were planned and fulfilled throughout the project, in accordance with the British Educational Research Association (BERA)'s guidelines (BERA, 2018; BERA, 2024). The University's approval for the empirical work conducted was gained annually (the Approval Notices are in Appendix G).

A key ethical consideration is the potential value of the research (BERA, 2024). The project aimed to be of an immediate and direct benefit to the participants who completed the creative teaching package. As an indicator of value beyond the project, aspects related to this project have already been recognised by an external audience (national and international). A list of outputs to date is presented in Chapter 8 (Theoretical Insights and Outputs), including a journal article, invited conference presentations, workshops with schools and a book contribution.

In this project, it is important that I acknowledge and consider the potential implications of my dual positionality, as both the project's researcher and a teacher educator leading the implementation of the creative teaching training package. I addressed ethical and relational considerations that could arise due to this dual positionality by:

- keeping the two roles as separate as possible (for example, focusing on the tutor-student relationship whilst leading the training package; not analysing data from the training package, for the purposes of the research project, until it had been completed);
- creating a safe space for pre-service teachers to express their views honestly, accurately and without the feeling of any judgement (for example, through the use of self-reflective journals);
- carefully wording the questions for the semi-structured interviews, to enable honest and accurate answers to emerge (examples are in Chapters 6 and 7).

5.7 Conclusion to the chapter

In summary, an EDR research approach was chosen for this project, to align with the aims of the research and to enable the research questions to be answered. Undertaking an EDR approach can be viewed as a complex and ambitious endeavour, with many facets that need informed consideration and a robust understanding of research methods, as well as the

researcher's capacity for thorough and iterative cycles of design, implementation, evaluation and revision. Whilst acknowledging the complexities of this research project, the aim of a complementary use of phenomenography and an iterative design research approach presented the opportunity for an overall in-depth, real-world research project, that aimed to advance both practical innovations and theoretical ideas. This project was designed to produce rich, robust data, that would be interpreted using well-designed processes, thus developing an accurate evidence base. The fluidity of EDR aligned with the real-world context, in which perceptions and understandings can change due to many factors, including contextual variations. Therefore, it was considered to be the most suitable approach for this project.

Relevant sections of the EDR diagram in Figure 5.1 will be included at the beginning of Chapters 6 and 7. This will show the position of the phase of the empirical work being discussed, and enable a focus on the specifics of the research method for each phase of the project, before presenting and discussing an analysis of the Findings and outcomes.

Chapter 6: An Exploration of Pre-service and In-service Teachers' Notions of Creative Teaching (Phase 1 of the Research)

6.1 Introduction to the chapter

This chapter explains Phase 1 of the empirical work, which is an exploration and analysis of pre-service and in-service teachers' perceptions of the notion of creative teaching. The position of Phase 1 in the overall EDR project is shown in Figure 6.1, taken from the diagram in Figure 5.1, Chapter 5:

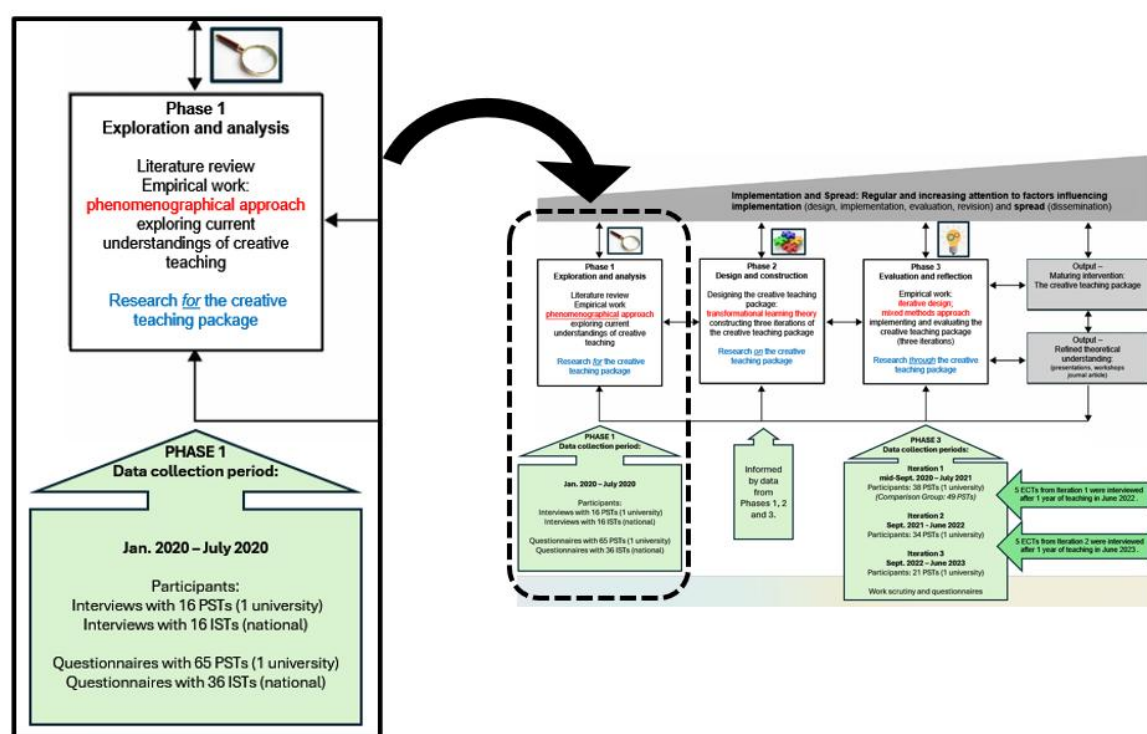


Figure 6.1 An extract from the EDR diagram - Phase 1 of the research

The research method, findings and interim discussion for Phase 1 are all included in this chapter as they inform each other, and later work. The chapter will explain the phenomenographical approach used to construct the creative teaching categories, using data from interviews with PSTs and ISTs. The results from testing these categories with questionnaires completed by larger groups of PSTs and ISTs, to rate their plausibility, will contribute to the chapter's findings. Next, the creative teaching categories will be discussed in relation to the Literature Review in Chapters 2 and 3. This chapter leads into Chapter 7: The Design and Construction of the Creative Teaching Package (Phase 2 of the research), as the categories will be applied to the design of the creative teaching package.

6.2 Research method for Phase 1 of the research

6.2.1 Research questions

This empirical work explored research questions (RQs) 1a and 1b:

- RQ1a. How is creative teaching perceived by current PSTs?
- RQ1b. How is creative teaching perceived by current ISTs?

These RQs were supported by the question:

- Can teachers' perceptions be supported with examples of creative teaching in action?

This question enabled an accurate understanding of participants' intended meanings, by contextualising their responses. It also provided evidence for the vignettes that substantiated the creative teaching category descriptions.

6.2.2 An overview of the phenomenographical approach

Phenomenography was introduced in Chapter 5 as the research approach used in Phase 1 of the empirical work. This approach aimed for trustworthy evidence, achieved by in-depth descriptions, a clear account of the research method and triangulation of evidence (Bassey, 1981; 2001). The following bullet points summarise the key characteristics of phenomenography, with the bold text presenting considerations for Phase 1 (the characteristics listed below are taken from Marton 1981; Marton 1986; Marton & Booth, 1997, and Tight, 2016).

- The content of a person's thinking related to the phenomenon is the focus, with detailed descriptions of conceptual understandings being the outcome. **Qualitative data were required that elicited participants' full understandings of the phenomenon of creative teaching.**
- Conceptual understandings of the phenomenon are classified and categorised according to commonalities. **Descriptive categories of types of creative teaching were the outcome.**
- The categorisation process moves beyond data sorting, aiming to identify the most distinct characteristics within the description of the phenomenon. **In-depth, rich participant responses were needed, and a clear categorisation process.**
- The phenomenon or concept 'can be understood in a limited number of qualitatively different ways.' (Marton, 1986, p.31). Research using a phenomenographical approach focuses on approximately five categories (Marton & Booth, 1997; Tight, 2016). **There was a limited number of categories of types of creative teaching.**

- Some overlaps are to be expected between the categories. **Overlaps will be made clear in the discussion.**
- All conceptions of the phenomenon are valued, including alternative conceptions. **A category may emerge from just one participant's viewpoint. Minimising the influence of the researcher's own conceptions and biases was crucial to achieving accurate data.**
- Final categories of description are decontextualised⁵⁵, to maximise generalisability. The application of the final categories by others, is expected. **The categories were tested using questionnaires with a wider group of participants, to provide evidence of relevance beyond the interviewed groups. Category descriptions were clear, with evidence to support and expand descriptions. The final categories were incorporated into the creative teaching package, for use by other PSTs.**

The step-by-step phenomenographical process used to develop the creative teaching categories is explained in section 6.2.4.

Data collection methods to develop the categories (participants and semi-structured interviews) Data were collected from two opportunistic sample groups: 16 PSTs undertaking a PGCE Primary Education Programme in a university in England⁵⁶ (I was a tutor on this programme), and 16 ISTs who were known to me in a professional capacity (for example, former teaching colleagues)⁵⁷ (Cohen et al., 2018). Although the creative teaching package would be designed for PSTs, the data from the ISTs were used to judge the plausibility of emerging categories from the PSTs' data, by providing insights into creative teaching from teachers currently working in schools.

Participants conceptualised their understanding of creative teaching, through their responses to open-ended questions in face-to-face semi-structured interviews - the suggested method for phenomenographical data collection (Marton, 1986). The planned interview questions are in Appendix H, with an example of how the questions were expanded to allow

⁵⁵ Although decontextualised, categories will stem from an original response that provided context – to enable the researcher to understand the response as accurately as possible.

⁵⁶ The PST participants had experienced 38 days of school-based experience on the PGCE programme (some had school experience prior to starting the course), and university-based input including the development of students' creativity in the primary subjects. Additionally, some participants may have chosen teaching for creativity as a theme for their first Masters' Level assignment.

⁵⁷ The group of ISTs were diverse regarding geographical locations and a range of experiences (e.g. year groups taught, subject specialisms and positions in school – including ECTs, experienced teachers, subject leaders, and school leaders).

participants' conceptions of creative teaching to be understood accurately, and to explore participants' responses further (Bryman, 2016; Wisker, 2008). A pilot interview was undertaken, to assess the potential effectiveness⁵⁸ of the questions, and no amendments were made to the questions (Cohen et al., 2018).

Interviews were audio-recorded with participants' permission, to enable a conversation to take place between the interviewer and participant (Cohen et al., 2018). Brief field notes were taken, for follow-up purposes during the interviews. A balance was achieved in each interview between maintaining practicalities (for example, timekeeping), engagement (for example, monitoring the participant's understanding of the questions), and the purpose of the interview (for example, asking relevant follow-up questions) (Bryman, 2016; Flick, 2018).

6.2.4 Creating the categories of creative teaching

The following aspects were considered for each emergent category of creative teaching:

- a title;
- a definition - to summarise the main notion of creative teaching in each category;
- a description – to describe the dominant features of creative teaching in each category;
- example vignettes – from participants' utterances in each category, to exemplify the dominant features of the category.

The step-by-step phenomenographical approach shown in Figure 6.2 was used to organise and analyse the data, with two main aims – to select relevant utterances for a data pool, and to use this data pool to establish categories of creative teaching (Marton, 1986).

⁵⁸ Effectiveness was judged in relation to the aims of a semi-structured interview, with questions aiming to minimise wording bias, and maximise open responses (Bryman, 2016).

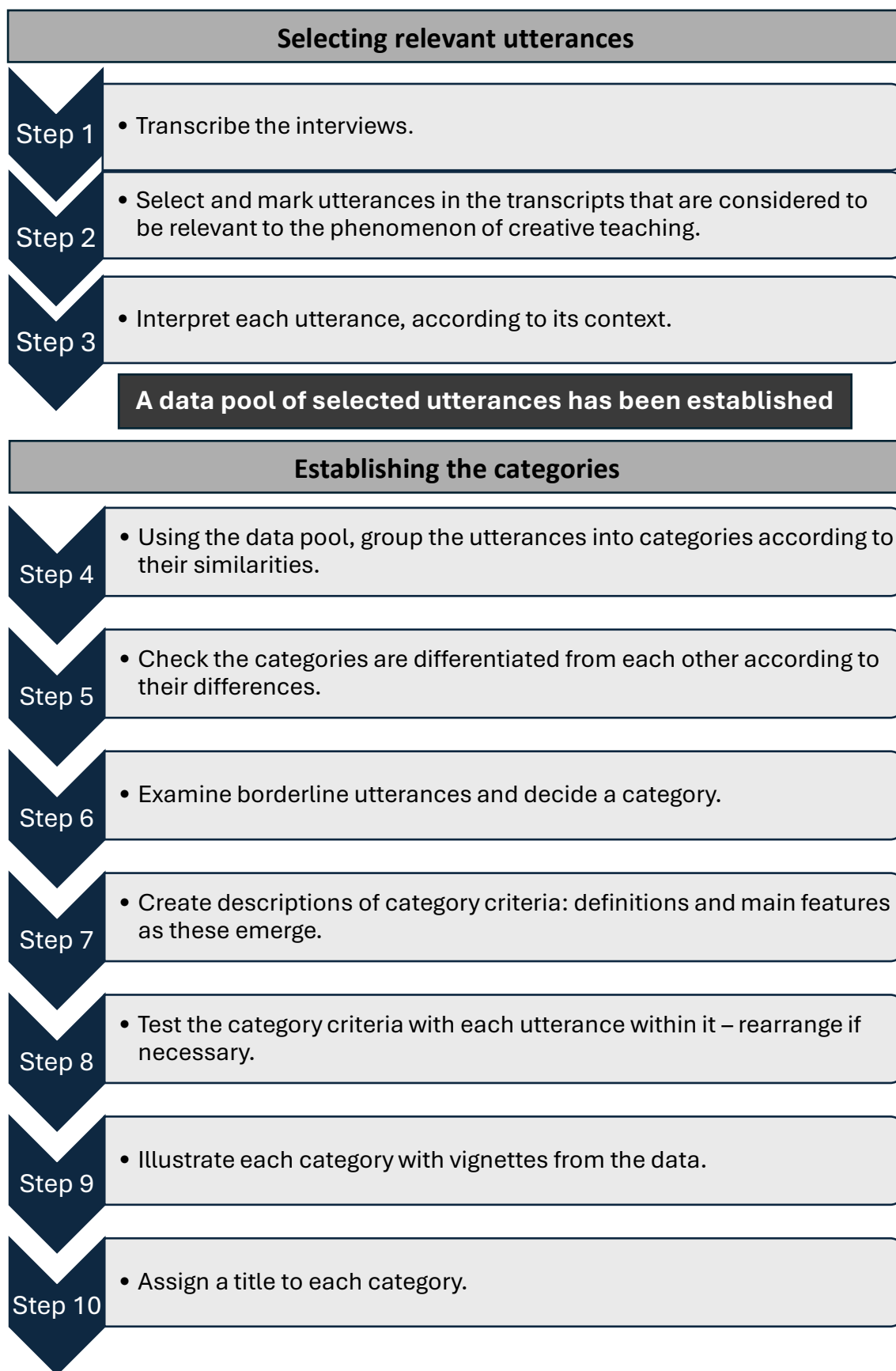


Figure 6.2 The step-by-step approach to create the categories of creative teaching (adapted from Marton, 1986; Marton & Booth, 1997)

These steps are explained in detail in the next two sections, with some examples from the data to illustrate the process.

6.2.4.1 Selecting relevant utterances

Step 1: Transcribe the interviews. The entire interview was transcribed from the audio recording for each participant, and the transcript for each participant was allocated a number. The full transcription enabled meanings to be cross-checked with responses to other questions (Flick, 2018).

Step 2: Select and mark utterances in the transcripts for each participant that are considered to be relevant to the phenomenon of creative teaching. Relevance to creative teaching was judged based on the themes in the Literature Review (Chapters 2 and 3), and also relevance for each participant (which might differ to the Literature Review themes, allowing ideas to emerge that had not yet been realised). A coding template was deliberately not used at this stage, to allow all possible perceptions of creative teaching to emerge.

Step 3: Interpret each utterance, according to its context. The meaning of each utterance, according to the theme of creative teaching, was judged in this step. The centrality of language in social constructivism (referenced in Chapter 5) was a key factor, because terminology was being used by participants, to provide contextual descriptions of creative teaching. This is illustrated in the example below.

Interview question: *'What is your understanding of 'creative teaching'?*

PST participant's response: *'The teacher always asks open questions. She doesn't know what the pupil is going to say back to her, or what she will say next to help with the learning, so it's always a new experience for her. I think this is really creative of the teacher.'*

Follow-up questions were asked, to understand the utterance in greater depth. These responses revealed the participant's meaning of:

- **'open questions':** *'She is always asking "How did you get to that answer? and "What do you think about this [gave an example of a theme being studied]?" The pupils could each give a different answer to the question and she encourages this.'*
- **'always':** *'This is happening in every lesson, in every conversation with the pupils.'*

Whether the open questions were planned or unplanned was also explored:

Interview question: *'Do you think she's planning those questions?'*

PST participant's response: *'No, she just does it automatically, but she knows she's going to do it though – she told me to put this sort of questioning into my lesson plan.'*

Steps 1-3 resulted in a data pool of selected and grouped utterances to show the participants' intended meanings, known as a data 'pool of meanings' (Marton, 1986, p.43). The example above illustrates one group of utterances for the data pool, that evidenced one PST's understanding of creative teaching.

Each utterance was labelled with the transcript's number, to enable a return to that transcript for further clarification if required.

6.2.4.2 Establishing the categories

The following steps were taken to establish the categories. These steps were iterative with continual adjustment. In contrast to content analysis where the categories are determined in advance, the phenomenographical approach developed meanings by bringing together and comparing utterances (Marton, 1986). The inclusion, or not, of each utterance in a category was determined as the category meanings started to form.

Step 4: Using the data pool, group the utterances into categories according to their similarities. A coding template emerged in this step: utterances of similar meanings were grouped, creating categories characterised by key indicators (the 'codes'). An example of the coding template for the PST categories is in Appendix I.

Step 5: Check the categories are differentiated from each other according to their differences. Although overlaps were expected between some of the categories, all categories had some distinct features. Two categories for the PST data appeared to have a lot of similarities at the start of the process (Responder and Adapter – discussed in the next section). Creating a set of key indicators that were absent from each category helped to distinguish between the categories and ensured that each category had a distinct position (absent indicators for each category are listed in Appendix J).

Step 6: Examine borderline utterances and decide a category. The potential issue of borderline utterances was alleviated by in-depth questioning, to expand themes that the participants raised in the interviews. Patterns in participants' responses emerged as the interviews progressed. For example, creative teaching as an act of disciplined improvisation emerged in the early interviews as a theme (i.e. disciplined creative teaching, improvised creative teaching or both). If a participant referred to creative teaching only in a disciplined context (pre-planned lesson ideas) or only in an improvised context (part of teacher-student interactions in lessons), a supplementary question explored whether the other aspect applied, or not. For example:

Interview question: *'You mentioned using your creative teaching skills to help your students in class, with their responses to tasks that perhaps you hadn't expected. Do you think creative teaching skills might apply at other times outside the classroom situation, for example when planning the lessons, or not?'*

PST participant's response: *'No, not really, because I need the students' responses in the actual lesson, to then think creatively and adjust the lesson in some way, so it meets their needs. I don't know what their responses will be when I'm lesson planning, so I don't think that I use my creative teaching skills at that point.'*

I was also open to participants' views of creative teaching falling into more than one category, and looked for this during the phenomenographical process. However, this did not occur as all participants largely aligned with one category, and a best fit model could be applied (Marton, 1986).

Step 7: Create descriptions of category criteria: definitions and main features as these emerge. Drafts of definitions and descriptions of categories started to emerge from Step 4 onwards. These were tested against the data pool of meanings, and adjusted, retested, and adjusted again, as advocated by Marton (1986).

Step 8: Test the category criteria with each utterance within it – rearrange if necessary. Utterances were tested according to the category criteria, and the category criteria continued to be drafted, demonstrating that the utterances and the criteria were integral to each other.

Step 9: Illustrate each category with vignettes from the data. Utterances were taken from one or more participant for each category, to illustrate each category's definition and main features.

Step 10: Assign a title to each category. The titles chosen aimed to capture the essence of each category, and focused on the teacher's identity regarding the category's creative teaching approach.

It was evident during the phenomenographical process that '...the rate of change decreases and eventually the whole system of meanings stabilises' (Marton, 1986, p.43). This stabilisation occurred during Step 8. The categories were established initially by the researcher and then checked with a focus group of PST and IST participants (n=5 for each group), to ensure that the social reality constructed within the project aligned with the participants' understandings (Flick, 2018).

6.2.5 Testing the categories: wider questionnaire

The plausibility of the categories was assessed by testing the categories with larger groups of participants of PSTs (n=65) and ISTs (n=36) during Phase 1. The PSTs were undertaking four different teacher training programmes in primary education, in the same university as the PST interview group, and the ISTs were primary education teachers working in different geographical locations in England, who responded to the researcher's request for participants using professional network contact systems. The PST categories were also tested during each iteration of the creative teaching package in Phase 3 by each cohort, to ensure continued alignment and relevance⁵⁹.

Participants were provided with the five descriptions of creative teaching (the category's definition and description of features) and completed a questionnaire, responding to the question:

'To what extent do you identify with each description of creative teaching?'

using a scale from 0 (not at all like me) to 5 (very much like me).

A pilot questionnaire was tested on an IST. This teacher suggested that there needed to be greater clarity regarding the possibility of identifying strongly with more than one of the five categories, and this addition was made. The data were analysed using a quantitative approach, to present an overall mean rating for each creative teaching category, enabling an efficient comparison between the categories.

6.3 Findings for Phase 1

6.3.1 RQ1a. How is creative teaching perceived by current PSTs?

Supporting question:

Can PSTs' perceptions be supported with examples of creative teaching in action?

6.3.1.1. The emergent categories of PSTs' perceptions of creative teaching

Table 6.1 summarises the categories of PSTs' perceptions of creative teaching, that emerged in the categorisation process.

⁵⁹ Outcomes are discussed in Chapter 7.

Table 6.1 The five categories of creative teaching, based on PSTs' perceptions

Category Title	Category Definition of Creative Teaching	Number of PSTs identifying with this category (n=16)
The Engager	A teaching approach used to plan one-off lessons, to maximise student engagement.	4
The Responder	A teaching approach using acquired problem-solving skills to respond to students' needs, by adapting learning activities during all lessons.	6
The Adapter	A holistic view of adaptable teaching by teachers with a creative nature - evident in all actions and thoughts.	4
The Performer	A teaching approach using a creative performance, achieved only by those who believe they have a creative personality.	1
The Risk-Taker	A teaching approach used to plan complex, potentially risky teaching activities.	1

The order of the categories in the table does not suggest a hierarchy, although the potential effectiveness of each creative teaching approach will be explored in the interim discussion (section 6.4). Tables 6.2 - 6.6 below present a description of each emergent category, and a vignette to illustrate the category's features (which includes italicised utterances from PSTs' interviews). Words in each category description have been put in bold font to highlight the category's features. As expected with a phenomenographical approach, each category has distinctive features as well as some qualities that overlap with other categories and possible connections between categories will be discussed in the interim discussion (section 6.4).

Table 6.2 Description of 'The Engager' category

Title: The Engager
<p>Definition:</p> <p>Creative teaching: A teaching approach used to plan one-off lessons, to maximise student engagement.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as a distinct approach. This approach is part of a teacher's skillset, which comprises different teaching approaches, each to be used at the most appropriate time. Therefore, the creative teaching approach will be used occasionally and with intent, to plan, implement and assess an entire lesson, when a teacher is aiming to maximise student engagement in an unusual way. There is novelty for the teacher, as they generate new lesson ideas, often in a playful way.</p>
<p>Vignette to support this category:</p> <p>A PST in this category discussed creative teaching as the use of a creative approach to plan an entire lesson for Year 4 students. She described her use of a 'conscience alley' *, to help the students to engage with the possible thoughts and emotions of Neil Armstrong before his space trip to the moon. With the teacher's guidance, they were also involved in formatively assessing their own and their peers' contributions to the lesson. The students' ideas from this activity informed a subsequent creative writing lesson.</p> <p>The PST said that the conscience alley technique was a new approach for her: <i>'I saw my teacher mentor using the conscience alley the week before and she explained it to me. I wanted to try it, having never done anything like this before.'</i></p> <p>The PST considered her main motivation for using this creative technique from the students' perspective: <i>'The children are so much more engaged, and they give you more. They have a better time; they want to be involved.'</i></p> <p>Although the PST did not immediately focus on her own gains using a creative approach, her declaration: <i>'I loved my Neil Armstrong activity!'</i> indicated her satisfaction, as well as gains for her professional practice: <i>'Their work was better; they had so many different ideas; they worked so well in a group.'</i></p> <p>Despite enthusiasm for using a creative teaching approach, the PST indicated that this would not always be used: <i>'You can incorporate a creative lesson sometimes... I am trying to think of more exciting ways [to teach]. Those were the lessons I remember!'</i></p> <p>*A conscience alley is a drama technique, enabling contrasting viewpoints to be presented about an issue. The students stand in two rows, voicing their thoughts as a character walks through this human alley. The character will then make a decision about the issue, and justify it, according to the viewpoints presented (Goodwin, 2006).</p>

Table 6.3 Description of 'The Responder' category

Title: The Responder [2 pages]
<p>Definition:</p> <p>Creative teaching: A teaching approach using acquired problem-solving skills to respond to students' needs, by adapting learning activities during all lessons.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as teachers using problem-solving skills intentionally and continually in the classroom, to adapt to students' needs, responding to and adjusting ideas according to their observations of students' responses. Adaptability is viewed positively: it enables learning intentions to be made relevant to the students' needs, and this ever-changing teaching experience will continually stimulate the teacher. Therefore, adaptability – and the creative skills this requires – is considered an essential part of a creative teacher's skillset, and mindset. A main strategy to support this adaptability is the creative teacher's use of spontaneous open questions, to personalise and extend learning by pursuing students' ideas, and allow students to take ownership of learning experiences through self and peer assessment, and taking on the roles as teachers.</p>
<p>Vignette to support this category:</p> <p>A PST in this category discussed creative teaching in the context of her experienced class mentor's use of open questions and student-led dialogue in all lessons: <i>'She is always asking "How did you get to that answer?" and "What do you think about this [the PST gave an example of a theme being studied]?" The pupils could each give a different answer to the question and she encourages this. She also uses talk partners a lot, and feedback: "What did you learn from your partner?"'</i> Although the PST thought the teacher's questions were spontaneous and not specifically planned: <i>'She just does it automatically.'</i>, there were indications of her intent: <i>'She knows she's going to do it though.'</i></p> <p>Another PST in this category referred to creative teaching with an example of learning intentions being planned at the beginning of the lessons, by incorporating students' interests and giving them ownership of the learning experience: <i>'The teacher asked the students: "What would you like to know about this science topic?" "How might we learn these things?" at the beginning of the lesson.'</i> Whilst acknowledging that a creative teacher needed to be <i>'...massively flexible - I try to go in [to the lessons] without deciding how to do things too much'</i>, creative teaching was viewed as something to aspire to, for its student-focused benefits: <i>'Allowing students to have more control enables them to learn what they really want to know.'</i></p>

Title: The Responder [2 pages]

A PST gave a specific example of the need for adaptability as part of the creative teaching approach from her own pre-service teaching experience, when leading a persuasive writing lesson about voting and MPs: *'I came into the lesson with lots of things I assumed they'd know. I had my lesson plan out, but I had to add an extra fifteen minutes on, because they didn't know what an MP was. This was very much a thinking on my feet lesson!'*

The PSTs in this category explained that they were not needing to rewrite their ideas to teach creatively, for example: *'Build upon what you know, and the activities the pupils enjoyed before, and the things they have responded well to. Think about what can be adapted. How can the pupils be involved in all parts of the lesson, including assessing their own progress as the lesson takes place?'*

Table 6.4 Description of 'The Adapter' category

Title: The Adapter [2 pages]
<p>Definition:</p> <p>Creative teaching: A holistic view of adaptable teaching by teachers with a creative nature - evident in all actions and thoughts.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as an integral part of a teacher's identity, with a creative mindset influencing all other aspects of a teacher's identity, and every decision, action and reflection. This holistic view of creative teaching (rather than a stand-alone quality) considers that the teacher will be thinking creatively to inform decisions made when planning lessons, leading lessons in the classroom, assessing lessons and in post-lesson reflections which inform future teaching. The creative teacher is always ready and prepared to adapt, viewing this as a valuable part of their own professional learning journey.</p> <p>A teacher's ability to empathise with students is considered a crucial part of their creative thinking process, enabling decisions which will be valuable to the student. Opportunities for creative teachers to engage in deep thinking are also considered essential – in particular for the development of creative ideas for lessons that require a synthesis of teaching skills. Concentrated thought enables several iterations of a lesson to be planned, with some ideas rejected, and the best ideas being justified and eventually accepted. The potential benefits for the creative teacher are seen as outweighing occasionally unsuccessful attempts - which are to be expected. The creative teacher is not viewed as self-centred, rather as someone who is student-focused with their goals, by being open-minded with their ideas.</p>
<p>Vignette to support this category:</p> <p>A PST in this category stated: <i>'For me, being a creative teacher is about acknowledging difference: seeing lots of different ways to do things, and being open-minded enough to do this, as well as understanding the different needs of the children. I think like this all the time as a teacher.'</i> He gave an example of his own creative teaching, when planning a lesson to develop Year 1 students' use of adjectives and adverbs in their writing: <i>'I decided to take them outside [into a wooded area of the school grounds]. They were a class that loved being out of the classroom, it really engaged them in their learning.'</i> The PST justified his creative teaching approach regarding both his own professional development: <i>'I wanted to challenge myself; I think this [teacher training] year should be a learning experience for me – finding fun ways to unravel information, whilst always thinking about the students and how to help them to learn.'</i> and the benefits for his</p>

Title: The Adapter [2 pages]

students: *'I always put myself in the students' shoes. You have to give them what they want to learn. If you want the students to write creatively, then they have to feel it!'* There was evidence that a deep level of creative thinking was applied before the lesson: *'I was constantly thinking of the learning outcomes - what can I do to connect it? I come up with ideas, sometimes they're right, sometimes not, and they'll always need adapting for the students you're working with, but experimenting is important.'*

The PST's creative adaptability was also indicated during the lesson: *'We sat round a campfire and I got them to close their eyes and focus on their listening - what could they hear? Birds, someone trimming the hedge... then I decided to get up and walk around, crunching leaves and snapping twigs. I had to think on the spot! They came up with so many ideas, some things I had never imagined they'd think of! Their use of adjectives and adverbs was so much better in their writing afterwards. They were even able to assess their own learning, with a bit of help.'*

The PST indicated a high level of personal engagement with creative teaching throughout the interview: *'For me, making learning so much fun is my fulfilment.'*

Table 6.5 Description of 'The Performer' category

Title: The Performer
<p>Definition:</p> <p>Creative teaching: A teaching approach using a creative performance, achieved only by those who believe they have a creative personality.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as a performance by a teacher with a strong desire to demonstrate a highly creative nature. Creativity is at the core of the teacher's identity, and the strong self-belief of the teacher means this is non-negotiable. This teacher is passionate to demonstrate their creative skills, by always planning and leading lessons in a way perceived to be different to the norm. Although the creative teaching approach is used to plan learning experiences within the context of identified learning outcomes, teachers see their creative acts as risk-taking.</p>
<p>Vignette to support this category:</p> <p>A PST in this category discussed his own creative teaching as <i>'a performance: I get on stage and do it.'</i> His example of his creative teaching approach was the lesson he created and led, to develop his Year 5 students' knowledge of electric circuits in science. When discussing his creative teaching, he referred to the use of role play and modelling: <i>'They had to hold hands and be the components in the circuit'</i> and a follow-up quiz: <i>'I led a 'beat the teacher' activity – I challenged them in groups to think why a circuit might not work.'</i> He indicated that his motivation for creative teaching was both student-centred: <i>'I think I get the most out of my students by being creative.'</i>, and for own gains: <i>'Taking risks in my lessons gives me more confidence in my abilities'</i>. An example of a lesson that he deemed to be less creative indicated that he found this demotivating: <i>'The teacher said it was noticeable that you weren't as bouncy and flamboyant as you usually are. I agreed as it wasn't a subject I was mad about – it was a 'meat and bones' maths lesson and didn't have the creative opportunities that I need to deliver lessons.'</i> This PST's suggestion of teaching being <i>'performing a script'</i> (his lesson plan), also suggested that there would be little adaptation of his lesson to accommodate students' in-lesson responses.</p> <p>The PST viewed risk-taking as an essential and positive aspect of creative teaching, referring to it several times, for example: <i>'Even if it's not a success, you don't learn from wins.'</i> and <i>'There is an element of risk – but if you don't leave your comfort zone, then you'll never learn.'</i></p>

Table 6.6 Description of 'The Risk-Taker' category

Title: The Risk-Taker
<p>Definition:</p> <p>Creative teaching: A teaching approach used to plan complex, potentially risky teaching activities.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as a challenging, distinct approach. An experienced teacher uses a creative approach to develop the presentation of ideas and knowledge in more complex ways to students. This creative approach is referred to in the context of a teacher planning part of a lesson, by incorporating the use of a specific technique or resource into the lesson delivery. Creative teaching is considered to be potentially detrimentally risky and confusing, conflicting with a teacher's intention to communicate subject knowledge and learning intentions with clarity.</p>
<p>Vignette to support this category:</p> <p>A PST in this category discussed creative teaching as the use of specific, planned teaching techniques or resources. Although the PST acknowledged that this creative approach aimed to engage the students, it was considered at times to be 'off-piste' and 'convoluted'.</p> <p>A technique perceived to be creative by the PST was described in an English lesson: <i>'The teacher used 'Kung Fu Punctuation', with a different Kung Fu based sound and action being used for different punctuation symbols.'</i> The risks associated with this teaching technique were student-orientated and reflected the potentially confusing nature of creative teaching techniques if handled incorrectly: <i>'The children were so confused. I think it was too complicated, and the teacher made a few mistakes, so it wasn't very clear. I don't think the children learnt anything.'</i></p> <p>There were indications in this category that creative teaching approaches were for more experienced teachers, rather than PSTs: <i>'I wouldn't use creative teaching techniques as a PST in my lesson, I want to make sure I teach things so the children really understand; if this means in a straightforward way then that's what I would rather do. I think you have to be really experienced to teach creatively and I'm not there yet.'</i> For example, the use of a planned role-play device was given by the PST: <i>'The teacher I'm with sometimes uses hot-seating – he stays in character throughout. I wouldn't know how to do this at this stage [of teacher training].'</i></p>

6.3.1.2. Testing the PST categories

The five categories of PSTs' perceptions of creative teaching were tested with a larger group of PSTs (n=65), to provide evidence of relevance beyond the interviewed group. Through a questionnaire, the PSTs were asked:

'To what extent do you identify with these five descriptions of creative teaching?'

using a scale from 0 (not at all like me) to 5 (very much like me) to share their responses.

Their responses are summarised in Figure 6.3.



Figure 6.3 Summary of PSTs' (n=65) responses to the creative teaching categories and mean ratings
Key: horizontal axis = scale of relatability; vertical axis = % of PSTs identifying with the category, rounded to nearest whole number

The mean ratings from the wider questionnaire mostly correlated with the number of PSTs who described each creative teaching category in the interviews, shown in Table 6.7.

Table 6.7 The responses to each PST creative teaching category in the interviews compared with the questionnaires

Creative teaching category titles	Number of PSTs interviewed who described this category	Mean ratings in the wider questionnaire
The Engager	4	3.18
The Responder	6	3.35
The Adapter	4	3.78
The Performer	1	1.42
The Risk-Taker	1	0.94

Overall, the results from the wider questionnaire provided evidence of alignment with The Engager, The Responder and The Adapter categories, and evidence that PSTs did not relate strongly to The Risk-Taker and The Performer categories. The Responder category was described by more PSTs than The Adapter category in the interviews, but The Adapter category received the highest mean rating in the wider questionnaire.

These Findings and outcomes will be discussed in the interim discussion (section 6.4).

6.3.2 RQ1b. How is creative teaching perceived by current ISTs?

Supporting question:

- Can ISTs' perceptions be supported with examples of creative teaching in action?

6.3.2.1 The emergent categories of ISTs' perceptions of creative teaching

Exploring the categories of creative teaching described by ISTs who work in current education systems may offer a realistic view of the creative teaching opportunities in schools for PSTs. The data from interviews with the 16 ISTs were analysed using the phenomenographical approach described in section 6.2. Five categories emerged, summarised in Table 6.8.

Table 6.8 The five categories of creative teaching, based on ISTs' perceptions

Category Title	Category Description of Creative Teaching	Number of ISTs identifying with this category (n=16)
The Engager ⁶⁰	A teaching approach used to plan one-off lessons, to maximise student engagement.	3
The Innovator	A teaching approach using innovative ideas to design and lead immersive learning experiences.	4
The Problem-Solver	A teaching approach using problem-solving skills to continually develop and adapt their ideas when planning, leading and evaluating lessons.	5
The Transformer	A holistic view of a dynamic teacher, driven and shaped by <i>possibility thinking</i> for all.	3
The Artist	A teaching approach focusing on arts-related subjects (art, music, drama).	1

Aligning with the PST categories, presented earlier, the order of the categories in Table 6.8 does not suggest a hierarchy. Tables 6.9 - 6.13 below present a description of each emergent category, and a vignette to illustrate the category's features (which includes italicised utterances from ISTs' interviews). Words in each category description have been put in bold font to highlight the category's features.

⁶⁰ The same category of 'The Engager' emerged in the PST and IST data analysis. Therefore, the same wording was used for the category title and description (different vignettes were used to substantiate the category description).

Table 6.9 Description of 'The Engager' Category

Title: The Engager
<p>Definition:</p> <p>Creative Teaching: A teaching approach used to plan one-off lessons, to maximise student engagement.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as a distinct approach. This approach is part of a teacher's skillset, which comprises different teaching approaches, each to be used at the most appropriate time. Therefore, the creative teaching approach will be used occasionally, to plan and implement an entire lesson, when a teacher is aiming to maximise student engagement* in an unusual way. There is novelty for the teacher, as they generate new lesson ideas, often in a playful way.</p> <p>* Engagement can be understood as increased motivation, development and application of subject knowledge, and understanding of ideas.</p>
<p>Vignette to support this category:</p> <p>An IST in this category discussed creative teaching as the use of a creative approach to plan one history lesson for Year 6 students: <i>'I used a mantle of the expert approach, to help the students to engage at a deeper level with the aspects of Ancient Greek history that they had already learnt about.'</i> Each team took on expert roles in one aspect (for example, religion, war, education) and researched and presented to an audience reasons for the importance of their aspect of Ancient Greece society in contributing to its success. The IST considered his main motivation for using this creative technique from the students' perspective: <i>'The students' enthusiasm for their learning was palpable throughout. They really wanted to share their new knowledge with the audience, and everyone took some ownership of the research and presentation. They gained so much.'</i> Despite enthusiasm for using a creative teaching approach, the IST indicated that he did not always use a creative teaching approach, instead considering it to be most appropriate for 'one-off' lessons: <i>'The other history lessons leading up to this one were very different – I usually led the students through a PowerPoint of information or used video clips and they then [individually] wrote an account about what they had learnt, perhaps as a diary entry or a fact file. I wouldn't say my teaching then was very creative - I, and the students, had done that sort of lesson many times before.'</i></p>

Table 6.10 Description of 'The Innovator' Category

Title: The Innovator [2 pages]
<p>Definition:</p> <p>Creative Teaching: A teaching approach using innovative ideas to design and lead immersive learning experiences.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as innovative, with teachers designing and leading sequences of sustained learning experiences (rather than isolated lessons) within the constraints/parameters of their education system's context. Creative teaching will usually be cross-curricular and thematic, often using techniques that will develop students' thinking skills (e.g. problem-solving; creative thinking; collaboration; communication; reasoning), as well as application of subject knowledge. Ideas for lessons are considered innovative*. Creative teaching has specific learning goals, including both subject knowledge-related and transdisciplinary skills, although there is an aspect of open-endedness in tasks, to enable the teacher to adapt the activity to respond to students' needs. Creative teaching would not be considered possible for subjects that do not present strong cross-curricular opportunities.</p> <p>*Innovative in this context is defined as: lesson content that is presented in a way that is novel to both teachers and students; ideas that are relevant to the students' contexts, and meet defined learning goals, and flexible activities that are highly engaging and immersive for both teachers and students.</p>
<p>Vignette to support this category:</p> <p>An IST in this category described an innovative teaching approach in which she worked collaboratively with other teachers to design, lead and evaluate a six-week thematic project on the theme of 'chocolate': <i>'The children worked in teams to gather evidence to design, make and market their own chocolate bar. In the last lesson they presented their product to a team of judges.'</i> The IST used a cross-curricular approach: <i>'Most subjects were covered for example, the history of chocolate; the geographical location of the cocoa plant; literacy activities included accounts of how chocolate was made, and persuasive speeches for the final presentations; art and design and technology to design the packaging and make the new chocolate bar; science to explore 'meltable' properties of different types of chocolate. We made so many links!'</i> When asked where the ideas came from, the teacher's response gave evidence of own innovative creative thinking skills: <i>'Some ideas came from a published scheme, but we [the teachers] came up with a lot of it ourselves, because we knew what our children would respond to.'</i></p>

Title: The Innovator [2 pages]

Adjustments of the design were indicated, demonstrating the IST's openness and adaptability: *'We had to change the timings of the activities, as some took much longer than we anticipated. Although it was successful overall, because they learnt so much, this meant that some children did not complete all the planned tasks.'*

Some curriculum constraints were indicated: *'We couldn't cover all subjects.*

Mathematics, Religious Education and Physical Education had to be covered separately.

I don't think our teaching was as creative in those lessons.'

Table 6.11 Description of 'The Problem-Solver' Category

Title: The Problem-Solver [2 pages]
<p style="text-align: center;">Definition:</p> <p>A teaching approach using problem-solving skills to continually develop and adapt their ideas when planning, leading and evaluating lessons.</p>
<p style="text-align: center;">Description of features:</p> <p>Creative teaching is perceived as teachers using problem-solving skills continually in their practice, to adjust their teaching ideas according to students' responses and consideration of a network of contextual factors. Adaptability is viewed positively: it enables learning intentions to be made relevant to the students' needs, and this ever-changing teaching experience will continually stimulate the teacher. Therefore, adaptability – and the creative skills this requires – is considered an essential part of a creative teacher's skillset, and mindset, influencing every decision, action and reflection. This holistic view of the creative teacher (rather than a stand-alone quality) considers that the teacher will be thinking creatively to inform decisions made when planning lessons, leading lessons, and in post-lesson reflections which inform future teaching, in the context of the education system in which they are working.</p>
<p style="text-align: center;">Vignette to support this category:</p> <p>An IST in this category discussed creative teaching in the context of his adaptation of a lesson plan for teaching long division in mathematics to year 6 students. His reflection on a previously unsuccessful lesson demonstrated his adaptability to optimise the students' learning experience: <i>'In the first long division lesson I taught the students the standard method, modelling this several times on the board. They then worked individually on long division problems. When I marked their work after the lesson, at least half of the class had made mistakes, some had barely started! I changed my lesson plan for the next lesson, to include more partner talk.'</i> The IST explained that this approach aligned with the school's contextual factors: <i>'Partner talk was one of the school's priorities so this fitted in well; I hadn't used this a lot before in my lesson so I wasn't sure how it would go. I had to re-write my lesson plan and identify all the points where I'd ask the students to discuss with their partners each aspect of the long division method.'</i></p> <p>There was evidence of improvised creative teaching as part of the lesson: <i>'The students worked through the questions together and discussed each step of the long-division process with their partner. I stopped the lesson at 10-minute intervals to ask: "Who has learnt from a mistake?" – we celebrated these mistakes as a class, to show that this was part of the learning experience. Some were mistakes I hadn't thought of, and would never have known if I hadn't asked them!'</i></p>

Title: The Problem-Solver [2 pages]

The IST's fulfilment in the creative teaching approach was indicated when he said: *'I also gave the students calculators so they could check at the end [using an inverse calculation] that their answer was correct; this was something else I hadn't done before. Their engagement was very strong when they realised that they would be marking their own work!'*

Table 6.12 Description of 'The Transformer' Category

Title: The Transformer [2 pages]
<p>Definition:</p> <p>Creative Teaching: A holistic view of a dynamic teacher, driven and shaped by <i>possibility thinking</i> for all.</p>
<p>Description of features:</p> <p>Creative teaching is perceived as an essential attribute belonging to those teachers with a mindset of teaching aiming to be transformative - for both teachers and students. Creative teachers possess a set of qualities*, enabling them to put themselves in spaces of uncertainty, to co-lead and co-construct their understanding of knowledge with both their students and colleagues, and potentially adjust (transform) according to the outcomes.</p> <p>The teacher-student relationship is considered essential for motivating teachers in their desire for transformation, and emotions (both teachers' and students') are considered to be key to this. Whilst they may need to adjust their creative ideas to accommodate the context of their education systems, the goal of 'possibility thinking', for both teachers and students, will dominate all aspects of the creative teacher's practice. A like-minded Professional Learning Community will be essential to their success.</p> <p>*The dominant qualities of the creative teacher in this category are: curious, adventurous, persistent, resilient, open-minded, adaptable and reflective.</p>
<p>Vignette to support this category:</p> <p>An IST in this category described the importance of the teacher-student relationship in aiding transformation:</p> <p><i>'Learning is a partnership with teacher and student – in the classroom the student can also be the leader – the student is always teaching the teacher how to be better [at their job]! Creative teachers share the learning journey with their students... they are guiding and supporting the learner towards understanding.'</i></p> <p>The IST emphasised that this shared learning journey '<i>doesn't have to be wildly different</i>', instead being an '<i>imaginative interpretation or presentation of whatever is being studied.</i>' Because the ISTs in this category perceived creative teaching to be in everything they did, they focused less on specific examples, and more on statements that demonstrated this, for example: '<i>I take the road less chosen</i>'; '<i>I am thinking outside conventions</i>'; '<i>The teacher standing back and giving the students the opportunity to think.</i>'</p> <p>Challenges for this holistic view of creative teaching were seen in this IST's list of qualities: '<i>I need to be curious, but importantly flexible, resilient and persistent.</i>' An IST</p>

Title: The Transformer [2 pages]
suggested that possibility thinking extended beyond the classroom for both teachers and students: <i>'we need to find ways to challenge people, (including teachers), in and outside the classroom.'</i>

Table 6.13 Description of 'The Artist' Category

Title: The Artist
<p>Definition:</p> <p>Creative Teaching: A teaching approach focusing on arts-related subjects (art, music, drama).</p>
<p>Description of features:</p> <p>Creative teaching is perceived as the teacher's planned teaching of arts-related subjects, classed by the IST as creative arts (named as art, music, and drama). Lessons using this approach are considered to be practical and stimulating, with something new being the product. The teachers who will be most successful at achieving this creative approach are those who are particularly artistic (in the context of teaching art, music or drama). Activities will suit students who have strong dispositions to arts-related practical work – there is a strong focus on the students' creativity. This creative teaching approach is only related to arts-related subjects – it does not apply to subjects beyond art, music and drama.</p>
<p>Vignette to support this category:</p> <p>The IST in this category gave the following example of her perception of this creative teaching approach in action:</p> <p><i>'I taught an art lesson that was inspired by Van Gogh's Starry Night picture, to Year 4 children. We studied the brush strokes in the original picture and then they were encouraged to think of something about their lives that they wanted the picture to show or represent. They chose their colours carefully and created their own version.'</i></p> <p>When asked why she thought this was an example of creative teaching, the teacher said: <i>'It was an art lesson. It was also very practical. The children were adding something new to the original picture – they weren't just copying it, so that made it very creative.'</i> The teacher explained her use of creative teaching skills by focusing on her own artistic skills: <i>'I am quite confident at teaching art and could show the students how to create brushstrokes like Van Gogh. I think this is a good example of me using my creative skills in my teaching.'</i> The IST did not identify other subjects in which she would use a creative teaching approach, beyond art, music and drama: <i>'I've always thought of creative teaching as being related to the arts subjects – art, music and drama. I don't think I could teach creatively in other subjects, like science or mathematics.'</i></p>

6.3.2.2 Testing the IST categories

The five categories of ISTs' perceptions of creative teaching were tested with a larger group of ISTs (n=36), to provide evidence of relevance to other ISTs. Through a questionnaire, the ISTs were asked:

'To what extent do you identify with these five descriptions of creative teaching?'

using a scale from 0 (not at all like me) to 5 (very much like me) to share their responses.

Their responses are summarised in Figure 6.4.

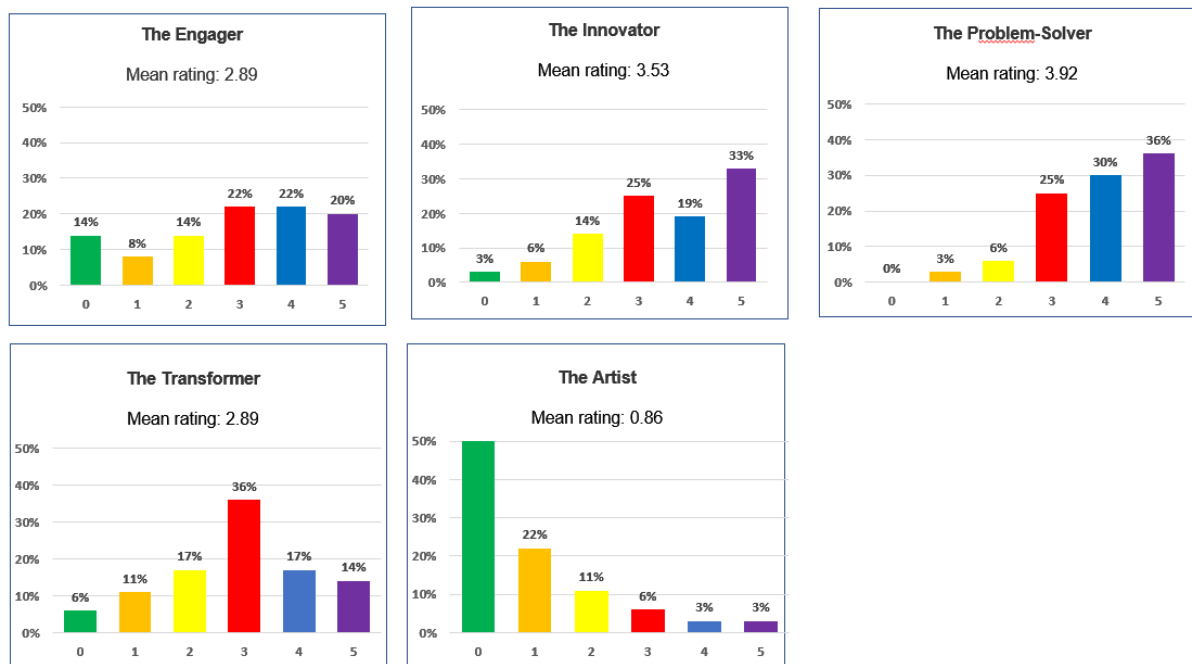


Figure 6.4 Summary of ISTs' (n=36) responses to the creative teaching categories and mean ratings
Key: horizontal axis = scale of relatability; vertical axis = % of ISTs identifying with the category, rounded to nearest whole number

The mean ratings from the wider questionnaire correlated with the number of ISTs who described each creative teaching category in the interviews, shown in Table 6.14.

Table 6.14 The responses to each IST creative teaching category in the interviews compared to the questionnaires

Creative teaching category titles	Number of ISTs interviewed who described this category	Mean rating in the wider questionnaire
The Engager	3	2.89
The Innovator	4	3.53
The Problem-Solver	5	3.92
The Transformer	3	2.89
The Artist	1	0.86

Overall, the results from the wider questionnaire provided evidence of strong alignment with the Innovator and Problem-Solver categories, some alignment with the Engager and Transformer categories, and the lowest alignment with the Artist category. These Findings and outcomes for the IST categories of creative teaching will be compared with the PST categories in the following interim discussion.

6.4 Interim Discussion for Phase 1

The interim discussion focuses on:

- an exploration of each of the five creative teaching categories for PSTs⁶¹ that emerged, compared with the Literature Review in Chapters 2 and 3, to enable the distinct features of each category to be considered, regarding the relevance to and alignment with current education systems;
- a comparison of the PST categories, including overlaps between categories, to inform the creative teaching package;
- a comparison of the PST creative teaching categories to the IST creative teaching categories, to judge the plausibility of the PST categories in current education systems, by exploring possible connections between the categories.

⁶¹ The PST categories were the main focus of the interim discussion because the discussion informed the design of the creative teaching package, which was created for PSTs' professional developments. Evidence from ISTs' data was used to explore the potential relevance of ideas to current school contexts.

6.4.1 The creative teaching categories for PSTs, compared with the Literature Review

The discussion of each creative teaching category below relates to the Findings in Tables 6.2 - 6.6.

The Engager category: *'A teaching approach used to plan one-off lessons, to maximise student engagement.'*

The Findings section provided evidence of good alignment for PSTs with The Engager category, with 4 out of 16 PSTs interviewed describing this category, and 77% of responses to this category in the wider questionnaire rating this category as 3+ out of 5 (the mean rating was 3.18).

The indicators in this category resonated with a perception of creative teaching that was commonly seen in the 'second wave of creativity' (Craft, 2003, p.145), following the publication of the NACCCE (1999) report. The Engager category focused on creative teaching through a disciplined lens, discussed by Beghetto (2017), with the teacher's creative thinking skills being applied intentionally and playfully at the lesson-planning stage, to create a novel and engaging learning experience for the students. Play was considered by Henriksen (2016) as a transdisciplinary skill of creative teachers, and similar playful uses of creative thinking devices were discussed in Chapter 3, for example the 'Mantle of the Expert' approach and role play techniques (Heathcote, 2009; Wegerif, 2010). There was evidence in The Engager category of the teacher's own engagement in the use of a novel approach, with the playful nature of creative teaching providing motivation and enjoyment of the teaching role, as discussed by Carruthers (2002).

There were strong indications in The Engager category that creative teaching skills could be learnt and developed by PSTs (Jeffrey & Craft, 2004; Sawyer, 2012; Woods, 1995). Three of the PSTs in this category explained that their own use of a creative teaching approach was a new experience for them, inspired by their teacher training programme input, and their school-based mentors. This indicated that the creative teaching skills to become an Engager could be explicitly taught by teacher training programmes and be learnt by PSTs, as discussed by Grainger (2004). The focus on the disciplined aspect only of creative teaching could be considered less spontaneous and more formulaic than a disciplined improvisation approach. However, its potential benefits for both the teachers and students - shown in examples in the Literature Review (Chapter 3) and discussed by Desailly (2015) - could be a useful introduction to creative teaching approaches for PSTs.

The Responder category: *‘A teaching approach using acquired problem-solving skills to respond to students’ needs, by adapting learning activities during all lessons.’*

The Findings section provided evidence of strong alignment for PSTs with The Responder category, with 6 out of 16 PSTs interviewed describing this category, and 81% of responses to this category in the wider questionnaire rating this category as 3+ out of 5 (the mean rating was 3.35).

The indicators in this category resonated with a perception of creative teaching that was commonly seen from 2010, discussed in Chapter 3. The intentional and continual use of in-lesson pedagogical strategies, aiming to optimise student outcomes, aligned with the discussion of improvised creative teaching (Beghetto, 2017). The teacher’s application of problem-solving skills to elicit students’ thoughts and understandings, using pedagogical techniques such as open questions, resonated with the teacher’s use of in-lesson dialogue discussed in Chapter 3, for example the ‘Odd One Out’ technique (Wegerif, 2010). The pedagogical strategies in The Responder category demonstrated the teacher’s efficiency of approach, with simply designed strategies (for example, the re-wording of a question) leading to personalised learning experiences for the students. There was evidence in The Responder category that the PSTs were allowing space in lessons for students’ responses, resonating with the idea of ‘lesson unplanning’ (Henriksen & Mishra, 2018, p.544; Beghetto, 2018a).

PSTs in this category expressed the challenges of improvised creative teaching, regarding having to expect unpredictable responses and adapt accordingly - discussed in Chapter 3 as developing new ways for a teacher to think and act (rather than rewriting ideas) (Beghetto, 2017; Beghetto, 2018a; Lucas and Spencer, 2017). The Odd One Out vignette in Chapter 3 demonstrated that although creative thinking tools were often simple in design, the potentially unpredictable answers that they may generate in each unique classroom environment were likely to challenge the teacher’s improvised creative responses and shape the learning experiences (Beghetto, 2017; Lucas & Spencer, 2017; Paek & Sumners, 2017). In The Responder category, this challenge was viewed as motivational and stimulating for the teacher, due to the results it achieved in the students’ learning. This aligned with Chapter 3’s discussion of the teacher’s adaptations leading to positive outcomes for students, which was considered essential for teachers to thrive in current education systems (Lin, 2014; Mehta & Fine, 2017).

Although there was evidence of intentional improvised creative teaching in The Responder category, the use of disciplined creative teaching skills when lesson-planning was not considered by PSTs in this category.

The Adapter category: *‘A holistic view of adaptable teaching by teachers with a creative nature - evident in all actions and thoughts.’*

The Findings section provided evidence of strong alignment for PSTs with The Adapter category, with 4 out of 16 PSTs interviewed describing this category, and 87% of responses to this category in the wider questionnaire rating this category as 3+ out of 5 (the mean rating was 3.78).

The indicators in The Adapter category aligned with the perception of creative teaching being an intentional act of disciplined improvisation (Beghetto, 2017), discussed in Chapter 3, with teachers using creative thinking skills in lesson-planning and during lessons, to optimise the students’ learning experiences. This presented a holistic view of the act of creative teaching, with the teacher’s openness to adapt influencing all actions (Beghetto, 2017). PSTs in this category gave examples of creative teaching that shared common features with examples in Chapter 3 (including the vignettes: Skoda (Gill, 2017), Iguana (Simpson, 2017), and Dogger (Desailly, 2015)). A main commonality was the teacher’s synthesis of teaching skills. To achieve this, teachers in this category engaged in deep thinking experiences, with the willingness to work on several iterations and the understanding that they might not always get it right (evident in the ‘Settlers’ vignette in Chapter 3 (Boyd et al, 2015)). Thus, risk-taking was considered an integral part of the creative teaching mindset in The Adapter category, aligning with the teachers in Henriksen’s (2016) study of creative teachers’ qualities, and Beghetto’s (2018b) view of ‘beautiful risks’, that encouraged risk-taking resulting in highly stimulating creative thinking opportunities for both the teacher and the students.

The Adapter category included modelling creative thinking strategies to students, alongside the teacher’s own creative thinking skills in action, and there was evidence that such creative teaching strategies could change the nature of subject knowledge, as discussed by Wegerif (2010). Some of the features of pedagogical strategies used to model and enhance students’ creative thinking skills (for example, no single solution, encouraging dialogue and articulation and flexibility), discussed by Wegerif (2010), Grigg and Lewis (2018) and Lucas and Spencer (2017) were evident in the category description. The application of embodied thinking (a transdisciplinary skill discussed by Henriksen (2016)) by teachers in The Adapter category also aimed to maximise students’ engagement, by creating meaningful experiences.

The Performer category: ‘A teaching approach using a creative performance, achieved only by those with a creative personality.’

The Findings section provided evidence of less alignment for PSTs with The Performer category, with one PST interviewed describing this category, and 12% of responses to this category in the wider questionnaire rating this category as 3+ out of 5 (the mean rating was 1.42). Although it received a low rating, The Performer category was a perception of creative teaching that had distinct indicators compared with the other categories, and therefore required a category of its own.

The Performer category of creative teaching aligned strongly with the view of creative teaching in the 1960s and 1970s, discussed in Chapter 2. For example, Rowen (1968) compared a creative teacher’s skills to those of an actor, and Opulente (1965) viewed creative teachers as performers with great insight. The passion to create novel classroom experiences evidenced in The Performer category aligned with the cycle of experimenting and innovation discussed by Baughman and Earle (1965), and the required risk-taking and self-confidence needed to achieve this were also indicators in this category. The category’s vignette refers to the teacher ‘*performing a script*’ (the lesson plan in this context), and this indicated that this perception of creative teaching had not necessarily progressed to the ‘improvised performance’ discussed by Sawyer (2004, p.12), which took into consideration the students’ in-lesson responses.

In common with Opulente (1965) and Romey (1970), an issue that emerged in The Performer category was the potential demotivation that the teacher may experience if the creative teaching opportunities defined in this category did not arise. There were indications that The Performer may be challenged if required to adapt to other teaching approaches. This issue conflicted with key factors for successful teaching discussed in Chapter 3: a teacher’s ability to adapt to the continually evolving demands of education systems (Lin, 2014; Mehta & Fine, 2017).

The Risk-Taker category: ‘A teaching approach used to plan complex, potentially risky teaching activities.’

The Findings section provided evidence of low alignment for PSTs with The Risk-Taker category, with one PST interviewed describing this category, and 12% of responses to this category in the wider questionnaire rating this category as 3+ out of 5 (the mean rating was 0.94). Although it received a low rating, The Risk-Taker category was a perception of creative teaching that had distinct indicators compared to the other categories, and therefore required a category of its own.

Risk-taking as a necessary part of a creative teaching approach was considered in Chapters 2 and 3. In Chapter 2, concerns were discussed regarding creative teaching being a risky endeavour when education systems became highly accountable from the late 1980s (for example, Reitman, 1986; Sawyer, 2004). However, Chapter 3 moved to a more positive view of risk-taking, with later discussions recognising this as an aspect of wise decision-making within a creative teaching approach (for example, Beghetto, 2018b; Cremin & Barnes, 2018; Henriksen, 2016). This view encouraged teachers to expect, identify and manage possible risks when using a creative teaching approach, conflicting with The Risk-Taker category which only viewed risks as detrimental to the teacher and the students.

The Risk-Taker category described creative teaching as a potentially confusing and ineffective approach. Such risks are likely to be minimised by the application of strong subject and pedagogical knowledge to achieve successful creative teaching approaches, as discussed in the Literature Review (Sawyer, 2004; Woods, 1995). There were also indications in The Risk-Taker category of low self-confidence in the use of a creative teaching approach. This may improve with a greater understanding of different aspects of creative teaching (for example, there were no indications of an understanding of improvised creative teaching in The Risk-Taker category).

6.4.2 A comparison of the PST categories: The Engager, The Responder and The Adapter

The categories of The Engager, The Responder and The Adapter received the highest mean ratings in the wider questionnaire. These three categories had the following common features that were considered to be integral to a creative teaching approach in the Literature Review from 2010 onwards:

- the creation of something new for the teacher;
- intentional, purposeful acts of creative teaching (aiming to develop the most effective learning experiences for the students);
- gains for the teacher (for example: satisfaction, motivation, success);
- the use of creative teaching techniques;⁶²
- creative teaching acts demonstrating an aspect of disciplined improvisation;
- the teacher adapting their professional practice;
- informed decision-making.

⁶² Creative teaching techniques identified in the Literature Review (Chapter 3) were: creative thinking devices; transdisciplinary creative teaching skills; use of open questions; paired/group work; students in the role of teachers, and self/peer assessment.

The three categories may be considered plausible in current education systems, as these features align with the explanation of the creative process in Chapter 3:

‘...the development of something new and of value (either to the creator or a wider audience), which successfully fulfils a purpose, and includes an element of satisfaction.’

(quote taken from Chapter 3, informed by Acar et al., 2017).

Some differences between the features in these categories were identified, and these are shown in the diagram in Figure 6.5, which considers the extent to which some of these features were developed.

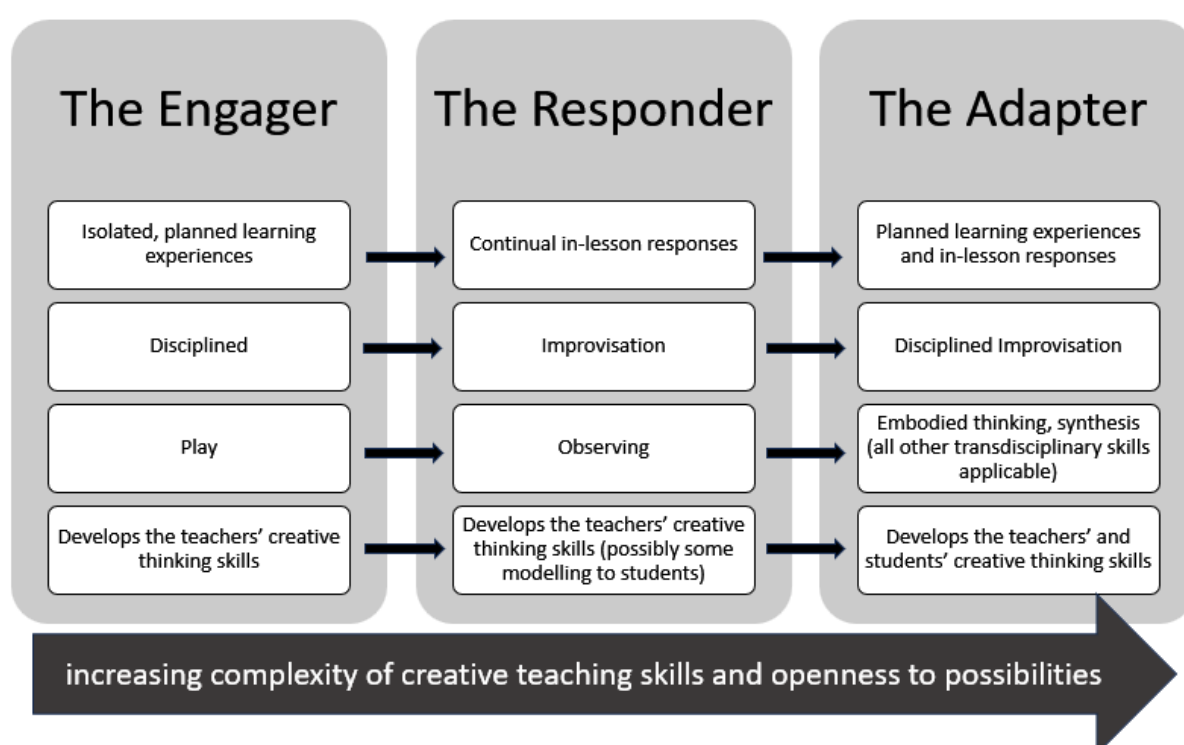


Figure 6.5 A comparison of key creative teaching features in The Engager, The Responder and The Adapter categories of creative teaching

Figure 6.5 shows an increasing complexity of creative teaching skills, which required greater openness of PSTs to possibilities. A key difference between The Engager and The Responder categories could be the amount of adaptation required. The Engager's planned creative teaching acts required adaptation, as the teacher moved away from their normal lesson planning structures, but this adaptation could be considered more predictable for the teacher. The Responder's level of adaptation could be viewed as greater, given the demands of adapting in less predictable in-lesson situations that require spontaneous decision-making. A key quality of The Adapter category (which was less evident in The

Engager and The Responder categories), was the development of the students' creative thinking skills, alongside their teachers'. This mutual benefit was discussed in Chapter 3 as a main area for development in education systems globally from 2010 (for example: Grigg & Lewis, 2018; Lucas & Spencer, 2017; Wegerif, 2010).

The main transdisciplinary skills that emerged in each category are shown in the third row of Figure 6.5. Other transdisciplinary skills were mentioned in some of the PSTs' examples of creative teaching (for example, modelling was commonly referenced). Although Henriksen (2016) does not propose that some skills are more complex than others, there may be some progression in the complexity of these skills, and their synthesis.

The Findings (Table 6.7) indicated that The Responder category was described by more PSTs than The Adapter category in the PST interviews, but The Adapter category received the highest mean rating in the wider PST questionnaire. This could suggest that PSTs aspire to become Adapters (which blends disciplined and improvised creative teaching), although in practice more may be at The Responder stage (focusing on improvised creative teaching).

A comparison of the PST creative teaching categories to the IST creative teaching categories

Comparing the PST creative teaching categories to the IST creative teaching categories enabled the plausibility of the PST categories in current education systems to be considered.

To inform the comparison, the alignment of the IST creative teaching categories was explored, alongside comparisons with the Literature Review. The results of the wider questionnaire for ISTs, in the Findings section, provided evidence that ISTs related to all of the IST categories of creative teaching - to at least some extent - except for The Artist category, which received a low rating from ISTs (Figure 6.4). The Artist's view of creative teaching corresponded to the misconception of creative teaching belonging to the arts domain, discussed in the review of literature from early decades in Chapter 2 (e.g. Rowan, 1968). This was not a view presented by any of the PSTs in their interviews. For these reasons, The Artist category was considered an outlier.

The other four IST categories of creative teaching resonated in some way to the Literature Review, with all including some or all of the aspects integral to a creative teaching approach - listed at the beginning of section 6.4.2, and aligning with Acar et al's (2017) explanation of the creative process. All IST categories included risk-taking as a positive trait necessary for creative teaching, to motivate creative teachers to generate new ideas, and risk-taking in the Literature Review from 2010 onwards was seen as an essential quality for a creative

teaching approach. This justified the PST category of Risk-Taker (viewing risk-taking in a negative sense) to be positioned as an outlier.

The diagram in Figure 6.6 is a suggested model of alignment between the PST and IST creative teaching categories. This model was created by identifying similarities between the category indicators and revisiting the Literature Review in Chapters 2 and 3. The model shows that there were potentially strong connections between the PST categories of The Engager, The Responder and The Adapter to IST categories.

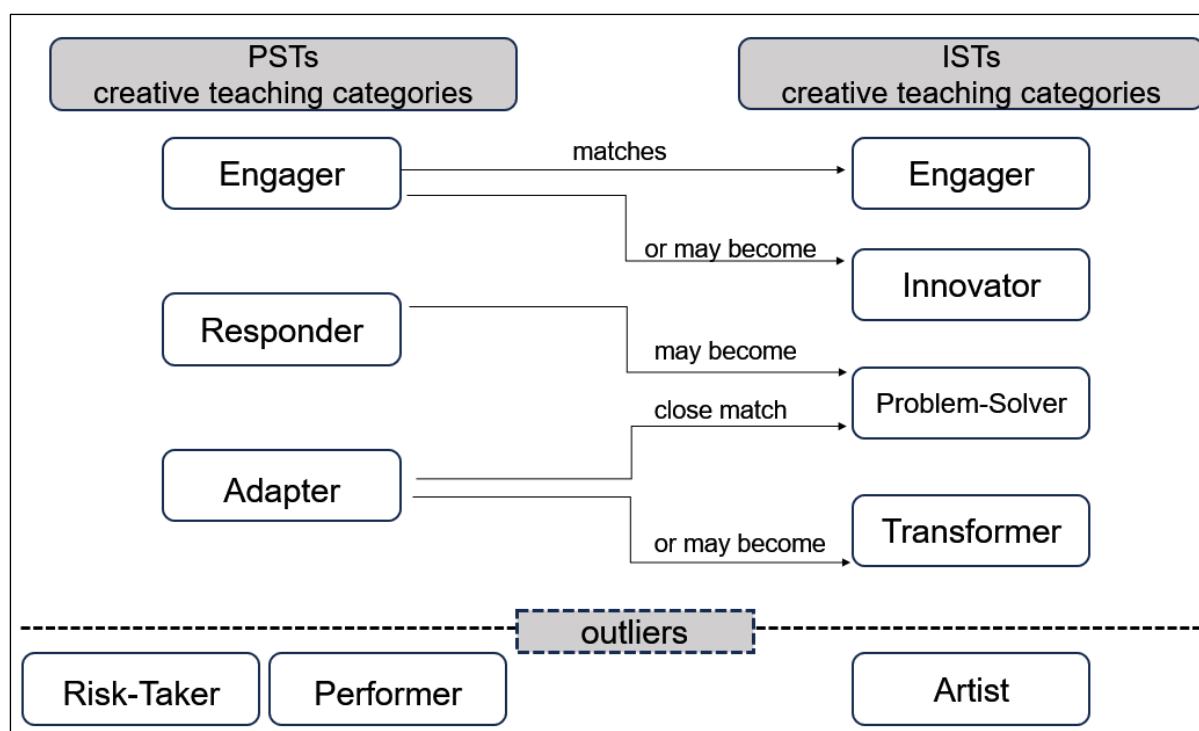


Figure 6.6 A proposed model of alignment between the PST and IST creative teaching categories

The differences between the PST and IST categories mostly reflect the greater professional experiences of the ISTs, as expected. For example, over time the PST Adapter may move into The IST Transformer category with some leadership experience. There was less evidence of the teacher's use of a creative teaching approach to develop the thinking skills of the students in the PST categories than in the IST categories (although this was evident in the PST Adapter category). This could be due to PSTs' interview responses focusing more on their own developments - within limited classroom experiences - compared with ISTs responding through their perspectives of experienced teachers, who would have the students' progress as a main and continual focus.

The greater experience of ISTs was also reflected in their indications of the potential constraints in which they may be working, providing evidence of 'thinking inside the box' (Henriksen & Mishra, 2018, p. 543). Accordingly, there was greater focus in the IST

categories on a sociocultural perspective, with novelty, appropriateness and satisfaction of creative teaching acts being judged ‘by a suitably knowledgeable group’ (Sawyer, 2012, p.8). Most ISTs based their responses on collaborative working practices and immersion in school systems, compared with the PSTs who mostly saw themselves as acting as individuals – an understandable perspective given their level of experience.

Other versions of Figure 6.6 could be created. For example, positioning The Performer category is challenging. Although this was deemed an outlier in the model, with more connections to a view of creative teaching from the 1960s and 1970s than current education systems, there were some features that connected it to the Engager category, if the teacher developed a more balanced focus between their own professional needs and the learning experiences of their students. Other outcomes for individual PSTs may also be possible, given the many contextual factors that will influence a PST’s development.

6.5 A summary of points to take into Phase 2

Chapter 5 explained that the purpose of establishing categories of understandings of creative teaching was to use the most relevant categories in the design of the creative teaching package (Table 5.1, RQ1a and RQ1b objectives). These categories of understanding will be useful to PSTs completing the creative teaching package, enabling them to realise that a concept can be perceived and thought about in different ways, that their conceptions of a phenomenon can change, and these realisations can influence their professional developments.

The Engager, The Responder and The Adapter were the most relevant categories of creative teaching to emerge from the PST data, with evidence of alignment with the results of the wider questionnaire, the themes of creative teaching explored in Literature Review in Chapters 2 and 3, and the IST creative teaching categories. The features of these categories will be incorporated into the creative teaching package, including providing the opportunity for PSTs to understand the similarities and differences between the categories, and the potential benefits, challenges and ways forward for each category regarding PSTs’ professional developments.

The Performer and The Risk-Taker PST categories were judged to be outliers. Both categories will be referenced in the creative teaching package, for PSTs to make evaluative judgements about these two categories by considering the following question:

‘Is there a place for these perceptions of creative teaching in current education systems?’

Creative teaching techniques and the transdisciplinary skills of creative teachers were evident in the PSTs' creative teaching categories. The creative teaching package will raise the PSTs' awareness of these skills, and the ways these can aid the development of a creative teaching approach.

As well as the outcomes of Phase 1 of the project informing the design of the creative teaching package for Phases 2 and 3 (discussed in Chapter 7), the categorisation of creative teaching will also be reflected upon in Chapter 8, in the context of outputs of the project, including theoretical insights.

Chapter 7: The Design and Evaluation of the Creative Teaching Package (Phase 2 and Phase 3 of the Research)

7.1 Introduction to Chapter 7

Chapter 7 focuses on Phase 2 and Phase 3 of this project, which investigated the development of PSTs' creative teaching skills and values through a creative teaching package, designed for three successive cohorts of PSTs undertaking a PGCE course at a university involved in teacher training.

Phase 2 (research *on* the creative teaching package) considered the design and construction of the creative teaching package, and its subsequent re-design following the completion of each iteration.

Phase 3 (research *through* the creative teaching package) comprised an iterative cycle of evaluation and reflection on the outcomes of the creative teaching package for the PSTs.

The combination of Phase 2 and Phase 3 aligned with the principles of Educational Design Research⁶³, by investigating the benefits of the creative teaching package for PSTs' professional developments⁶⁴, and the improvements to the creative teaching package following each iteration. The position of Phase 2 and Phase 3 in the overall EDR project is shown in Figure 7.1, taken from the diagram in Figure 5.1 (Chapter 5).

⁶³ The principles of Educational Design Research refer to trialling several iterations to allow evaluation, reflection and adjustments (McKenney & Reeves, 2019).

⁶⁴ The term 'professional developments' was discussed in Chapter 5, understood to be developing teaching skills that provide the most effective learning experiences for the students, alongside developing a 'teacher identity' which reflects teaching dispositions, attitudes and values.

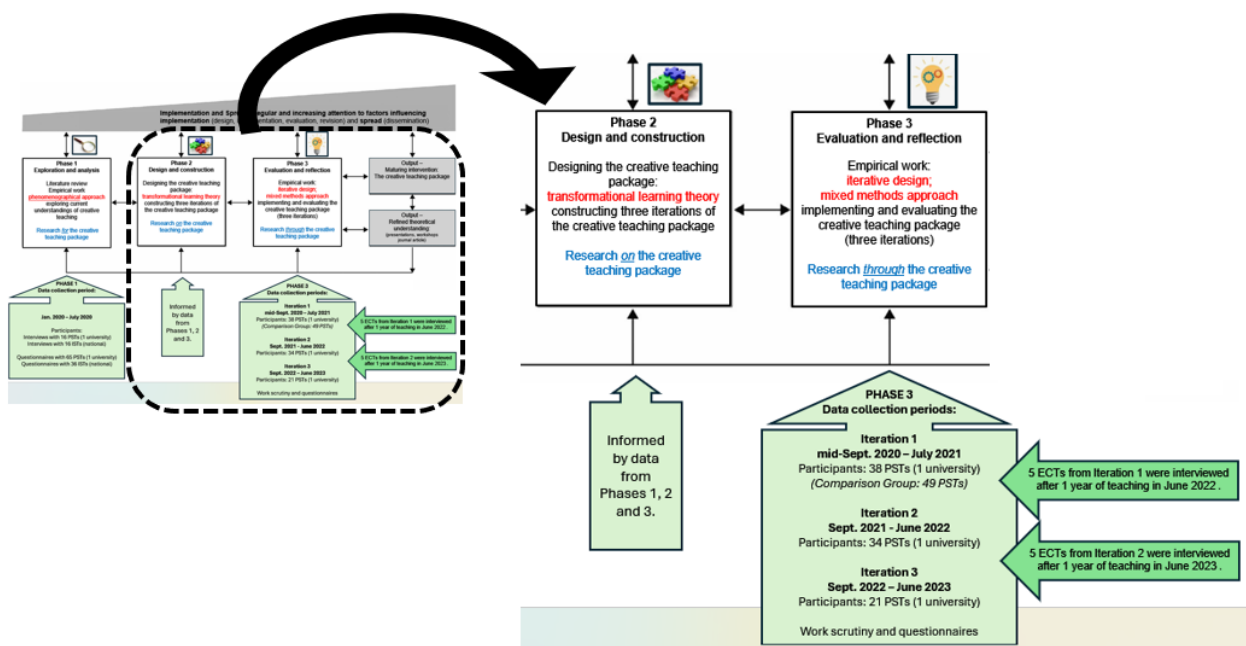


Figure 7.1 An extract from the EDR diagram – Phase 2 and Phase 3 of the research

Phase 2 and Phase 3 are both discussed in this extended chapter, to reflect their inter-connection and influence on each iteration of the creative teaching package. This is shown in the workflow model in Figure 7.2, which describes the chronological sequence of iterative design and evaluation processes that developed the creative teaching package.

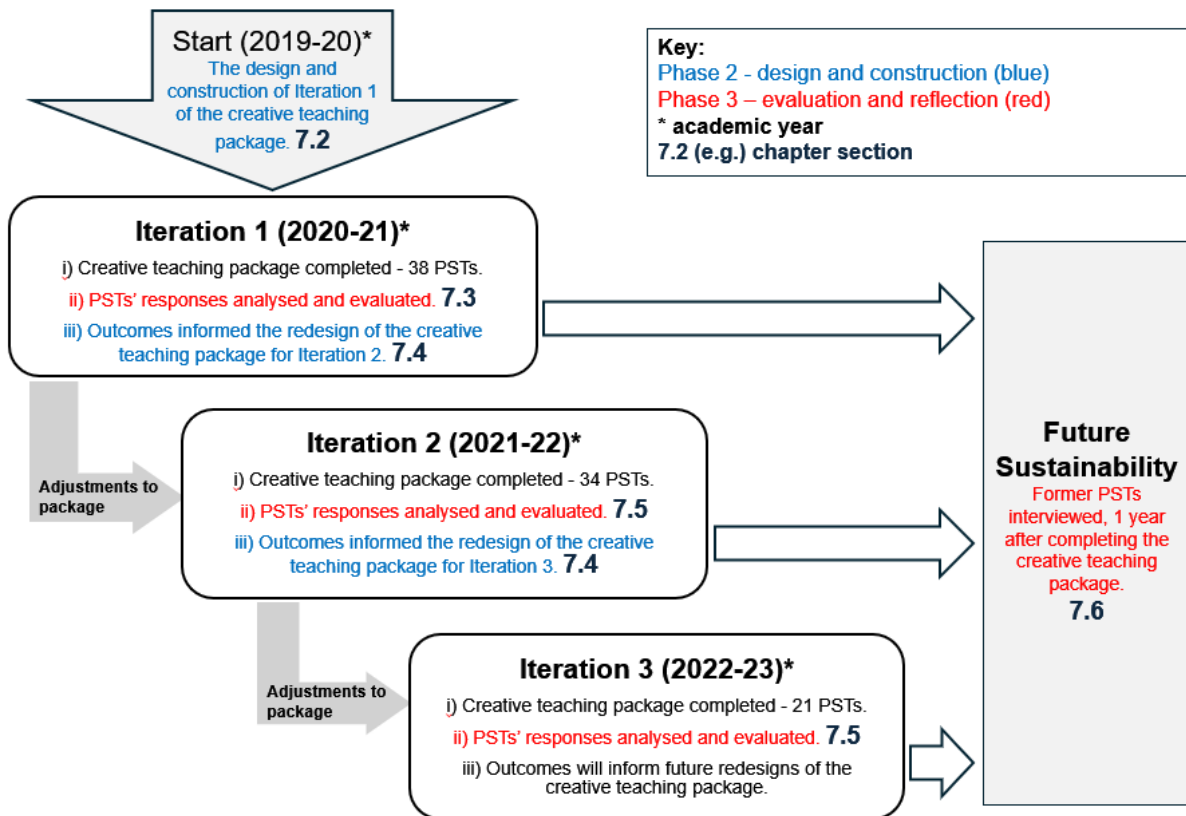


Figure 7.2 The workflow model of design and evaluation activities of the project, combining Phase 2 and Phase 3 to develop the creative teaching package

Figure 7.2 shows that this chapter is divided into sections presenting outcomes ('Findings') from the design and evaluation processes. An overview of the chapter sections is in Table 7.1, including the research questions that guide each section.

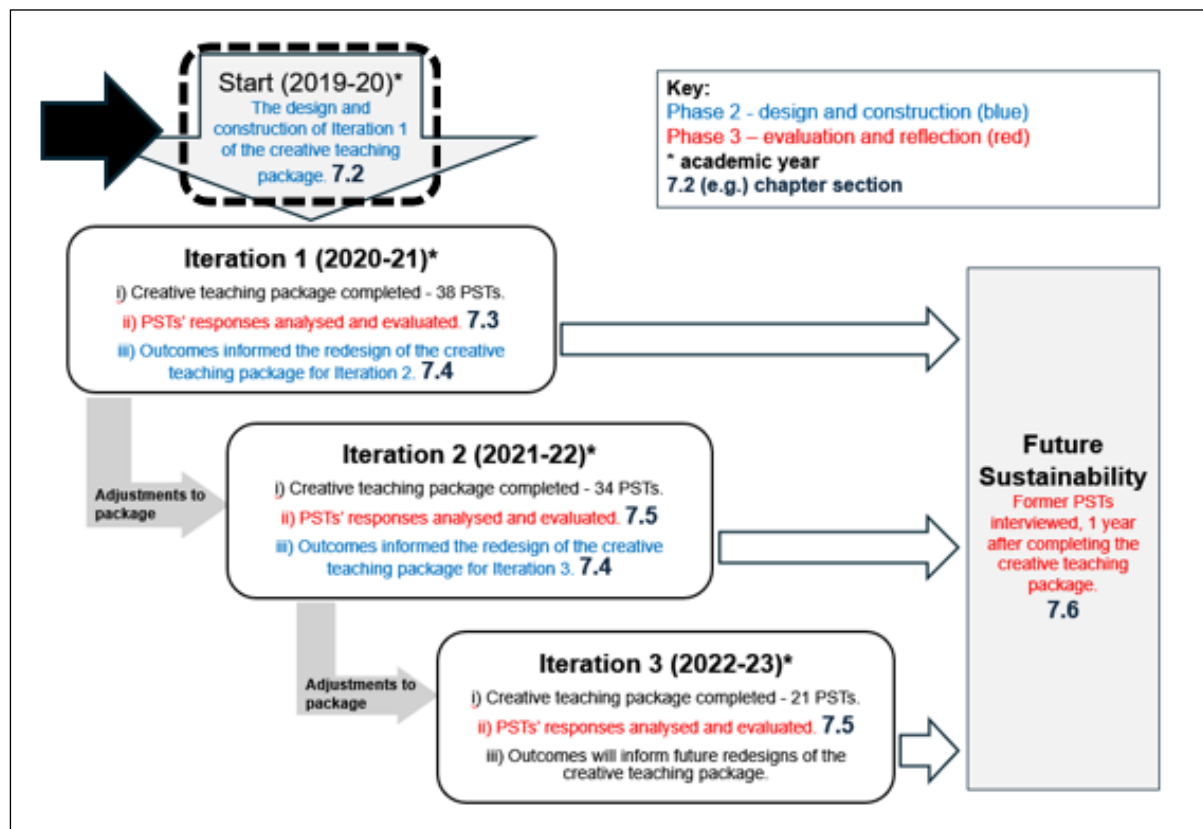
Table 7.1 An overview of Chapter 7 sections and research questions

Chapter 7 sections	Title	EDR phase	Research questions (RQ)
7.1	Introduction to Chapter 7		
7.2	Design of the creative teaching package Iteration 1	Phase 2	RQ 2: How can a training package be designed and constructed, to enable PSTs to develop creative teaching skills and values?
7.3	Evaluation of the creative teaching package Iteration 1	Phase 3	RQ 3: How did the creative teaching package influence the PSTs' professional developments? <i>Two parts:</i> -RQ 3a) How did the PSTs develop their creative teaching skills? -RQ 3b) How did the PSTs develop their creative teaching values? RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?
7.4	Re-design of the creative teaching package Iterations 2 and 3	Phase 2	RQ 5: How can a training package be improved through re-design, to enable PSTs to develop creative teaching skills?
7.5	Evaluation of the creative teaching package Iterations 2 and 3	Phase 3	RQ 6: How did the improvements to the creative teaching package influence the PSTs' professional developments? <i>Two parts:</i> -RQ 6a) How did the PSTs' creative teaching skills improve? -RQ 6b) How did the PSTs' creative teaching values improve? <i>At the end of Iteration 2, revisiting:</i> RQ 4 (revisited): Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?
7.6	The sustainability of the creative teaching package	Phase 3	RQ 7: Were there indications of the sustainability of a creative teaching approach, beyond the training phase?
7.7	Discussion of Phase 2 and Phase 3 outcomes		
7.8	A summary of points for Phase 2 and Phase 3		

As this is an extended chapter, the workflow model in Figure 7.2 will be used at the beginning of each chapter section, to show the section's position in relation to the entire project, along with an overview of the section and a summary of the section's outcomes where relevant.

Table 7.1 includes a discussion of Phase 2 and 3 outcomes (section 7.7). This provides the opportunity to consider the findings and outcomes of Phases 2 and 3 in relation to the main themes of the Literature Review in Chapters 2, 3 and 4.

7.2 Design of the creative teaching package Iteration 1 (Phase 2)



Overview of section 7.2

Section 7.2 explains how a training package was designed and constructed in Phase 2 of the project, to optimise PSTs' professional developments of creative teaching skills and values, by:

- demonstrating that the design was informed by theoretical and research-informed influences;
- presenting the three themes of the creative teaching package:
 - What is creative teaching? (skills-focused)
 - How can I become a creative teacher? (skills-focused)
 - Why should I become a creative teacher? (values-focused)
- illustrating these three themes, through examples of evidence-informed tasks.

7.2.1 Research overview for RQ2

Research aims and question Phase 2 of this project focused on research *on* the creative teaching package. It aimed to investigate how Iteration 1 of the creative teaching package could be designed and constructed, to optimise the PSTs' professional developments through their engagement with its themes. The following research question was investigated:

RQ2. How can a training package be designed and constructed, to enable PSTs to develop creative teaching skills and values?

Sources informing the design and construction process A combination of theoretical and practical influences informed the design and construction processes of Phase 2, aiming for an optimal creative teaching package. These sources comprised:

- *theoretical influences*: main outcomes from this project's Literature Review (Chapters 2, 3 and 4);
- *research-informed influences*: the creative teaching categories from Phase 1 (Chapter 6), and further data presented below, collected from Phase 1 PST participants (n=16) through the semi-structured interviews discussed in Chapter 6⁶⁵.

7.2.2 The aims of the creative teaching package and an overview of its theoretical framework

The creative teaching package aimed to develop three aspects of PSTs' professional developments. These aspects are shown in Figure 7.3, each with an accompanying question that informed the design of the creative teaching package and this project's research questions.

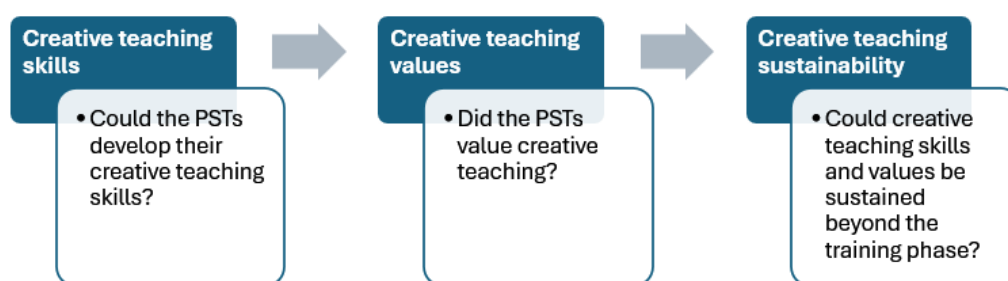


Figure 7.3 The aims of the creative teaching package: three aspects of PSTs' professional developments

⁶⁵ The semi-structured interview process is explained in Chapter 6, section 6.2.3, and demonstrated in Appendix H. The same approach was applied to this phase of the project.

These three aims aligned with the creative teaching themes discussed in the Literature Review (Chapters 2, 3 and 4), and Phase 1 findings (Chapter 6). Chapter 4 discussed applying transformative learning processes to motivate and enable PSTs to develop creative teaching skills as a core component of their teacher identities. To enable such transformation, the design and construction of Iteration 1 of the creative teaching package was informed by a constructivist approach (Kroth & Canton, 2014), and Mezirow's (2000) transformative learning theory, and its three associated aspects: centrality of experience, critical reflection, and rational discourse. These three aspects were considered to be appropriate to the PSTs' developments of 'cognitive exploration' (Oleynick et al., 2017, p.12). To encourage PSTs' openness to experiences and uncertainties, and to optimise the transformational experiences, tasks were structured to enable PSTs to gain multiple perspectives from peers, through formative peer discussion, review and feedback opportunities (Nicol, 2014; Oleynick et al., 2017; Southworth, 2022). Examples of the application of these theoretical ideas to the creative teaching package are provided below.

The impact of the Covid-19 global pandemic on the aims of Iteration 1 Iteration 1 of the creative teaching package was implemented between September – December 2020, when restrictions related to the Covid-19 global pandemic on the design and structure of the PSTs' training programme were in place. The restrictions that had to be considered in the design of the creative teaching package were:

- all university-based sessions had to be taught in the first term of the PGCE course;
- all university-based sessions had to be taught online.

The intended structure of the creative teaching package and several tasks had to be adapted for Iteration 1 to meet these restrictions. These adjustments are described at relevant points below.

7.2.3 The three themes of the creative teaching package

An overview of the three themes and task design Figure 7.3 above shows that PSTs' development of creative teaching skills and values, and its potential sustainability, were the core aims of the creative teaching package. Three inter-connected themes (worded as questions) aligned with these aims, and were used to guide the PSTs through the creative teaching package, shown in Figure 7.4.

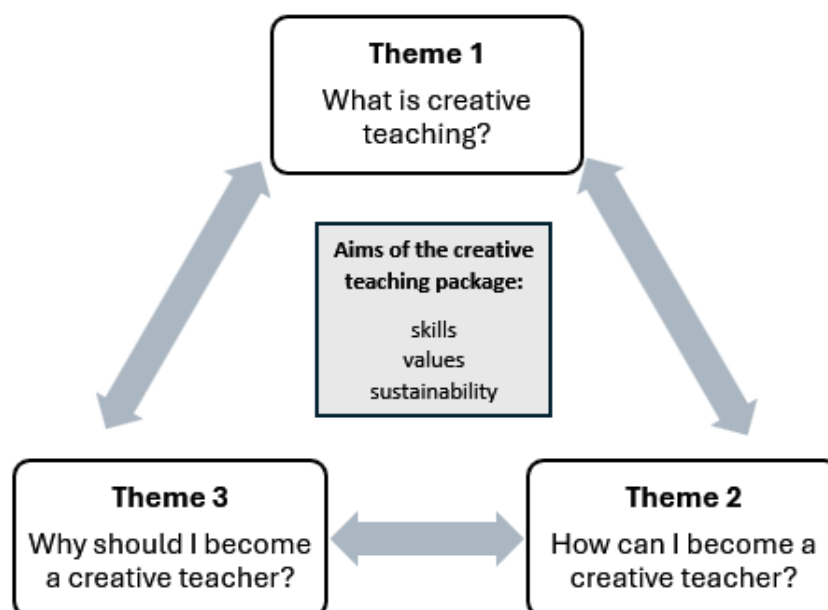


Figure 7.4 The three inter-connected themes of the creative teaching package

Table 7.2 provides an overview of the aim, tasks and purpose of each theme in the creative teaching package.

Table 7.2 An overview of the three themes in the creative teaching package

Themes and aims for PSTs	Overview of creative teaching package tasks	Purpose of creative teaching package tasks
Theme 1 What is creative teaching? <i>(skills-focused)</i> Aim: To understand what creative teaching means, in the context of current education systems.	Review and discuss* former PSTs' filmed vignettes of their creative teaching examples. <i>*discussions with peers and tutors</i> 4 tasks ⁶⁶	To exemplify: - the different types of creative teaching (Phase 1 categories) - the meaning of disciplined improvisation in creative teaching - the six main creative teaching techniques, including the transdisciplinary creative teaching skills
	Review and discuss experienced ISTs' filmed in-lesson examples of their creative teaching. 3 tasks	To identify the benefits* of: - the six main creative teaching techniques, including transdisciplinary creative teaching skills <i>*benefits to teachers and students</i>

⁶⁶ The tasks varied in content and length.

Themes and aims for PSTs	Overview of creative teaching package tasks	Purpose of creative teaching package tasks
Theme 2 How can I become a creative teacher? (skills-focused) Aim: To gain, practise and apply creative teaching skills.	Use the six creative teaching techniques to complete: practice creative teaching - scenarios tasks - lesson planning tasks actual creative teaching - evidence of PSTs' disciplined and improvised creative teaching skills in lesson evaluations in school 7 tasks	To experience creative teaching: <i>by practising:</i> - the six creative teaching techniques, including transdisciplinary creative teaching skills, in scenarios-based disciplined and improvised creative teaching contexts. <i>by applying:</i> - the six creative teaching techniques, including transdisciplinary creative teaching skills, in school-based disciplined and improvised creative teaching contexts.
Theme 3 Why should I become a creative teacher? (values-focused) Aim: To understand the value of creative teaching, through ongoing self-analysis of own teacher identity.	Self-reflection tasks: -'What kind of teacher do you aim to be?' (ongoing teacher identity diagrams, including role identity) -journal of professional developments (guided by aspects of transformative learning theory) -self-reflection integrated into Theme 1 and Theme 2 - introductory task to Mezirow's 10-step transformative learning 7 tasks	To develop: - openness to a transformative learning experience - creative self-efficacy - an understanding of potential challenges for creative teaching, and ways forward To critically reflect on: - own developmental experiences regarding teacher identity, and the position of creative teaching within this - multiple perspectives, including those of peers

In the creative teaching package, PSTs were also introduced to the following key literature and research, taken from the Literature Review in Chapters 2, 3 and 4, to develop their understanding of the creative teaching package themes:

Themes 1 and 2:

- creative teaching as disciplined improvisation (Beghetto, 2017);
- transdisciplinary creative teaching skills (Henriksen, 2016);

- the six creative teaching techniques (a range of literature e.g. Wegerif, 2010);
- problem-solving and problem-finding (a range of literature e.g. Lucas & Spencer, 2017).

Theme 3:

- transformative learning theory (Mezirow, 2000);
- decision-making skills (Newton, 2017);
- peer review and gaining multiple perspectives (Nicol, 2014).

The creative teaching package tasks incorporated Mezirow's (2000) three aspects of transformative learning, where possible. An example of this is demonstrated in Table 7.3.

Table 7.3 Mezirow's three aspects of transformative learning, applied to the creative teaching package tasks

Mezirow's three aspects of transformative learning	Application to the creative teaching package tasks
Centrality of experience	PSTs actively responded to authentic examples of teaching - either their own or others'.
Critical reflection	Problem-based learning tasks and PSTs' justifications of decisions, to improve a teaching and learning experience. Follow-up self-reviews through self-reflective journal writing.
Rationale discourse	Peer discussion of PSTs' task responses, to justify and negotiate own views, and gain multiple perspectives.

To optimise PSTs' engagement with the creative teaching package tasks from the outset, the three aspects of transformative learning described in Table 7.3 were introduced in the first creative teaching session, using a summary of main ideas from Chapter 4⁶⁷.

In common with all teacher training programmes, it was expected that each PGCE cohort undertaking the creative teaching training package would include a diverse range of learning needs and neurodiverse conditions. The design of the training package aimed to maximise inclusivity by optimising the engagement of all participants and recognising and celebrating differences (for example, by presenting a variety of creative teaching approaches from the outset). When implementing the training package, different learning needs were also continually monitored and adjustments made where necessary, in line with the policies and practices required for a higher education programme.

⁶⁷ As an example, the assumptions and conditions for rational discourse in Table 4.1 (taken from Chapter 4) were shared and discussed with PSTs in the first creative teaching session.

The following sections provide evidence to support the design and construction of each theme for Iteration 1 of the creative teaching package, and examples of tasks per theme.

7.2.3.1 Theme 1 – What is creative teaching?

Aim of theme: To understand what creative teaching means, in the context of current education systems.

Evidence supporting Theme 1's design Developing a shared understanding of the current meanings, aims and outcomes of creative teaching with the PSTs was essential to gaining their engagement with the creative teacher training package from the outset (Boyd et al., 2015). Using evidence from the Literature Review and Phase 1, PSTs were introduced to:

- the meaning of disciplined improvisation in creative teaching;
- the six main creative teaching techniques;
- the different types of creative teaching (Phase 1 creative teaching categories).

Figure 7.5 shows the inter-connections between these three aspects for Theme 1.

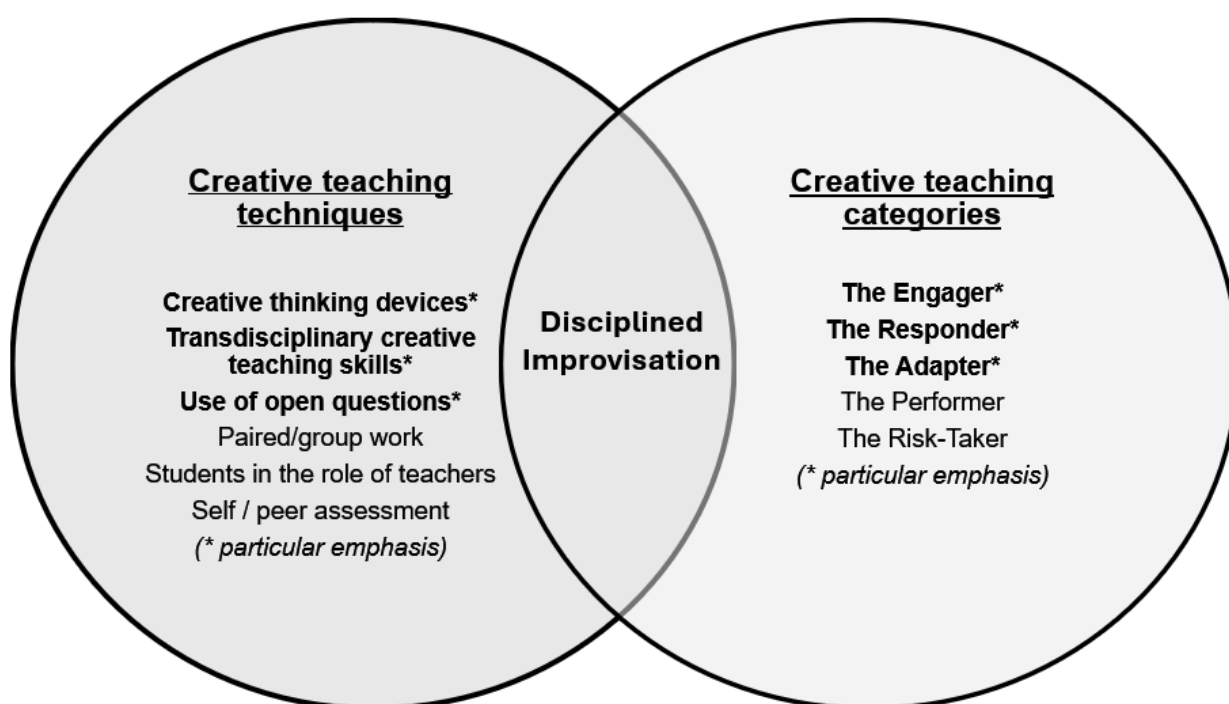


Figure 7.5 The inter-connections between the three main aspects of Theme 1

The six creative teaching techniques were established in the Literature Review outcomes (Chapter 3, section 3.3). The creative teaching categories established in Phase 1, and the main discussion points about these categories in Chapter 6, were also applied to the design

of Theme 1 of the creative teaching package. Creative teaching package tasks were designed to ask Iteration 1 PSTs to review and discuss videos of former PSTs' and experienced ISTs' creative teaching examples. These tasks enabled the PSTs to understand and consider the characteristics of The Engager, The Responder and The Adapter creative teaching categories, regarding the potential benefits, challenges and ways forward. The six creative teaching techniques listed in Figure 7.5 (for example, transdisciplinary creative teaching skills, discussed by Henriksen (2016)) were evident in these creative teaching examples, providing an opportunity to raise PSTs' awareness of the ways in which these techniques aided the development of a creative teaching approach. Phase 1 (Chapter 6) discussed that it was not assumed the PSTs would all develop as creative teachers in the same ways. Therefore, reviewing a variety of creative teaching examples aimed for the PSTs to recognise different perceptions of creative teaching, and that their understandings may change, thus influencing their professional developments.

In Phase 1, The Performer and The Risk-Taker creative teaching categories were judged to be outliers (Figure 6.6, Chapter 6). Both categories were included in a creative teaching package task. This task aimed for PSTs to make evaluative judgements about these two categories by considering the question:

'Is there a place for these perceptions of creative teaching in current education systems?'

A discussion of The Risk-Taker category aimed to introduce Beghetto's idea of 'beautiful risks' (2018), regarding what the risks could be in a creative teaching approach, and how to plan for these, instead of viewing risk-taking as detrimental to professional development. A discussion task of The Performer category was also considered a valuable inclusion, to enable PSTs to understand the changing notions of a creative teacher (and a teacher's role identity) over time.

Three main issues about creative teaching arose during the semi-structured interviews with PSTs in Phase 1, and tasks were incorporated into the Theme 1 tasks to address these issues, shown in Table 7.4.

Table 7.4 Creative teaching issues and tasks in Theme 1 to address these issues

Issues about creative teaching raised by PSTs in Phase 1	Tasks in Theme 1 to address these issues
<i>'How can a creative teaching approach apply to all primary subjects?'</i>	All primary subjects were represented in the examples of creative teaching analysed by the PSTs. Their analyses focused on the teacher's use of

	transdisciplinary skills, demonstrating that these skills could be applied to all subjects.
<i>'When is creative teaching appropriate, and are there situations when it is less appropriate?'</i>	This question was incorporated into tasks and discussions, supported by ideas from literature (for example, Cremin & Barnes (2018).
<i>'How can creative teaching be time-efficient?'</i>	Time-efficiency was a main focus in every discussion. For example, the creative teaching package emphasised the idea of 'lesson unplanning' discussed in Chapter 3, by focusing on adaptations to existing teaching strategies.

Example creative teaching package tasks for Theme 1 Example tasks for Theme 1 are in Figure 7.6 and Figure 7.7.

Introducing disciplined improvisation through the 'Odd One Out' creative teaching technique

A task introducing PSTs to the idea of creative teaching as disciplined improvisation fulfilled the following aims:

- To develop PSTs' understanding of creative teaching as 'disciplined improvisation';
- To introduce to PSTs the creative thinking device 'Odd One Out';
- To enable PSTs to engage in critical reflection and problem-based learning tasks, to aid their professional developments.

The full task is in Appendix K.

Figure 7.6 A Theme 1 task - introduction to creative teaching as disciplined improvisation, and the creative teaching technique 'Odd One Out'

Creative teaching in primary mathematics: 'The Dance Party' Vignette

(exemplifying 'The Engager' category of creative teaching)

Initial task given to PSTs, who generated written responses to the questions

'Watch the video clip of a former pre-service teacher's example of creative teaching, and prepare responses to the following questions, for discussion with your peers and tutor:

- What are the possible benefits and challenges of this creative teaching approach – for the teacher and the students?
- Which transdisciplinary creative teaching skills are evident in this approach? Do any of the transdisciplinary creative teaching skills appear to be more complex than others?
- How often / when would you consider using a similar approach?'

Follow-up group discussion (peers and tutor)

PSTs' responses to the questions above – a peer discussion task.

Further questions for discussion:

- Is this an example of disciplined creative teaching, improvised creative teaching, or both?
- Which creative teaching category might this example fit into (The Engager, The Responder or The Adapter?) Explain your decision.

A transcript of the 'Dance Party' vignette and a PST's task response are in Appendix L.

Figure 7.7 A Theme 1 task – reviewing a former PST's (from Phase 1) vignette of creative teaching

7.2.3.2 Theme 2 – How can I become a creative teacher?

Aim of theme: To gain, practise and apply creative teaching skills

Evidence supporting Theme 2's design Theme 2 of the creative teaching package aimed for PSTs to develop their disciplined and improvised creative teaching skills, by using the six creative teaching techniques in their teaching. Figure 7.8 shows that the structure of Theme 2's tasks was progressional, from practising creative teaching skills in university-based scenarios contexts, to actual use of creative teaching skills in school-based teaching placements.

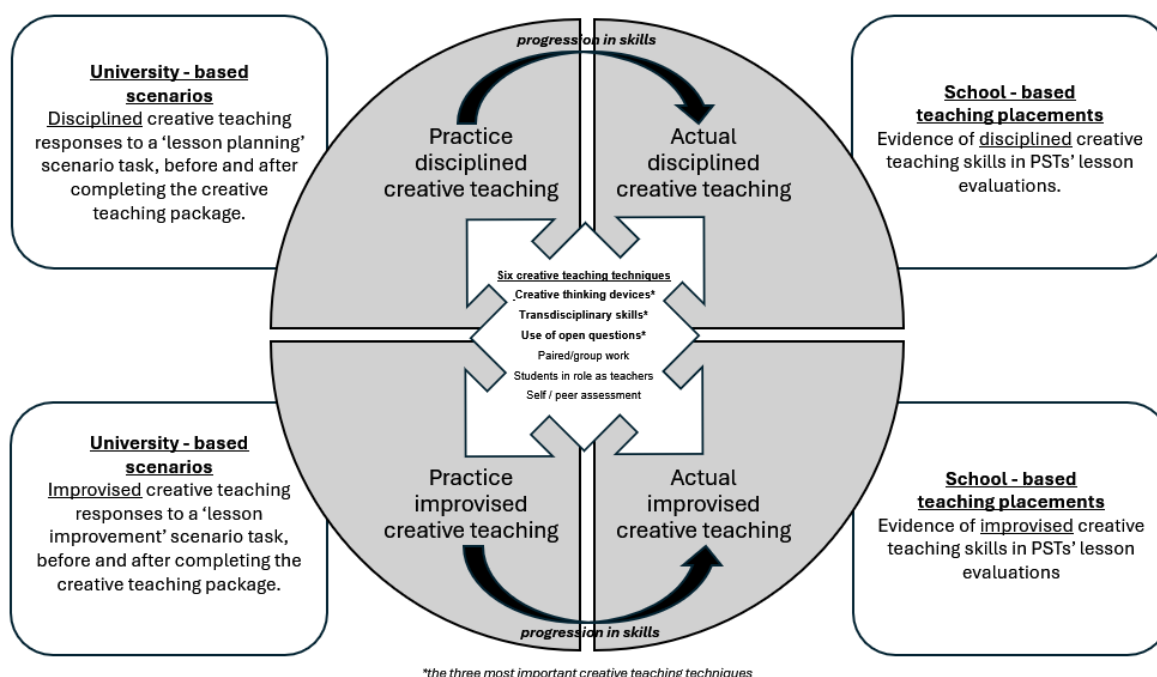


Figure 7.8 A diagram showing the progressional design of Theme 2's creative teaching package tasks⁶⁸

In Theme 2, scenarios tasks comprised PSTs giving reasoned responses based on their professional judgements to a range of given teaching scenarios. The use of scenarios gave PSTs the opportunity to practise new creative teaching skills, make decisions and justify their responses. Scenarios aimed to provide PSTs with authentic and relevant contexts, without time pressures or the risk to students' learning experiences (Boyd et al, 2015; Cremin & Barnes, 2018). Scenario tasks also provided opportunities for PSTs to learn from peers' and tutors' perspectives (Nicol, 2014). There was an emphasis on the many different, acceptable responses to each task, to alleviate the potential issue of not knowing the entire context in a given scenario. Allowing time for a discussion of PSTs' questions towards the end of each task aimed to strengthen their understandings, regarding application to real-world practice, and alignment of university practices with classroom reality (Chong et al., 2011).

The design of university-based scenarios tasks in Theme 2 reflected a constructivist approach, with the task structure supporting the active creation and interpretation of knowledge in the context of personal experience (Kroth & Canton, 2014). Figure 7.9 shows an example of the structure of a task for Theme 2, with the sequence of tasks increasing the

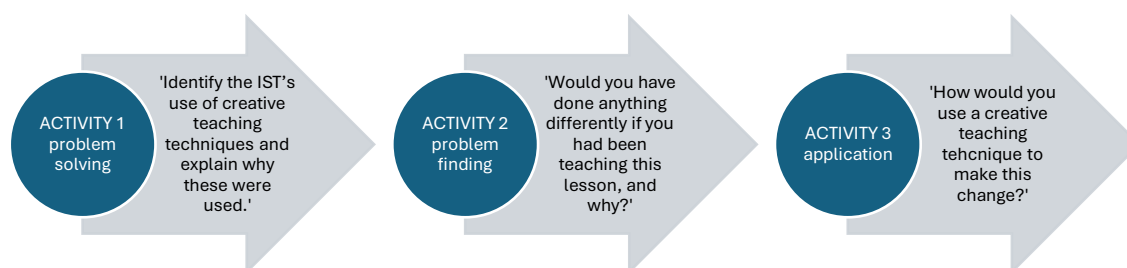
⁶⁸ A school-based placement task was designed but unable to be enacted in Iteration 1 due to Covid-19-related restrictions. This is explained towards the end of this Theme 2 section.

PSTs' levels of skills through a problem-solving, problem-finding and application approach (Boyd et al., 2015).

Context of the task:

For an 'improvised' creative teaching scenario, PSTs reviewed a film clip of an IST leading a lesson with 10-year-old students, through three progressional activities.

The sequence of activities:



Activity 4:

'Now consider the other creative teaching techniques. Which would you apply to improve the lesson and how would you apply each technique?'

Figure 7.9 A sequence of activities within a creative teaching package 'improvised scenarios' task, to enable PSTs' progressional developments of creative teaching skills

Scenarios tasks were positioned at an early stage of the PSTs' training, and Mezirow's 10-step transformative learning process (Chapter 4, Figure 4.1) was reordered, to optimise PSTs' professional developments at this early stage of their training (Mezirow, 1995). This is demonstrated in Table 7.5.

Table 7.5 An adjustment of Mezirow's 10-step process for transformative learning, applied to creative teaching scenarios tasks

Steps applied to the scenarios task (listed in the order of application)	Aspects of the task that achieve the step
7. Acquire knowledge and skills (for implementing one's future plans)	Pre-tasks focusing on developing PSTs' skills and knowledge of improvised creative teaching, to be applied to the task.
1. Experience a disorienting dilemma	The disorientating dilemma is presented in the scenario (e.g. a student is not engaging with a learning experience, in a given classroom scenario).
5. Explore new roles, relationships and ways of acting	PSTs consider the dilemma and apply their improvised creative teaching skills to solve the problem. Their responses may reflect their teacher identity values.

Steps applied to the scenarios task <i>(listed in the order of application)</i>	Aspects of the task that achieve the step
6. Plan a course of action	PSTs design responses that adapt the learning experience, aiming for increased student engagement.
8. Provisionally try out new roles	PSTs present suggested responses to their peers and tutor, and justify decisions.
2. Undergo self-examination	PSTs complete a follow-up reflective journal and teacher identity task, to enable self-examination of role identity.
3. Conduct a deep [critical] assessment of personal role assumptions	
4. Recognise that one's discontent and process of transformation are shared, and that others have negotiated similar change	Peer discussion during and after the task.
Steps in the original model, not explicitly applied to the scenarios task	
9. Build competence and self-confidence in new roles and relationships	PSTs may engage with steps 9 and 10 in the future, by taking the experience they gained from the task into their future practice and teacher identities.
10. Reintegrate into one's life with a new perspective.	

Example creative teaching package task for Theme 2 An example of an improvised creative teaching scenario task has already been provided in Figure 7.9. A scenario task designed to develop PSTs' disciplined creative teaching skills is described in Figure 7.10.

Disciplined creative teaching in primary science: a lesson-planning task

Context of the task: A primary science lesson planning task was completed by PSTs before the creative teaching package (Lesson Plan 1), and towards the end of the creative teaching package (Lesson Plan 2). The 'before' lesson plan provided a useful baseline for PSTs to self-review own progress in professional developments, and for tutors to identify any misconceptions that needed addressing. For both lesson planning activities, the development of PSTs' science subject knowledge was supported by primary science university tutors.

Task brief for PSTs:

'Lesson Plan 1: Design a learning activity to develop 7-year-old students' understandings of the lifecycle of plants (class size = 25 students). Consider the resources and teaching techniques you will use to:

- introduce the topic;
- provide a sequence of activities that build up the students' knowledge and understanding;

- assess the students' learning.'

'Lesson Plan 2: To help you to prepare for your forthcoming teaching placement, design a learning activity to develop students' understandings of the science topic you will be teaching on your school-based placement. Consider the resources and teaching techniques you will use to:

- introduce the topic;
- provide a sequence of activities that build up the students' knowledge and understanding;
- assess the students' learning.'

We suggest that you reflect upon all aspects of the PGCE course, to consider the teaching techniques you think will be the most effective. Your notes regarding disciplined creative teaching techniques, your teacher identity diagrams, and your self-reflective journal will be helpful.⁶⁹

Figure 7.10 A Theme 2 task - a disciplined creative teaching scenario

The restrictions placed on the PGCE course due to the Covid-19 global pandemic meant that all university-based sessions and input (including the creative teaching package) had to be completed in Term 1, and all school-based teaching placements had to be completed in Terms 2 and 3. As a result, there was not the capacity in the school-based teaching placement timetable for a specific task and follow-up linked to creative teaching. Although a specific creative teaching placement task could not be included, PSTs' application of creative teaching techniques to school-based teaching (advocated throughout the creative teaching package) could be monitored through their teaching placement records. This is presented as evidence of the creative teaching package's effectiveness in section 7.3 of this chapter.

7.2.3.3 Theme 3 - Why should I become a creative teacher?

Aim of theme: To understand the value of creative teaching, through ongoing self-analysis of own teacher identity.

Evidence supporting Theme 3's design Theme 3 aimed for PSTs to analyse their own teacher identities as these emerged and evolved during the PGCE course, and the position of creative teaching within these identities. The literature review in Chapter 4 discussed that a main aim of transformative learning was significant, long-lasting changes (Hoggan, 2016).

⁶⁹ This activity was classed as a scenario because at this point the PSTs were not familiar with the pupils or school context in which they would deliver the lesson, allowing them to produce an 'ideal' lesson plan, related to their teacher identities and values. Lesson Plan 2 focused on a different science topic to Lesson Plan 1 - to maximise the usefulness of the activity for the PSTs regarding their forthcoming teaching placement.

This aligned with the aim of developing a creative teaching approach that was sustainable for PSTs – lasting beyond their training programme. In the context of this project, achieving this aim required PSTs to develop an openness to transform, by being receptive to the idea of a malleable teacher identity, both in the teacher training phase and beyond (Huang et al., 2019; Oleynick et al., 2017). To support this aim, a self-reflective journal task was incorporated throughout the creative teaching input. This was designed to help PSTs to complete in-depth analyses of their teacher identity developments, and the potential for interwoven, multiple aspects of their teacher identities to develop.

Understanding PSTs' notions of their ideal teacher identities and the influences or prior experiences that informed these ideas, before starting a teacher training programme, aimed to provide an insight into the potential for PSTs to transform (Cranton & Taylor, 2012). Chapter 4 discussed that if PSTs' identities were based upon examples of teachers from over a decade ago, then these models were likely to be outdated due to the changing needs of education, and PSTs would need support in recognising this. To test this potential issue and inform the design of the creative teaching package, PSTs from Phase 1's participant group (n=16) were asked to describe their ideal teacher identities, and identify the main influence on these ideals. Regarding main influences, 69% of PSTs stated 'former primary teacher role models' from over a decade ago.

Asking about the origins and natures of PSTs' teacher identities in the interviews raised the decisions Phase 1 PSTs had made about their teacher identities to consciousness. Most Phase 1 PSTs indicated that this was the first time they had attempted to explain the influences that shaped their teacher identities – suggesting that prior to the interview they had a semi-conscious awareness (at best) of the reasons for their choices. An aim of teacher training programmes is for PSTs to develop unique teacher identities through reflective and research-informed practice. Thus, enabling PSTs to analyse the developments of their teacher identities in-depth, by considering the question:

'What kind of teacher do you wish to be?'

at the beginning of the programme, was considered to be appropriate for the creative teaching package (Boyd et al., 2015).

Creative teaching package tasks exposing PSTs to others' perspectives (including peers') aimed to broaden their unique perceptions of creative teaching, and strengthen transformational processes, with PSTs recognising that there were several ways to be creative, and the associated benefits. Analysis of Phase 1 PST interviews indicated that

some PSTs held a narrow view of creative teaching.⁷⁰ Therefore, gaining others' perspectives would be an important inclusion in the creative teaching package.

Example creative teaching package tasks for Theme 3 Example tasks for Theme 3 are in Figure 7.11, Figure 7.12 and Figure 7.13.

Teacher identity tasks (*issued in the first creative teaching session*)

Task brief for PSTs:

Initial teacher identity task

'You may have an idea of what your ideals will be as a teacher in the future. These qualities and values that you aim to develop could be called your 'teacher identity'. These are likely to match your understanding of a teacher's role.

Consider this question:

'What kind of teacher do you wish to be?'

Note ideas for your ideal 'teacher identity' down on the template that accompanies this presentation (e.g. this can be an annotated drawing of yourself in the teacher role).

We will discuss the following aspects in the session:

- *Why it is important to have an in-depth understanding of our ideals as we develop as teachers, and where these ideals come from.*
- *Whether these ideals are fixed, or will these change over time.'*

Ongoing teacher identity task

'Each week on the PGCE course, take time to think about the development of your ideas on your journey as you become a teacher. Look at your teacher identity diagram and reflect on these questions:

- *What has changed, and what has influenced the change?*
- *Are some aspects more prominent than others at certain times?*
- *How do the different strands of your identity complement each other?*
- *Do any strands clash and can you resolve this?*
- *Do you feel there are any limitations on aspects of your teacher identity?*

Aim to annotate your teacher identity diagram with updates each week.'

Figure 7.11 A Theme 3 task - Teacher identity

An ongoing self-reflective journal task was designed to support PSTs' in-depth analyses of their teacher identities, summarised in Figure 7.12.

Self-reflective journal task

⁷⁰ For example, in Phase 1 interviews, PSTs who described 'The Engager' creative teaching approach focused on using their creative teaching approach to plan isolated lessons, with no explicit reference to a teacher's adaptability within the lesson.

Task brief for PSTs:

'Think about your views of teaching and learning, and the learning environment. Reflect upon the following questions:

- *Are your ideas changing?*
- *Why are these changes occurring?*
- *What are the influences?*
- *How do you feel about the changes?*

Record your thoughts in a format of your choice, for example - a diary, a blog, a learning log, an emotions graph. Be prepared to share your record with your peers and tutor.'

Figure 7.12 A Theme 3 task - Self-reflective journal

PSTs were introduced to Mezirow's 10-step process for transformative learning (Chapter 4, Figure 4.1) through the task summarised in Figure 7.13.

An introduction to Mezirow's 10-step process for transformative learning**Task explanation:**

PSTs were introduced to Mezirow's 10-step process for transformative learning (Mezirow, 2000), by choosing and reflecting on one example of change they had experienced as a developing teacher so far on the PGCE course. PSTs responded to the following questions, after four weeks of PGCE course input:

- *'What has developed or changed for you? (this can be an ongoing development)*
- *What has influenced this change? (there may be more than one influence)*
- *How do you feel about the change, and why do you feel like this?*
- *What are your next steps or questions, linked to this change?*
- *Would you call this change 'a disorientating dilemma', or not?'*

Figure 7.13 A Theme 3 task - Introductory task to Mezirow's 10-step process for transformative learning

What was not included in the creative teaching package Strong subject knowledge was raised by most PSTs in Phase 1's interviews, as a requirement for developing creative teaching approaches, and this was also evident in the literature review. This essential teaching attribute was a main priority for all aspects of the PGCE course, which included in-depth subject knowledge-specific sessions. Therefore, this was not a specific focus in the creative teaching package. Aligning with this, the development of PSTs' Creative Pedagogical Domain Knowledge (CPDK) (discussed in Chapter 3) was also not a main focus of the creative teaching package, due to time limitations and its strong links to subject-specific knowledge (Beghetto, 2017). The PSTs' abilities to apply creative teaching approaches to a range of subjects taught in primary education was monitored in the outcomes of the creative teaching package.

7.2.4 The training procedure

The creative teaching package was delivered by two tutors on the PGCE course, with the lead tutor being this project's researcher. The creative teaching package was only a part of the overall PGCE course, which aimed for a curriculum of inter-connected input (an overview of the PGCE course contents is in Appendix M). There was no specific creativity module in the PGCE course prior to the implementation of the creative teaching package. The package was allocated 35 hours (five sessions, plus self-study tasks) dispersed through the first term of the course, shown in the following PGCE course's timeline for Iteration 1:

- **September – December:** University-based input only (*including all creative teaching input*)
- **January-June:** School-based teaching placements only

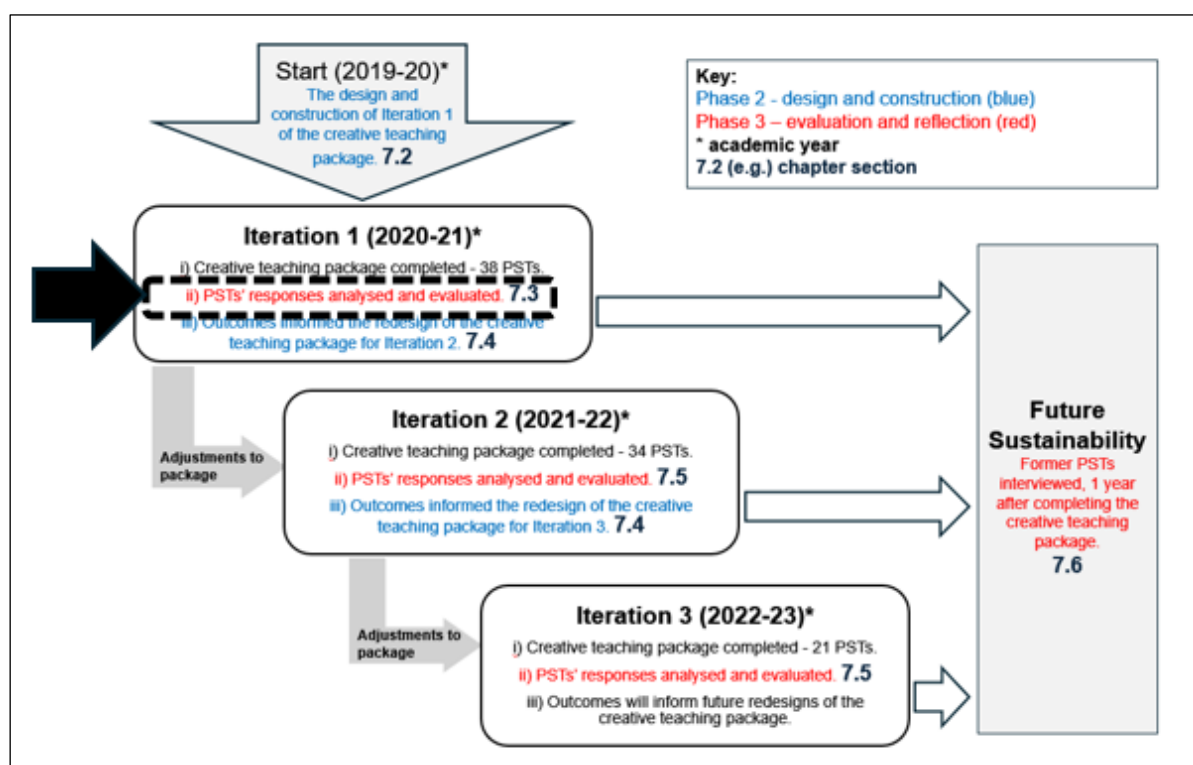
The creative teaching package was taught using online platforms for Iteration 1, due to Covid-19 – related restrictions that had been placed on the PGCE course. The structure for each online session comprised:

- Pre-tasks – interactive online presentations, with self-study task sheets to submit using online submission portals;
- Live online teaching and discussions with tutors and peers;
- Follow-up self-reflective journal tasks.

The tutors chose examples from the pre-task submissions for discussion at the live online sessions, with the PSTs' consent and input. The structure of the sessions enabled the PSTs to consider and revisit their ideas about creative teaching through a cycle of self-study, discussion with peers and tutors, and a return to self-study to adjust their understanding according to others' input and perspectives (Nicol, 2014).


The creative teaching package was introduced to school partners and tutors as part of the PGCE course's curriculum at the beginning of the academic year, to strengthen its application to all aspects of the PGCE course, including the school placements.

7.3 Evaluation of the creative teaching package Iteration 1 (Phase 3)



Overview of 7.3

Section 7.3 explains how the creative teaching package, Iteration 1, was evaluated in Phase 3 of the project. This investigates its influence on PSTs' professional developments of creative teaching skills and values, by:

- presenting data analysis outcomes of PSTs' responses to creative teaching package tasks;
- analysing PSTs' application of creative teaching skills to school-based contexts;
- considering the development of PSTs' creative teaching values, in relation to completing the creative teaching package;
- comparing Iteration 1 PSTs' outcomes to a similar cohort of PSTs, who had not completed the creative teaching package, at points relevant to the project;
- considering aspects for the improvement of Iterations 2 and 3 of the creative teaching package, based on Findings from Iteration 1 ( indicates aspects for improvement).

Summary of outcomes:

Evidence from multiple data sources provided strong indications of the beneficial influence of the creative teaching package on Iteration 1 PSTs' professional developments (creative teaching skills and values).

Several areas for the improvement of the creative teaching package for Iterations 2 and 3 were identified.

7.3.1 Research overview for RQ3 and RQ4

Research aims and questions Phase 3 of this project aimed to investigate how the creative teaching package influenced PSTs' professional developments, through a process of evaluation of and reflection on data analysis outcomes of the creative teaching package. The creative teaching package aimed to develop the PSTs' creative teaching skills and values, therefore the following research questions were investigated in Phase 3:

RQ3: How did the creative teaching package influence the PSTs' professional developments? (two parts):

-RQ3a) How did the PSTs develop their creative teaching skills?

-RQ3b) How did the PSTs develop their creative teaching values?

The evaluation and reflection process also considered aspects for development for Iterations 2 and 3 of the creative teaching package, through the following research question:

RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?

Sources informing the evaluation and reflection process

Participants Data from the creative teaching package were analysed from 38 PST volunteer participants⁷¹ out of a cohort of 58 PSTs. Characteristics of the participant PSTs were compared with the entire cohort. The results (in Appendix N) demonstrated that the participant group's characteristics were representative of the cohort.

A 'Comparison Group'⁷² of 49 PSTs was identified, to enable a comparison of data between the PSTs who completed the creative teaching package (Iteration 1 PSTs) with those who had not (the Comparison Group) (Cohen et al., 2018). The PSTs in the Comparison Group completed the PGCE course in the year prior to the introduction of the creative teaching package. The characteristics of the Comparison Group are provided in Appendix N - this shows that the characteristics of the PSTs who did not complete the creative teaching package were very similar to the characteristics of the PSTs who did complete the creative

⁷¹ All PGCE PSTs in each cohort were required to complete the creative teaching package; the volunteer participants consented to their data being used in the project.

⁷² 'Comparison' is understood as PSTs who had not completed the new creative teaching package, due to their teacher training programme being completed before its introduction (rather than it being deliberately withheld). Data from the PST PGCE cohort from 2019-20 was used for comparison purposes. Comparable data were not available for every data set analysed and this is explained in the Findings below.

teaching package, strengthening the likelihood of any changes noted in the Findings below being due to the creative teaching package rather than cohort differences.

All cohorts of PST participants, including the Comparison Group, experienced a PGCE programme of similar content, with the exception of the addition of the creative teaching package. Although the content of the PGCE courses remained largely the same for the four years, it was expected that PSTs would gain different experiences in schools due to the different contexts, priorities, and values of each school system. Therefore, comparisons are reported with caution, being mindful that other factors may have influenced the PSTs' professional developments.

Data sources The creative teaching package outcomes generated a large quantity of potential data for this project. Data were selected using the following criteria:

- data best suited to the purpose of the data analysis (the RQs);
- full data sets;
- data providing in-depth analysis opportunities.

The data sources comprised Iteration 1 PSTs' written responses to tasks, evaluations and questionnaires built into the creative teaching package, and analyses of PSTs' lesson evaluations from teaching placements. Data were analysed using quantitative and qualitative methods, demonstrated in each section of Findings below. The results from quantitative statistical analysis of emerging patterns in large data sets were investigated using qualitative methods, to strengthen the evidence by providing illustrative in-depth examples (Biesta, 2021; Cohen et al., 2018). PSTs' written responses and evaluations to the creative teaching package were analysed using qualitative content analysis methods, including the use of coding templates, to identify common themes, patterns and any differences (Bryman, 2016; Flick, 2018). Specific data sources are explained below, as each research question is addressed.

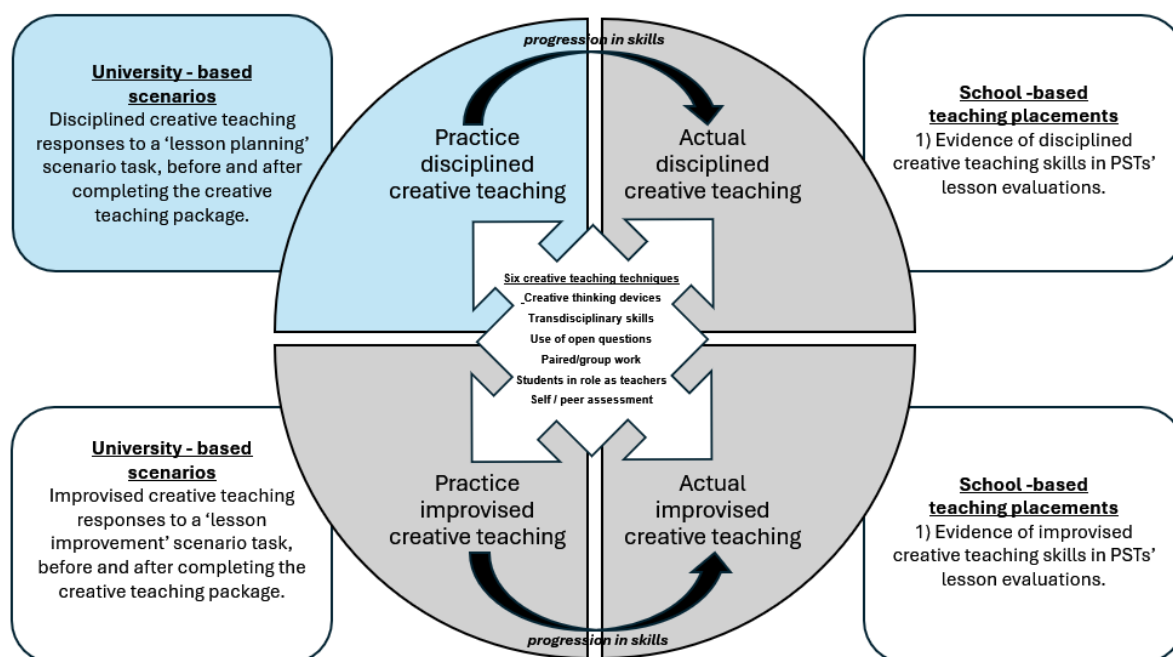
7.3.2 Findings: RQ3a) How did the PSTs develop their creative teaching skills?

To investigate how PSTs developed their creative teaching skills through the creative teaching package, a selection of PSTs' task responses was analysed from each of the four categories shown in the diagram in Figure 7.8⁷³. Accordingly, the findings below consider PSTs' development of creative teaching skills, firstly in university-based practice scenarios of

⁷³ To guide the Findings, this model will be inserted below, with the relevant section for consideration highlighted in blue.

the creative teaching package, followed by applying the skills to school-based teaching placements.

7.3.2.1 Practice disciplined creative teaching



There was evidence that the PSTs developed their use of disciplined creative teaching skills in practice scenario contexts, exemplified below.

The 38 PSTs completed the 'science lesson planning' scenario task (described in Figure 7.10). A statistical analysis compared PSTs' use of creative teaching techniques in the lesson plans before they undertook the creative teaching package (Lesson 1) with their use of creative teaching techniques after completing the creative teaching package (Lesson 2). The results are summarised in Table 7.6, providing evidence of statistically significant increases for the PSTs' use of all creative teaching techniques following the completion of the creative teaching package, except for 'use of open questions'.

Table 7.6 A statistical comparison of creative teaching techniques used by PSTs in Iteration 1 in lesson plan design, before and after completing the creative teaching package

Creative teaching techniques in lesson plans (3 main techniques in bold font)	% of PSTs' science lesson plans that included the technique (n=38)		P-value significance at $p < .05$ (χ^2 test with 1 df)
	Lesson Plan 1 (before the creative teaching package)	Lesson Plan 2 (after the creative teaching package)	
Creative thinking devices	32%	84%	$\chi^2 (1, N = 38) = 21.59, p < .001$ statistically significant increase

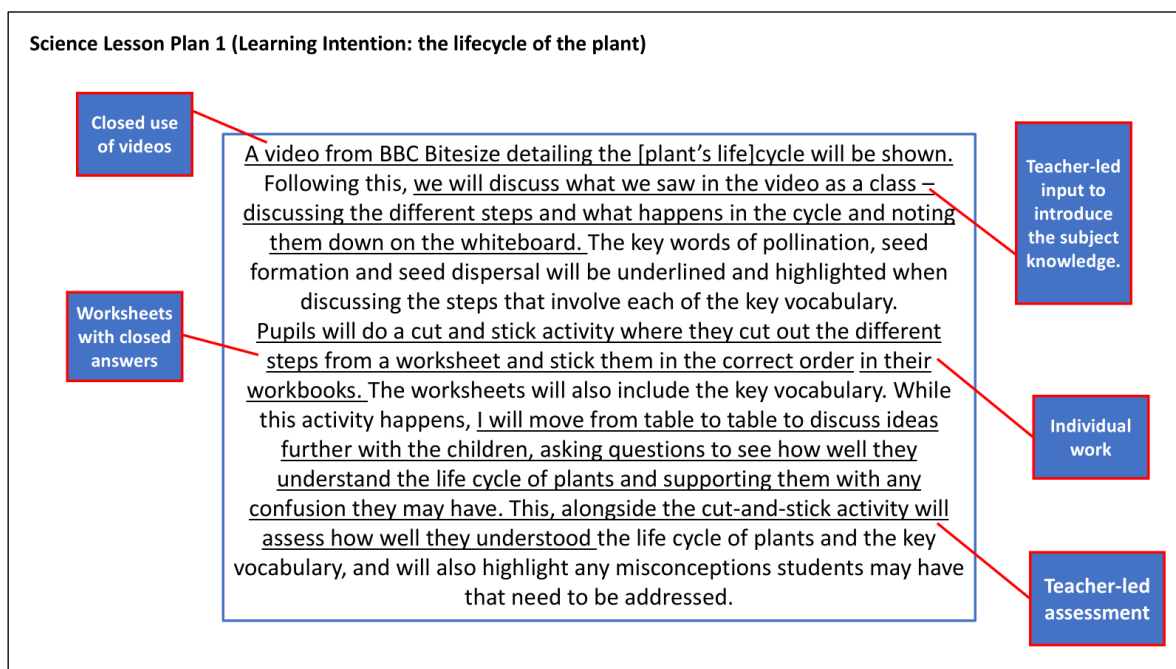
Transdisciplinary creative teaching skills	21%	61%	$\chi^2 (1, N = 38) = 12.26, p < .001$ statistically significant increase
Use of open questions	11%	26%	$\chi^2 (1, N = 38) = 3.15, p = .0758$ no statistically significant change
Paired/group work	39%	84%	$\chi^2 (1, N = 38) = 16.11, p < .001$ statistically significant increase
Students in role as teachers	11%	47%	$\chi^2 (1, N = 38) = 12.54, p < .001$ statistically significant increase
Self / peer assessment	11%	50%	$\chi^2 (1, N = 38) = 14.03, p < .001$ statistically significant increase

The number of closed teaching techniques used (indicating a non-creative teaching approach) was also compared between Lesson Plan 1 and Lesson Plan 2. There was evidence of a statistically significant decrease in the use of the following techniques (a χ^2 test with 1 df returned $p < .001$ for each technique):

- Teacher-led input to introduce the subject knowledge;
- Closed use of video resources;
- Worksheets with closed questions;
- Individual work;
- Teacher-led assessment.

Lesson plan examples produced by one PST in Figure 7.14 exemplify the six creative teaching techniques in Table 7.6 (PST's Lesson Plan 2) and the non-creative teaching techniques in the list above (PST's Lesson Plan 1).

Lesson Plan 1, completed before the creative teaching package, annotated with non-creative teaching techniques



Lesson Plan 2, completed after the creative teaching package, annotated with creative teaching techniques

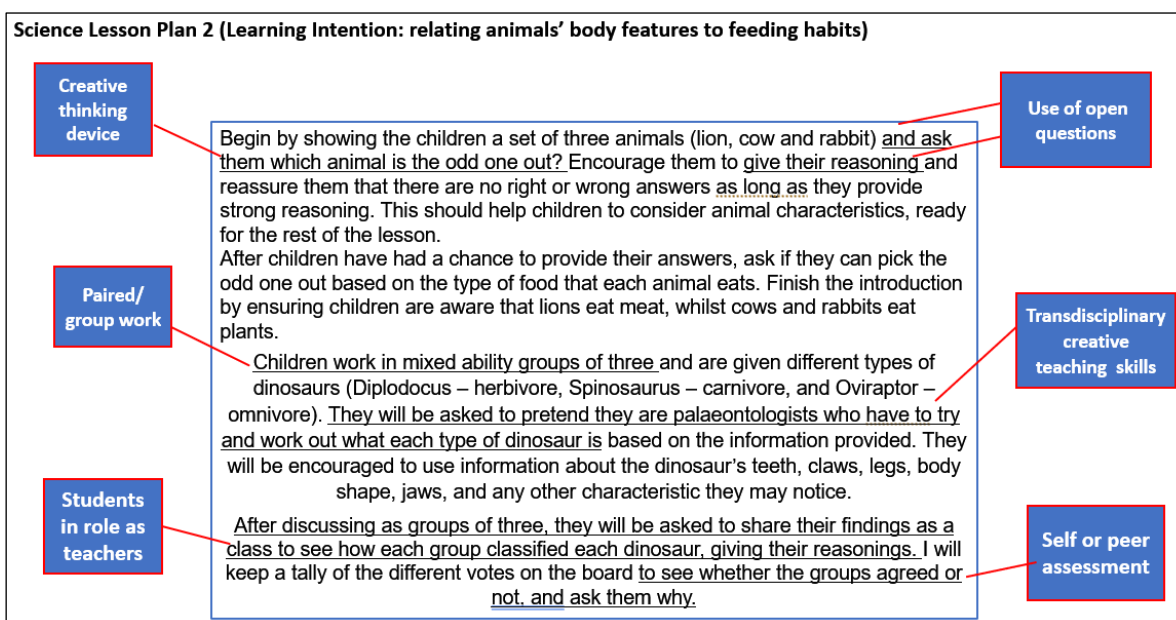


Figure 7.14 Lesson Plan 1 and Lesson Plan 2 produced by 1 PST, exemplifying disciplined creative and non-creative teaching techniques

The 49 PSTs in the Comparison Group (who had not completed the creative teaching package) completed a similar science lesson planning task at the beginning and end of Term 1 of their PGCE course. The same statistical analysis method (χ^2 test with 1 df) was applied to their science lesson plans, to identify any statistically significant differences in the PSTs' use of creative teaching techniques. For the six creative teaching techniques listed in Table 7.6, the results ranged from $p = .32$ to $p = 1.00$, suggesting that there was no statistically significant increase in the use of these creative teaching techniques by the Comparison Group.

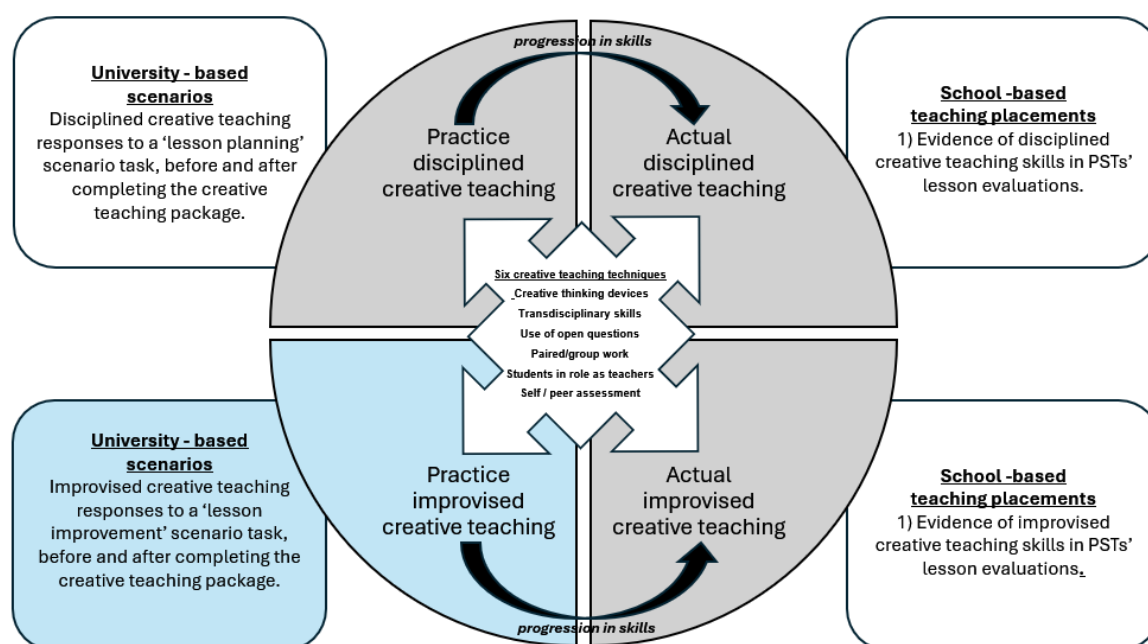
The number of closed teaching techniques (indicating a non-creative teaching approach) was also compared between Lesson Plan 1 and Lesson Plan 2 for the Comparison Group. The results suggested that there was evidence of a statistically significant decrease in one non-creative teaching technique (a χ^2 test with 1 df returned $p < .001$ for the use of worksheets with closed questions). There was no evidence of a statistically significant decrease for the four other non-creative teaching techniques listed above.

Based on the outcomes in Table 7.6, the following improvements for the creative teaching package for Iterations 2 and 3 were identified:

➡ use of open questions;

➡ use of transdisciplinary creative teaching skills (although this had experienced a statistically significant increase before and after the completion of the creative teaching package, tutors felt the PSTs' score of 61% could be improved, as this had been identified as a main creative teaching technique for focus in the creative teaching package).

7.3.2.2 Practice improvised creative teaching



There was evidence that Iteration 1 PSTs developed their use of improvised creative teaching skills in practice scenario contexts, with the findings below being similar to those for practice disciplined creative teaching above. The 38 PSTs completed the 'in-lesson adaptations' scenario task (described in Figure 7.9). A statistical analysis compared the PSTs' use of creative teaching techniques to suggest in-lesson adaptations for a video of a teacher leading a primary science lesson before they undertook the creative teaching package (Response 1) with their use of creative teaching techniques after completing the creative teaching package (Response 2). The results are summarised in Table 7.7, providing evidence of statistically significant increases for the PSTs' use of all creative teaching techniques following the completion of the creative teaching package, except for 'use of open questions'.

Table 7.7 A statistical comparison of creative teaching techniques used by PSTs in Iteration 1 for an in-lesson adaptations scenario, before and after completing the creative teaching package

Creative teaching techniques (3 main techniques in bold font)	% of PSTs' responses that included the technique (n=38)		P-value significance at $p < .05$ (χ^2 test with 1 df)
	Response 1 (before the creative teaching package)	Response 2 (after the creative teaching package)	
Creative thinking devices	16%	71%	$\chi^2 (1, N = 38) = 23.61, p < .001$ statistically significant increase

Creative teaching techniques (3 main techniques in bold font)	% of PSTs' responses that included the technique (n=38)		P-value significance at $p < .05$ (χ^2 test with 1 df)
	Response 1 (before the creative teaching package)	Response 2 (after the creative teaching package)	
Transdisciplinary creative teaching skills	11%	55%	$\chi^2 (1, N = 38) = 17.22, p < .001$ statistically significant increase
Use of open questions	16%	29%	$\chi^2 (1, N = 38) = 1.89, p = .1687$ no statistically significant change
Paired/group work	18%	61%	$\chi^2 (1, N = 38) = 8.20, p < .001$ statistically significant increase
Students in role as teachers	8%	58%	$\chi^2 (1, N = 38) = 21.51, p < .001$ statistically significant increase
Self / peer assessment	8%	50%	$\chi^2 (1, N = 38) = 16.37, p < .001$ statistically significant increase

The six creative teaching techniques in Table 7.7 in the list above are illustrated in the examples of PSTs' responses to the task in Figure 7.15.

use of open questions

'The activity could be paused for a mini-plenary, to question the groups about what they thought might happen, and to then ask them an open question: "What might happen if they did their test differently? What might they change and why?".'

creative thinking device

self/peer assessment

'Some children perhaps needed more help with understanding that plants take water through their roots, not leaves, 'sucking the water up'. This could be modelled using the analogy of drinking straws and water.'

Transdisciplinary creative teaching skills

students in role as teachers

'The children could peer-assess the efficacy of each group's experiments, and offer suggestions for improvement, as some were less engaged when each group was feeding back to the class. I think giving children a level of ownership of the lesson is worthwhile because it requires deeper engagement.'

paired/group work

'They were already working in groups – but some weren't as engaged as the groups were quite large. I suggest that some might benefit more from working in a pair, so they would have to contribute and couldn't sit back.'

(Three PSTs' responses from Iteration 1)

Figure 7.15 Response 2 to the in-lesson adaptations scenario, produced by three PSTs

There was no Comparison Group data due to the in-lesson adaptations scenario tasks being specifically designed for the creative teaching package.

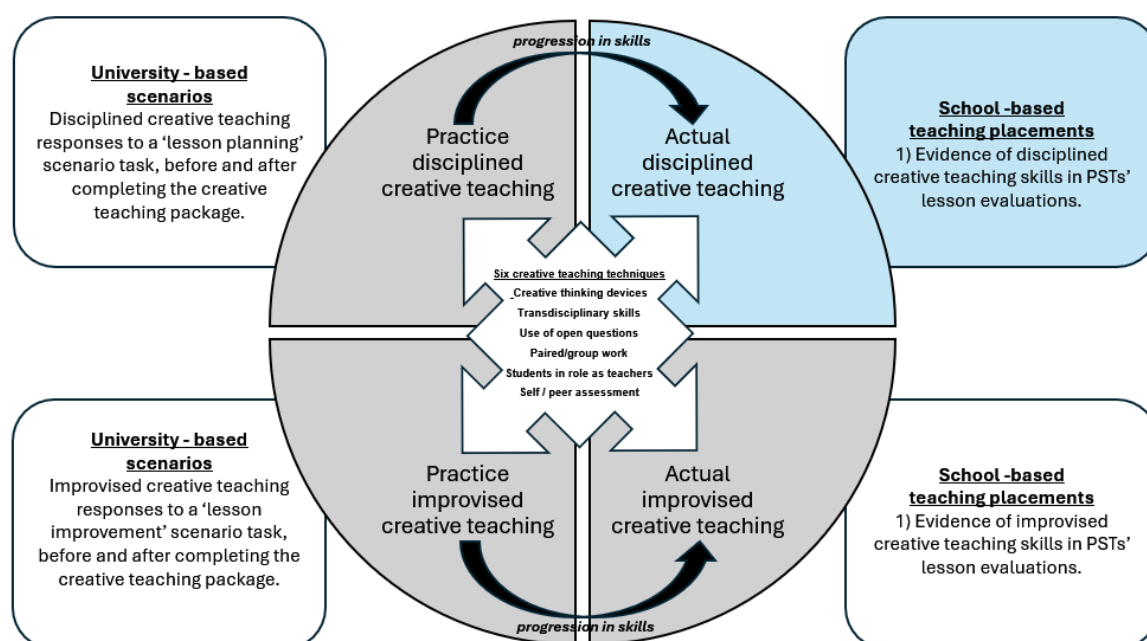
Based on the outcomes in Table 7.7, the following improvements for the creative teaching package for Iterations 2 and 3 were identified:

➡ use of open questions;

➡ use of transdisciplinary creative teaching skills (although this had experienced a statistically significant increase before and after the completion of the creative teaching package, tutors felt the PSTs' score of 55% could be improved, as this had been identified as a main creative teaching technique for focus in the creative teaching package).

The data so far has provided evidence of PSTs' potential creative teaching skills, in practice university-based scenario contexts. The next set of Findings analysed data from Iteration 1, to provide evidence of PSTs' actual creative teaching skills in school-based contexts.

7.3.2.3 Actual disciplined creative teaching



There was evidence that Iteration 1 PSTs applied the disciplined creative teaching skills they had developed in the university-based scenarios, to school-based teaching placement contexts. This was demonstrated in an analysis of PSTs' uses of disciplined creative teaching skills in lesson evaluations.

Analysis of PSTs' lesson evaluations taken from teaching placement records identified the frequency of PSTs' uses of the three main creative teaching techniques (creative thinking devices; transdisciplinary creative teaching skills and open questions). This use was in a disciplined creative teaching context because PSTs suggested ideas at the lesson-planning stage, to adapt a previously taught lesson for future use⁷⁴. These ideas had to be a specific solution to a problem (an adaptation of value), for example:

'When I marked the work, I saw that a lot of students were still struggling to identify the properties of each 2D shape. Next time, I would make my [mathematics] 'starter' longer, giving each pair three shapes instead of one. I would hand the learning over to them and challenge them using some open questions to find all the differences possible between their shapes. A pair can then hide a shape in a bag, and the class can ask them yes/no questions to guess what the shape is.'

(extract from one PST's written evaluation of a lesson)

⁷⁴ To judge the value of the PSTs' evaluations, ideas for adaptations were checked against the school mentor's feedback comments: only those that were agreed by the mentor were included in the data.

A sample⁷⁵ of 20 PSTs' lesson evaluations was selected randomly at the mid-point of teaching placement 1⁷⁶ and the number of suggested adaptations recorded. The results were compared with a sample of 20 lesson evaluations from the Comparison Group, shown in Figure 7.16.

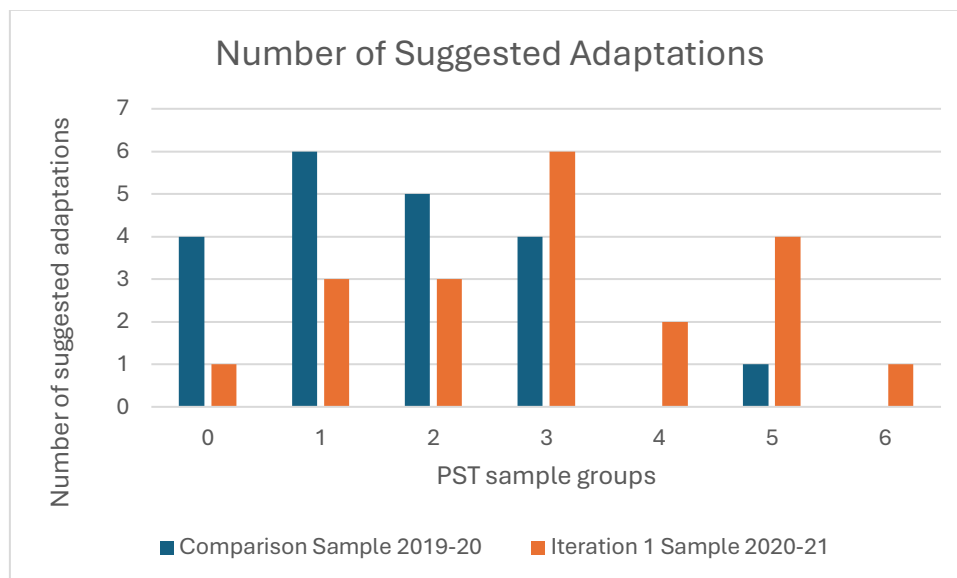


Figure 7.16 A graph showing the number of suggested adaptations in PSTs' lesson evaluations (Iteration 1 and Comparison Group samples: $n=20$)

A statistical data analysis method was applied to compare the number of suggested adaptations between the two samples. The results in Table 7.8 show that the number of suggested adaptations using disciplined creative teaching skills was statistically significantly higher for the Iteration 1 sample compared with the Comparison Group sample.

Table 7.8 A statistical comparison of the number of suggested adaptations using disciplined creative teaching skills in PSTs' lesson evaluations

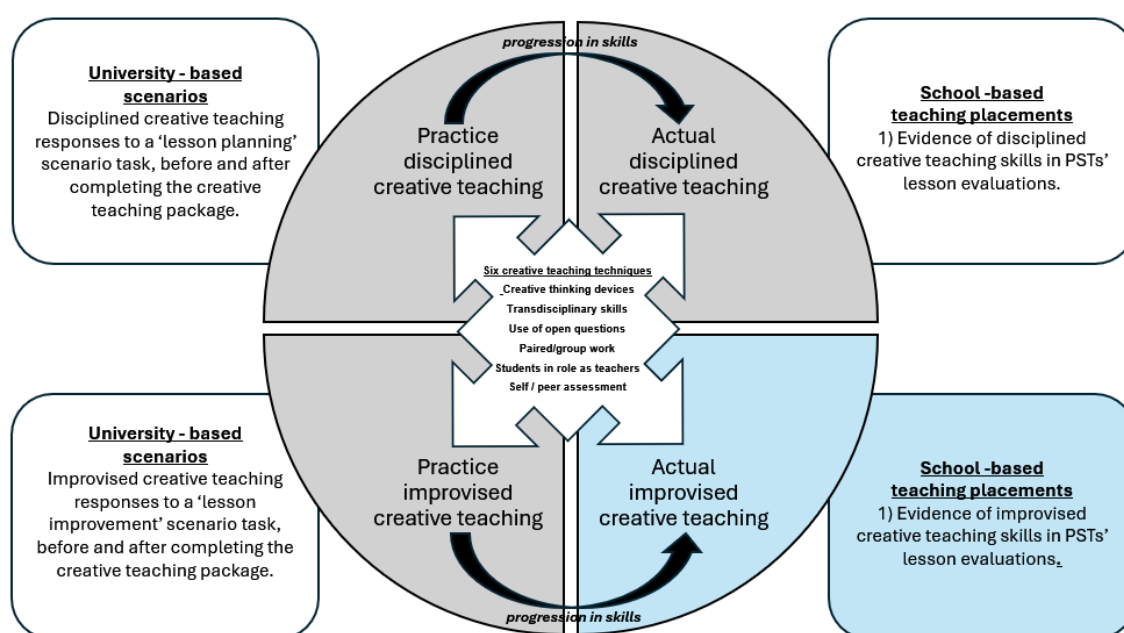
Comparison Group sample ($n=20$)	Iteration 1 sample ($n=20$)	P-value significance at $p<.05$ (<i>T</i> -test for two independent means)	Effect size (Cohen's <i>d</i>)
Mean = 1.65 Standard Deviation = 1.31	Mean = 3.05 Standard Deviation = 1.54	p -value = .00492 statistically significantly higher	$d = 0.98$ large

⁷⁵ A sample was chosen for efficient data analysis purposes. A random number generator was used to produce a random sample.

⁷⁶ This was the earliest point after completion of the creative teaching package, aiming to minimise the influence of other factors. The sample comprised either English, mathematics or science lessons, as these were the only subjects taught by PSTs at this stage of the teaching placements.

Based on the outcomes in Figure 7.16, and Table 7.8, PSTs demonstrated greater use of disciplined creative teaching techniques for suggested adaptations to lesson plans in their post-lesson evaluations, compared with the Comparison Group. This would also be monitored in the PST groups for Iterations 2 and 3.

7.3.2.4 Actual improvised creative teaching



There was some evidence that Iteration 1 PSTs applied the improvised creative teaching skills they had developed in the university-based scenarios, to school-based teaching placement contexts. This was demonstrated in the analysis of PSTs' uses of improvised creative teaching skills in lesson evaluations.

In common with the data collection for disciplined creative teaching described above in 7.3.2.3, analysis of PSTs' lesson evaluations taken from teaching placement records identified the frequency of PSTs' uses of the three main creative teaching techniques in an improvised creative teaching context. For this improvised creative teaching focus, PSTs explained their in-lesson adjustments, enacted in a taught lesson. These ideas had to be a specific solution to a problem (an adaptation of value), for example:

"[In the creative writing lesson] I noticed that some children had rushed ahead, writing a lot and neglecting punctuation. I stopped the class, and pretended I had done this too. I read out my work without taking a breath (to show them there is a reason why we use full stops), showed them my work, and asked them what they thought of it. I asked them for advice! They told me that I needed to put some commas, capital letters and full stops in."

(extract from one PST's written evaluation of a lesson)

Using the same method as in section 7.3.2.3, a sample of 20 PSTs' lesson evaluations were selected randomly at the mid-point of teaching placement 1, and the number of PSTs' in-

lesson adaptations was recorded. The results were compared with a sample of 20 lesson evaluations from the Comparison Group, shown in Figure 7.17.

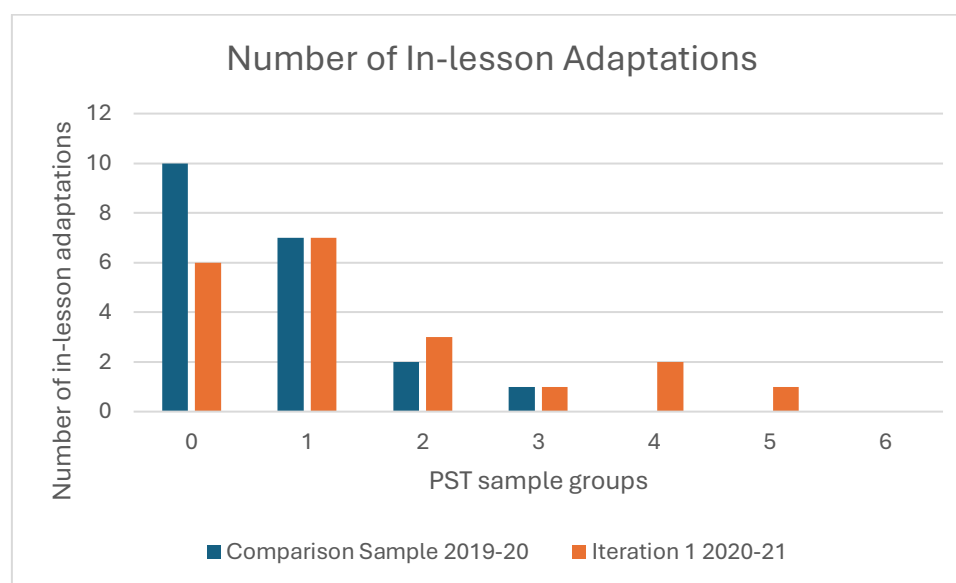


Figure 7.17 A graph showing the number of in-lesson adaptations in PSTs' lesson evaluations (Iteration 1 and Comparison Group samples $n=20$)

A statistical data analysis method was applied to compare the number of suggested adaptations between the two samples. The results are in Table 7.9.

Table 7.9 A statistical comparison of the number of in-lesson adaptations using improvised creative teaching skills in PSTs' lesson evaluations

Comparison Group sample ($n=20$)	Iteration 1 sample ($n=20$)	P-value significance at $p<.05$ (<i>T</i> -test for two independent means)	Effect size (Cohen's <i>d</i>)
Mean = 0.7 Standard Deviation = 0.86	Mean = 1.45 Standard Deviation = 1.50	p -value = .0606 no statistically significant change	$d = 0.61$ medium

Table 7.9 shows that the mean number of in-lesson adaptations was higher for the Iteration 1 sample compared with the Comparison Group sample, but this difference was not statistically significant. The results for Iteration 1 were compared with the number of suggested adaptations by Iteration 1 PSTs in a disciplined creative teaching context (Figure 7.16); only seven PSTs noted more than one improvised in-lesson adaptation, compared with 16 PSTs who suggested more than one disciplined adaptation.

➡ Based on the outcomes in Figure 7.17 and Table 7.9, improvised in-lesson adaptations was an area for greater focus in the creative teaching package for Iterations 2 and 3.

7.3.3 Findings: RQ3b) How did the PSTs develop their creative teaching values?

The findings above for RQ3a) provided evidence that PSTs had successfully developed some creative teaching skills, although there were areas identified for improvements, in Iterations 2 and 3 of the creative teaching package. RQ3b) investigated the extent to which Iteration 1 PSTs valued a creative teaching approach, within their teacher identities. The following findings consider:

- The position of creative teaching in PSTs' teacher identities;
- How creative teaching was perceived by PSTs by the end of the creative teaching package;
- The importance and achievability of creative teaching for PSTs.

Four data sources, related to the developments of PSTs' teacher identities, were used to analyse PSTs' creative teaching values:

- Written responses to the teacher identity task (described in Figure 7.11) , completed before and after the creative teaching package;
- PSTs' reflective journal entries (described in Figure 7.12);
- Written responses to questions about professional development changes (described in Figure 7.13);
- Results from a questionnaire asking: 'What does creative teaching mean to you?' (relating to the categories of creative teaching from Phase 1 of the research).

There was strong evidence that the Iteration 1 PSTs developed their creative teaching values through their completion of the creative teaching package, demonstrated in the Findings below.

The position of creative teaching in PSTs' teacher identities The PSTs described their teacher identities through a written response to the question: '*What kind of teacher do you wish to be?*' at the beginning of the PGCE course. They revisited this question after completing the creative teaching package, by adjusting their written responses and describing the influences on those adjustments. Figure 7.18 compares results for Iteration 1 PSTs (n=38) with the Comparison Group (n=49), regarding inclusion of the term 'creative'⁷⁷ as an ideal quality for their teacher identities at the beginning and end of term 1 of the PGCE course.

⁷⁷ The term 'creative' had to be in the context of the teacher's creativity, rather than the students.

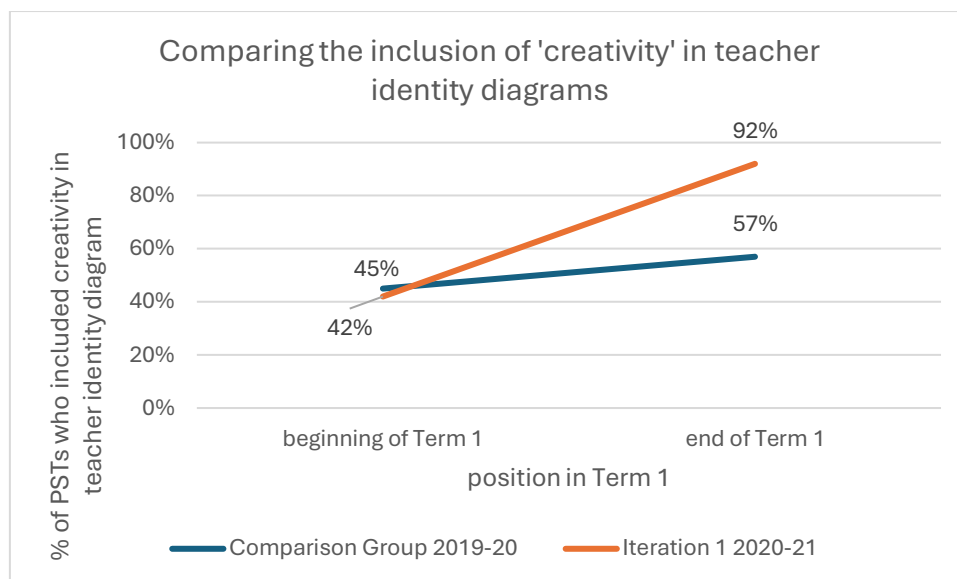
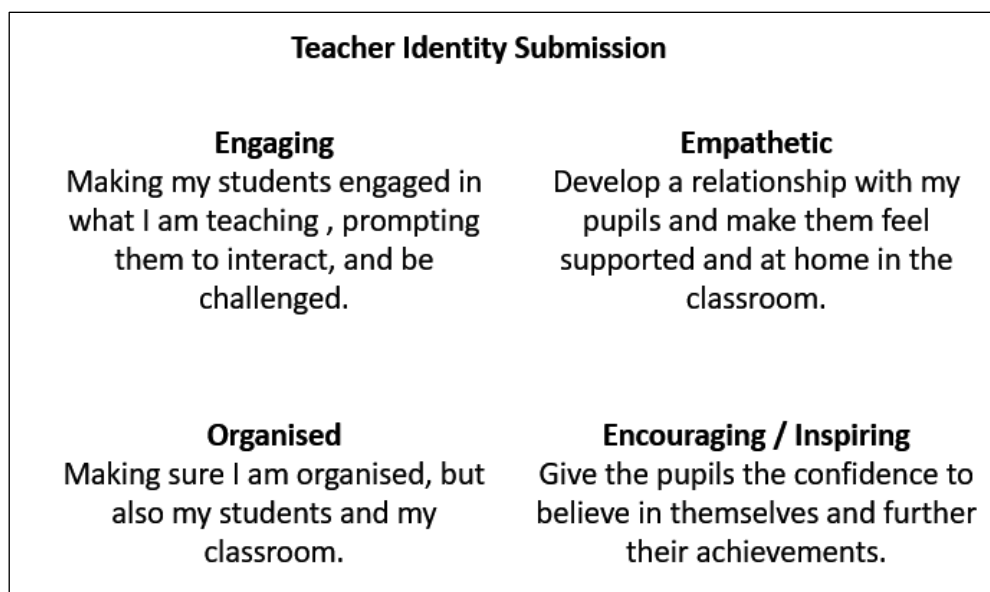


Figure 7.18 A graph to compare PST's inclusion of 'creativity' in teacher identity diagrams, at the beginning and end of Term 1 (Iteration 1 compared with the Comparison Group)

There was a statistically significant increase in the inclusion of creativity in the teacher identities of PSTs following the completion of the creative teaching package, both compared with their results at the beginning of the programme and compared with the Comparison Group's results at the end of Term 1 (both χ^2 tests with 1 df returned $p < .001$). This is exemplified in one Iteration 1 PST's teacher identity diagrams - before and after completing the creative teaching package - in Figure 7.19.

Before the creative teaching package:

No explicit references to creative teaching



After the creative teaching package:

Explicit references to creative teaching (marked with a circle)

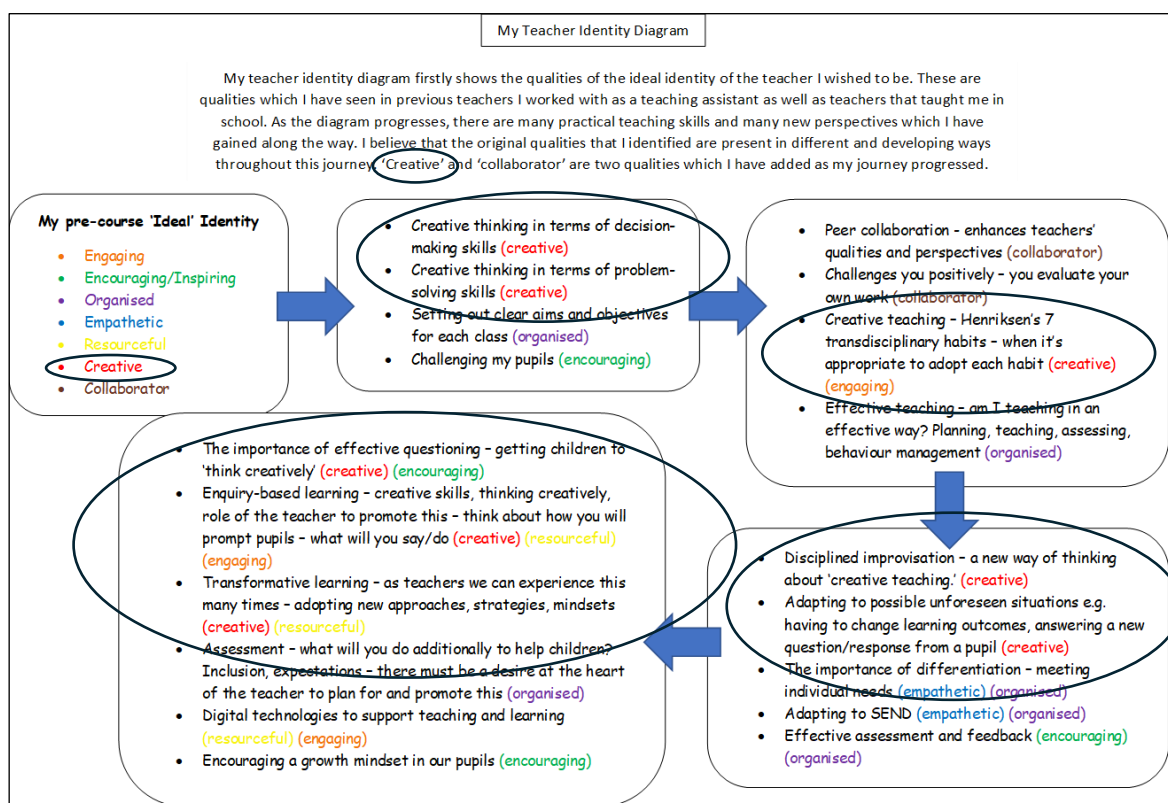


Figure 7.19 Examples of one PST's teacher identity diagrams, before and after the creative teaching package

There was a large increase in the frequency of common vocabulary and themes⁷⁸ associated with creative teaching used in the teacher identity descriptions by the Iteration 1 PSTs (22 occurrences before the creative teaching package compared with 84 occurrences after the package was completed). 84% of the PSTs' teacher identity responses after completing the creative teaching package also made explicit reference to at least one of the transdisciplinary creative thinking skills (Henriksen, 2016), for example:

'I want to ensure that I always think from the point of view of the pupils, using an embodied thinking approach. I need to think how an activity will come across to them, to ensure that it actually meets the objective and is engaging.'

42% of Iteration 1 PSTs included creative teaching in both teacher identity diagrams. There was evidence that these PSTs demonstrated a greater understanding of creative teaching in their revised teacher identities, after completing the creative teaching package. For example, before the creative teaching package, a PST described her understanding of creative teaching as:

'Being flexible and adaptable when things aren't going to plan.'

After completing the creative teaching package, the same PST's description of creative teaching had a greater depth, with evidence of creative teaching being a conscious and deliberate decision-making tool:

'Although disciplined and improvised creative teaching may have occurred naturally in my practice at times, by having it explicitly explained ensured that I made a conscious effort to be creative, both in planned and unplanned circumstances. This [the creative teaching package] made creative thinking go from a subconscious level (where it occurs instinctively, but perhaps with less thought and effort involved) to a conscious level (where teaching and learning opportunities are thoroughly thought about using creative thinking skills). I genuinely believe it [the creative teaching package] has allowed me to make more, and better, creative teaching choices both spontaneously and non-spontaneously.'

All 38 PSTs recognised that aspects of their teacher identities, including creative teaching, would need to be adapted, expanded or reduced according to the context of their teaching experiences, for example:

⁷⁸ The main vocabulary and themes were: creative, innovative, imaginative, disciplined improvisation, adaptable, flexible, thinking outside the box, try new things, risk, transdisciplinary skills (e.g. embodied thinking, play), spontaneous, openness.

'Some [aspects of my teacher identity] will keep going in the same direction and some will be challenged. I will realise that over time, in practice, my teacher identity attributes will look a bit different to how I initially imagined'.

'Although I feel like I have a strong understanding of a range of theories regarding the necessities of being an effective teacher, being in the classroom adds further challenges which will develop my teacher identity.'

➡ Only 37% of PSTs included informed risk-taking in their final teacher identity descriptions and diagrams, and this was identified as an area for development in Iterations 2 and 3 of the creative teaching package.

How creative teaching was perceived by PSTs by the end of the creative teaching package The Iteration 1 PSTs' perceptions of the relevance of the five PST creative teaching categories produced in Phase 1, were explored after they had completed the creative teaching package. This provided an indication of the types of creative teaching approach that were becoming part of their teacher identities and influencing their professional developments. PSTs were asked in a questionnaire:

'To what extent do you identify with these five descriptions of creative teaching?'

at the end of the creative teaching input. Following the same questionnaire process described in Phase 1 (Chapter 6, section 6.2.5), PSTs ranked how much they related to each category, using a scale from 0 (not at all like me) to 5 (very much like me). A statistical comparison of Iteration 1 PSTs' mean outcomes with the Comparison Group's outcomes could provide an indication of the creative teaching package's influence on PSTs' teacher identities, shown in Table 7.10.

Table 7.10 A comparison of Iteration 1 and the Comparison Group's responses to the question 'To what extent do you identify with these five descriptions of creative teaching?'

Creative teaching categories (Phase 1)	Comparison Group PSTs (N=49)	Iteration 1 PSTs (N=38)	Comparison of the results: P-value significance at $p<.05$	Effect size (Cohen's d)
	Mean Score (M) and Standard Deviation (SD)		(T -test for two independent means)	
The Engager	$M = 3.22$ $SD = 1.12$	$M = 3.89$ $SD = 0.92$	p -value = .003772 statistically significant increase	$d = 0.65$ medium
The Responder	$M = 3.40$ $SD = 1.08$	$M = 3.82$ $SD = 1.06$	p -value= .081949 no statistically significant difference	$d = 0.39$ small
The Adapter	$M = 3.73$ $SD = 0.86$	$M = 4.07$ $SD = 0.91$	p -value = .074919 no statistically significant difference	$d = 0.38$ small
The Risk-Taker	$M = 0.96$ $SD = 0.87$	$M = 0.76$ $SD = 0.99$	p -value = .329867 no statistically significant difference	$d = 0.21$ small
The Performer	$M = 1.47$ $SD = 1.04$	$M = 0.63$ $SD = 0.82$	p -value = .000104 statistically significant decrease	$d =0.90$ large

Table 7.10 shows that the Iteration 1 PSTs' ratings for The Engager category were significantly higher than the Comparison Group. The Responder and Adapter categories were also rated highly by Iteration 1 PSTs, although the mean rating was not significantly different to the Comparison Group – a point which will be considered in the Discussion (section 7.7).

The Iteration 1 PSTs' ratings for The Performer category were significantly lower than the Comparison Group, indicating that the PSTs viewed this category to be less relevant to their teacher identities, compared with the Comparison Group. An analysis of Iteration 1 PSTs' written understandings of creative teaching offered some insights into this lower rating, for example:

'Since completing the creative teaching sessions, I have changed my opinion on creativity being a performance, which I thought before starting the course. I believe now that it [creative teaching] is something I will adopt daily in my teaching, whether it is to problem solve, think imaginatively or engage students in an interesting way. It

is not about my performance, but it is adapting my ideas to improve my lessons for the pupils.'

(PST's written response)

The Iteration 1 PSTs' changes in understanding of creative teaching before and after completing the creative teaching input were also analysed through a comparison of their written responses to the question: *What is your understanding of creative teaching?* PSTs' descriptions of creative teaching were classified as describing disciplined, improvised, or both disciplined and improvised creative teaching. Table 7.11 shows large statistically significant increases in PSTs' understandings of the main themes of creative teaching, after their completion of the creative teaching input.

Table 7.11 A comparison of Iteration 1 PSTs' descriptions of creative teaching before and after completion of the creative teaching package

Understanding of creative teaching	% of PSTs' responses that included this feature (n=38)		P-value significance at $p<.05$ (χ^2 test with 1 df)	Example PST response (taken from the end of the creative teaching package)
	Before	After		
Description of <u>disciplined</u> creative teaching (aligning with The Engager)	16%	58%	$\chi^2 (1, N = 38) = 14.47$, $p<0.001$ statistically significant increase	<i>'Creative teaching means thinking imaginatively about how you present curricular content, to ensure you deliver engaging and meaningful learning to your students.'</i>
Description of <u>improvised</u> creative teaching (aligning with The Responder)	11%	50%	$\chi^2 (1, N = 38) = 14.02$, $p<0.001$ statistically significant increase	<i>'It is about thinking creatively in many different situations, such as changing your approach mid-lesson to meet a certain need, or improvising in-class responses to questions.'</i>
Description of <u>both disciplined and improvised</u> creative teaching (aligning with The Adapter)	8%	63%	$\chi^2 (1, N = 38) = 25.33$, $p<0.001$ statistically significant increase	<i>'Creative teaching is not limited to subjects or age groups. It is involved in every step of a learning experience, from planning the methods used in the lesson to delivering the learning, the content, and also the way feedback is given and the implications and outcomes.'</i>

The importance and achievability of creative teaching for the PSTs At the end of the creative teaching package, the Iteration 1 PSTs responded to the questions:

'How important do you think creative teaching is for you?'

'How achievable do you think creative teaching is for you?'

on a scale of 0 (not at all important/achievable) to 5 (very important/achievable). These questions related to PSTs' value of creative teaching in their teacher identities, because they needed to both value its importance (as a skill to invest in), and believe it to be achievable (as a skill they could develop). The PSTs' responses provided evidence of positive aspects of the creative teaching package, and also challenges for the PSTs, that could be addressed in Iterations 2 and 3 of the creative teaching package. The PSTs' ratings for importance and achievability are in Figure 7.20.

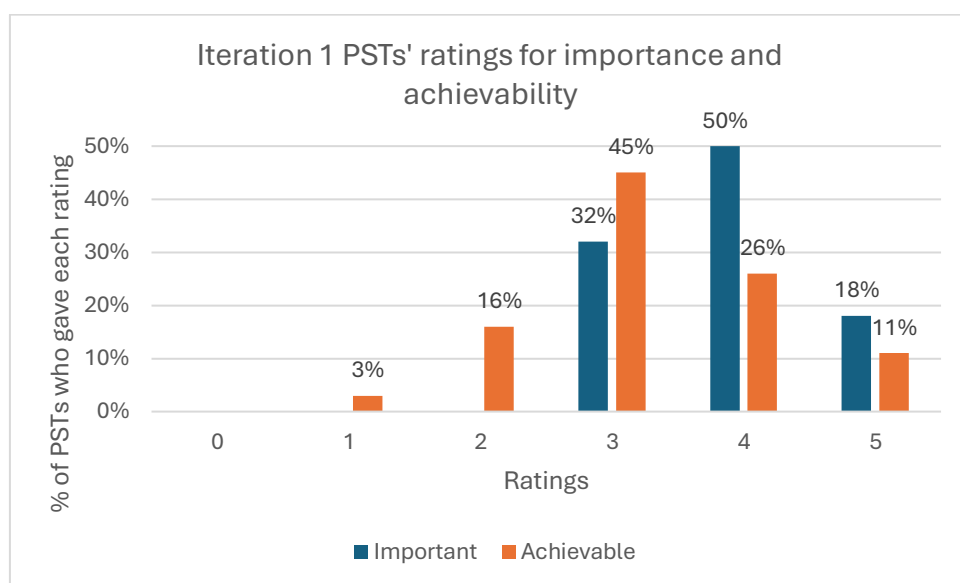


Figure 7.20 A Graph to show Iteration 1 PSTs' ratings for importance and achievability of creative teaching

The PSTs gave a mean rating of 3.87 out of 5 for the importance of a creative teaching approach. Table 7.12 summarises the main reasons given by the PSTs for the importance of creative teaching.

Table 7.12 Iteration 1 PSTs' main reasons for the importance of creative teaching

Reason	% of PSTs who included this reason (n=38)	Example quote from PSTs' written responses
Benefits focusing on teachers:		
Enables teachers to tailor the curriculum to students' needs	71%	<i>'Without creative teaching, pupils may as well learn from pre-recorded computer programs, which cannot cater to their needs and teach every lesson according to an identical template.'</i>
Enables teachers to adapt/make decisions	68%	<i>'Creative teaching means we don't just push through when something isn't working. Instead, we change and adapt.'</i>
Increases teachers' own motivation/engagement	61%	<i>'I aim to make the topics interesting for myself so I can make things interesting for the class. If I'm not interested in something, how can I expect my class to be?'</i>
Benefits focusing on students:		
Increases students' engagement	63%	<i>'Creative teaching is important to me because it keeps me thinking of new and exciting disciplined or improvised ways to engage students' learning.'</i>
Increases students' successful learning experience (knowledge, understanding, application)	60%	<i>'Without creative teaching, children are expected to all learn in the same way.'</i>

For achievability of a creative teaching approach, Iteration 1 PSTs gave a mean rating of 3.26. Three main factors enabling creative teaching to be achievable emerged in the analysis of the PSTs' data:

- Learning from others' (PSTs' and ISTs') examples;
- Trying out a creative teaching approach in the problem-based learning (scenarios) tasks;
- Being open-minded to using a creative teaching approach.

Based on evidence from the analysis of PSTs' written responses to importance and achievability, the following aspects were identified as areas requiring improvement for Iterations 2 and 3 of the creative teaching package.

➡ PSTs' responses revealed more uncertainty of the achievability of creative teaching, compared with their responses to the importance of creative teaching. There were strong indications that this uncertainty could be alleviated by incorporating a specific creative teaching task into the creative teaching package. For example:


'I understand the importance of creative teaching, but I am not sure at the moment how achievable this will be for me. I don't think I will know this until I have completed my teaching placement. The scenarios tasks were useful [in the creative teaching package], to start us off, but I now need the real experience in the classroom, and all the 'unknowns' that go with it, to know what a creative teaching approach 'feels like'.'

(PST's written response)

Some PSTs recognised the potential challenge of the school's support of creative teaching. For example:

'It [creative teaching] is something I value and have included in my teacher identity, but I would need to know that the school is supportive of this.'

(PST's written response)

 To address this concern, when asked the question: *'How could the creative teaching package be improved?'* 68% of PSTs suggested input from a current IST, giving reasons such as:

'A presentation or workshop with an experienced teacher would help me to see that creative teaching is seen as an important skill in schools at the moment, and give me more real-life examples, so I can work out how achievable it is for me.'

(PST's written response)

'I would like to hear from current teachers about the support for creative teaching in schools – is it something teachers work together to achieve?'

(PST's written response)

These aspects for improvement will be discussed further in the next section, as well as section 7.4: the redesign of the creative teaching package.

7.3.4 Findings: RQ4) Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?

The Findings presented for Iteration 1, based on an analysis of PSTs' task outcomes, and some comparisons to PSTs' task responses who had not completed the creative teaching package, indicated that the creative teaching package was a beneficial influence on PSTs' professional developments of creative teaching skills and values. The strengths of the creative teaching package in Iteration 1 will be discussed further in section 7.6 of this chapter.

The Findings indicated that the re-design of the following aspects would improve the creative teaching package for Iterations 2 and 3:

- ➡ use of open questions;
- ➡ transdisciplinary creative teaching skills;
- ➡ improvised in-lesson adaptations.

The creative teaching package would also be adjusted to improve PSTs' creative teaching values, by adding:

- ➡ a specific creative teaching task, completed on teaching placements;
- ➡ input from an experienced IST, to increase PSTs' understanding of the achievability of creative teaching (as well as continuing to focus on its importance);
- ➡ an increased focus on the value and importance of informed risk-taking.

To substantiate this evidence for RQ4, and increase its usefulness for the re-design of the creative teaching package for Iterations 2 and 3, this section investigates Iteration 1 PSTs' views of the content and structure of the creative teaching package tasks. These views were gained through the PSTs' written responses to tasks in the creative teaching package, and their written evaluations of the package. It was important to gain an understanding, from the PSTs' perspectives of the strengths of the creative teaching package, as well as the areas for improvement already identified above. Therefore, strengths highlighted by the PSTs are presented below.

Iteration 1 PSTs (n=38) responded very positively to many aspects of the creative teaching package. In their final written evaluations, 95% of PSTs rated the package as good, very good or excellent. One PST's response below exemplified the gains described by the PSTs:

'The creative teaching input introduced me to the idea of disciplined and improvised creative teaching, which I will be taking with me in my teacher identity. I would highly recommend this module and the taught concepts, as the tasks were carefully structured to build up my understanding of creative teaching, and allowed this understanding to change as I learnt more. '

Only two PSTs did not rate the creative teaching package highly. One PST stated that the creative teaching input gave "prescribed ideas about creativity" for the PSTs to use in their own practice, but most PSTs understood the unique qualities of each creative teaching act, negating this idea.

To evaluate the creative teaching input, tutors asked PSTs to identify which aspects of the creative teaching package had influenced positively their ideas about creative teaching. 82%+ of PSTs stated that each of the following aspects had been a positive influence:

Theme 1: What is creative teaching?

- Reviewing former PSTs' creative teaching vignettes (92%)
- Reviewing ISTs' creative teaching examples (89%)

Theme 2: How can I become a creative teacher?

- Scenarios tasks (92%)

Theme 3: Why should I become a creative teacher?

- Teacher identity tasks (86%)
- Self-reflective journals (82%)

All themes:

- Peer discussions (82%)
- Reviewing relevant literature (82%)

Evidence of well-designed tasks for these aspects is provided below, in findings presented by theme.

7.3.4.1 Evidence from Theme 1 – What is creative teaching?

Reviewing former PSTs' creative teaching vignettes PSTs valued reviewing filmed vignettes of former PSTs' creative teaching experiences, with three main values being identified in the PSTs' task responses:

Value 1: an increased understanding of a range of creative teaching techniques, for example:

'Creative teaching is about providing teaching experiences that allow children to engage fully with an activity and to use problem-solving skills and thinking skills to look at a topic. This may be to present a topic in a physical way (I am thinking for example of the Dance Party maths lesson or the circuits role play activity in science) or to find ways of making a topic more than simply memorising facts.'

Value 2: an increased understanding of creative teaching transdisciplinary skills, for example:

'I think if utilised correctly, each of the seven transdisciplinary skills can be used to teach creatively. For example, the teacher used both modelling and play during the Dance Party exercise, and it appears that she used a creative teaching approach very well, because the children all learnt and enjoyed the experience!'

Value 3: an increased understanding of creative teaching approaches applied to all subjects, for example:

'I have realised that creative teaching is possible in all subjects. For example, I was inspired when I learnt about a 'Maths Dance Sequence'. I felt that this was a 'breakthrough' moment for me on my teacher journey, because I realised that even a rather logical subject such as maths can lend itself to creative teaching.'

These examples demonstrated the connections the PSTs were making in these tasks between former PST's vignettes, and their own developing teaching skills, values and identities, strengthening the link between Themes 1 and 3 of the creative teaching package. For example, in 'The Dance Party' vignette task (Appendix L), PSTs were asked to consider when such an approach might or might not be suitable for classroom use. One PST considered this by asking herself questions about the teaching and learning context to help her decision-making processes:

'I think this style of teaching has to be considered alongside context: are my class in the right frame of mind for this active style of teaching today? Is the unit of work right for it, or would another approach introduce the concept in a clearer way? I would also be conscious of my differentiated groups; some may love every lesson to be like this - but others may prefer a different approach. I am a huge advocate for creative teaching, but I believe, for it to have full impact, it must be considered and flexible.'

Reviewing ISTs' creative teaching examples PSTs' reviews of ISTs' creative teaching examples in film clips provided the opportunity for PSTs to evaluate all the interactions taking place in a classroom, and the place for a creative teaching approach within this, illustrated in the examples from two PSTs' task responses below:

'The IST started the lesson without a lesson objective and discussed this with the children. This enhanced [student] engagement, as the children were actively creating their own learning objective to aim towards.' [task focus: an IST's disciplined creative teaching]

'I thought the teacher's handling of a misconception in the class was done effectively. The teacher addressed the whole class, so that everyone became aware of the common misunderstanding. She didn't say the correct answer, but asked open

questions to help the children to use their subject knowledge and build up the correct answer together.’ [task focus: an IST’s improvised creative teaching]

7.3.4.2 Evidence from Theme 2 – How can I become a creative teacher?

Scenarios tasks and peer discussions Analyses of the PSTs’ responses to the scenarios tasks suggested three main influences of these tasks on their professional developments:

- Creative thinking: practising the skill of designing a solution and response to solve a teaching problem, in an unexpected situation;
- Evaluative thinking and reasoning: PSTs had to justify their decisions;
- Benefitting from multiple perspectives of different (sometimes contrasting) approaches to the task: peers discussed their decisions with others.

For example, PSTs were provided with the first part of teaching scenario, in which student David was struggling to start his drawing of a spider’s web in an art lesson (the complete task and a selection of responses is in Appendix O). PSTs responded to the question:

‘What would you have done to help David to start his drawing?’

PSTs’ solutions were varied, ranging from asking David a question, to modelling the task, to working with a partner. The benefit for PSTs in being exposed to a range of others’ creative teaching approaches was demonstrated in the following PST’s self-reflective journal response:

‘I gained so many new ideas by listening to others’ responses to the scenarios tasks. Peers suggested solutions that I would never have thought of. I still valued my ideas, but I learnt that there might be other ways for me, as a teacher, to solve problems.’

7.3.4.3 Evidence from Theme 3 – Why should I become a creative teacher?

Teacher identity tasks and the self-reflective journals There was evidence to show that completing the teacher identity tasks helped PSTs to gain self-awareness and confidence as developing teachers. For example, a PST stated in his self-reflective journal:

‘I didn’t really know what my ‘ideal teacher identity’ would be [at the beginning of the teacher training course]. I was nervous about beginning my journey as a pre-service teacher, as I was anxious about the responsibilities involved. However, completing the teacher identity tasks have really helped me to understand my professional journey.’

The self-reflective journal was also viewed by PSTs as a highly influential aspect of the creative teaching package, demonstrated in this PST's written evaluation of the creative teaching input:

'My views on creativity changed rapidly upon embarking on the course. I never considered the usefulness of a journal - it's allowed me to self-reflect at the end of each session/day and sum up what I've learned and found the most useful. I could then see how this learning was changing my teacher identity, and where creative teaching was fitting into this. I aim to continue with my self-reflective journal, and review it once in a while, to help me to keep exploring new ways to teach creatively.'

PSTs' self-reflective journals enabled in-depth reflections after completing the creative teaching tasks. These reflections provided evidence that the tasks from Theme 1 (reviewing PSTs' vignettes of creative teaching) not only developed PSTs' understandings of creative teaching approaches, but also influenced their teacher identity developments, for example:

'We watched a video of a former PGCE PST sharing his experiences of 'role play' in the classroom and pretending to be a customer in a café or travel agent, linked to a geography lesson. The PST was inspired to make his lessons fun and memorable, since the children will be more likely to use the information learnt in future lessons. The activity will have also shown them that their learning is relevant to every-day life. I loved this idea and found it inspirational.'

PSTs' reflective journals also indicated that they were connecting the creative teaching package to other input on the PGCE course. The example journal extract below suggested that the creative teaching input was being applied to contexts beyond the creative teaching package, and then processed by the PST as part of her developing teacher identity:

'A recent question in my mathematics tutorial about the teacher not knowing the answer to a complicated multiplication question straight away was enlightening. My maths tutor simply said: 'You ask the class for help.'. This response, and the creative teaching module, has made me understand that it is ok not to be a perfect mathematician. Instead, an 'ideal teacher' is someone who is able to 'think on their feet', showing the students their own positivity and enthusiasm. It is ok for the teacher to be a learner!'

7.3.4.4 Evidence spanning all themes

Transformative learning processes Section 7.2 discussed that transformative learning theory informed the design of the creative teaching package. The transformative learning introductory task in the creative teaching package asked Iteration 1 PSTs to explain a

professional change they had experienced. All PSTs discussed a professional development (for example: their approach to an aspect of teaching; their conceptualisation of an aspect of teaching). Analysis of the PSTs' written responses to the question in this task:

'How do you feel about the change, and why do you feel like this?'

indicated their openness to adapt or change their views and ideas about teaching, and their recognition that responding to change would be essential to shaping their teacher identities. 95% of PSTs viewed the development of their professional ideas as positive (dominant vocabulary in written responses included the terms: confident, positive, encouraged, excited, and determined), suggesting a strong willingness to change. When asked why they felt this way, the PSTs' responses indicated that change would be beneficial to them, for example:

'I think the idea I initially had of being the perfect teacher, has become more like the teacher who is not afraid to change direction if things aren't going the way I planned for, without feeling disheartened. It's ok not to know some things and there is always a solution to find answers.'

There were also suggestions in the PST's responses that this openness to change would need to be sustained beyond the teacher training year, for example:

'I feel my teacher identity will continue to develop throughout my whole teaching career, as teaching is a continuous learning curve, with self-reflection being highly valuable.'

The following PST's response exemplified most PSTs' views of the importance of self-reflection in the ongoing evaluative processes, that were helping them to shape their teacher identities:

'I have definitely learnt that no matter how many years you have been a teacher for, you are forever learning and reflecting on practice.'

All the PSTs' responses to this question: *'Do you think your teacher identity will continue to develop during your school placement?'* indicated that they recognised the need for and benefits of adapting their teacher identities, for example:

'I am sure my teacher identity will change once again when I begin to teach in a real classroom. Whilst I will endeavour to hold to the [teaching] values I now have, the way I carry them out in practice will be developed on placement. I'm also prepared for the fact that there'll be elements of being a good teacher that I haven't even considered yet, and will be best learned through observation of others.'

Reviewing relevant literature Iteration 1 PSTs stated that reviewing recommended literature had influenced their ideas about creative teaching. For example, reflecting the importance of a teacher's decision-making skills when considering a creative teaching approach, the relevance of a paper about decision-making was referenced by a PST in her final written evaluation of the creative teaching package:

'I read in one paper [Newton, 2017] that decision-making is considered an important part of creative thinking. This was thought-provoking for me, as I had never considered that decision-making was an aspect of creativity, and reading this has altered the way I think about creativity.'

7.3.4.5 Areas for development for Iterations 2 and 3, based on PSTs' views

The evidence above demonstrates that the design and construction of the creative teaching package was viewed positively by the Iteration 1 PSTs. Aligning with Findings presented earlier in this chapter, 89% of Iteration 1 PSTs in their final written evaluation of the creative teaching package suggested that, whilst valuing the university-based scenarios tasks, they would benefit from experiencing a specific creative teaching task during school placements⁷⁹, for example:

'At the moment I don't know what creative teaching feels like, although I understand it in theory and through the scenarios tasks in the creative teaching sessions. Trying out and evaluating my own creative teaching approach on teaching placement will be an important next step for me, and is something that should be added to the creative teaching package if [the structure of] the next PGCE year allows this.'

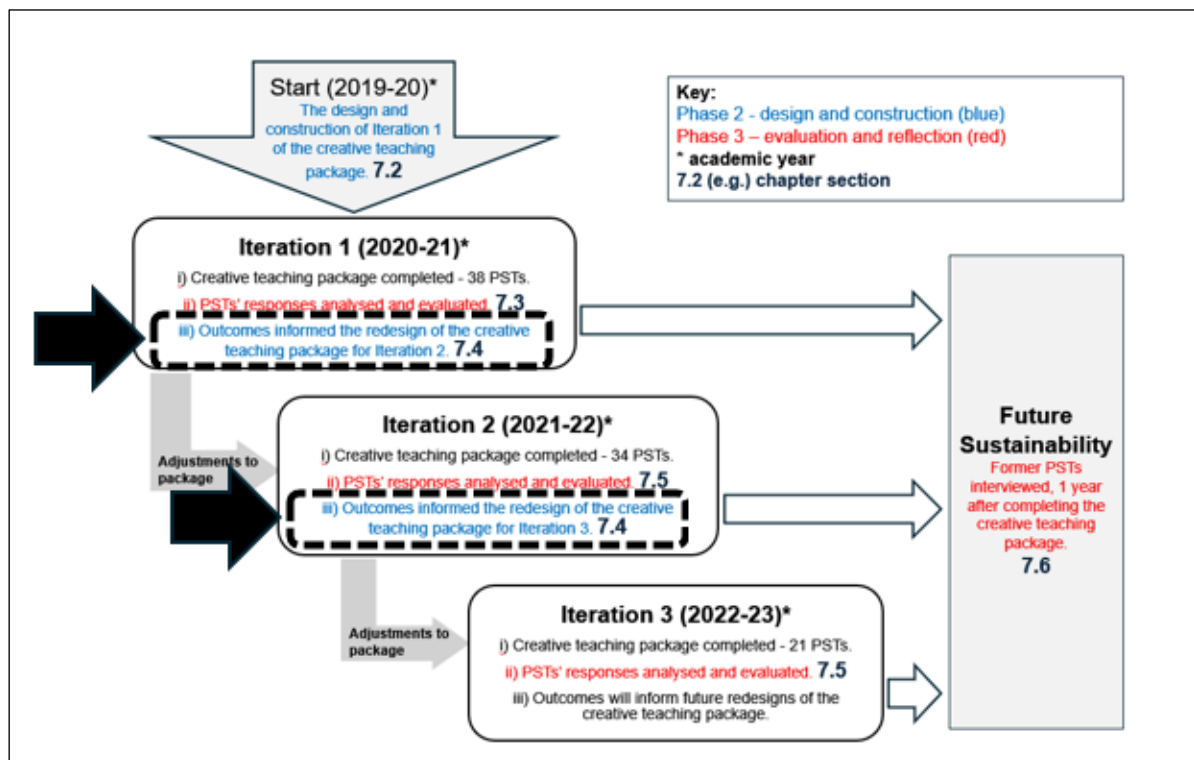
In the final written evaluation of the creative teaching package, PSTs rated how prepared they felt for disciplined or improvised creative teaching. The results⁸⁰ aligned with Findings presented earlier in this chapter, which identifying improvised creative teaching as requiring greater development in subsequent iterations of the creative teaching package, for example:

'I need more practice and instruction on how to 'improvise' creative thinking. For example, particularly in maths I find it difficult to stray from what I have planned. If I had more ideas or more ways to creatively adapt my lessons if children are struggling, then I think I would be more successful in this area.'

⁷⁹ The PSTs in Iteration 1 understood that all the creative teaching package input and sessions had to be at the beginning of the PGCE course for their academic year 2020-21, due to the Covid-19 restrictions in place.

⁸⁰ 63% of Iteration 1 PSTs stated well prepared for both disciplined and improvised creative teaching; 29% stated better prepared for disciplined creative teaching; 8% better prepared for improvised creative teaching.

7.4 Re-design of the creative teaching package Iterations 2 and 3 (Phase 2)



Overview of section 7.4

Section 7.4 explains how the creative teaching package was improved through re-design by returning to Phase 2 of the project, to optimise PSTs' professional developments of creative teaching skills and values, by:

- applying the Findings from Iteration 1 (section 7.3), to design four additional aspects for the creative teaching package in Iterations 2 and 3;
- illustrating these additional aspects, through examples of evidence-informed tasks that would be added to the creative teaching package.

7.4.1 Research overview for RQ5

Research aims and question After the evaluation of Iteration 1's outcomes, this project returned to Phase 2's focus on research on the creative teaching package, by investigating the aspects of the creative teaching package that could be improved for Iterations 2 and 3. This aimed to optimise the PSTs' professional developments through their engagement with its themes. To achieve this aim, the following research question was investigated:

RQ5: How can a training package be improved through re-design, to enable PSTs to develop creative teaching skills?

The Findings for Iteration 1 in section 7.3 provided evidence that the following aspects of the creative teaching package could be improved for subsequent iterations:

- use of open questions;
- transdisciplinary creative teaching skills;
- improvised in-lesson adaptations;
- the value and importance of informed risk-taking;
- a specific creative teaching task, completed on teaching placements;
- input from an experienced IST, to increase PSTs' understanding of the achievability of creative teaching (as well as continuing to focus on its importance).

7.4.2 The re-design of the creative teaching package - Iterations 2 and 3

Restrictions related to Covid-19 were removed for Iterations 2 and 3, allowing greater flexibility for the content and structure of the sessions within the PGCE course timetable. An additional session was allocated to the creative teaching package, with a total of 6 sessions (42 hours). The timeline of creative teaching package input for Iterations 2 and 3 is in Table 7.13 (with Iteration 1 included for comparison).

Table 7.13 A timeline of the PGCE course, showing the position of the creative teaching package input for Iterations 2 and 3

Iteration	September – December	January	February - end June
Iteration 2 Iteration 3	University-based and school-based blend <i>Creative teaching input (sessions 1-5)</i>	School – based teaching placements <i>School-based creative teaching package task</i>	University-based and school-based blend <i>Creative teaching package input (session 6 in March)</i>
Iteration 1	University – based input only <i>Creative teaching input</i>	School – based teaching placements only	

For PGCE programme design reasons, beyond the control of this project, the creative teaching input continued to be through online platforms, with a blend of asynchronous and live online input.

Four additions were designed for Iterations 2 and 3 of the creative teaching package, shown in Figure 7.21. These additions addressed the areas for improvement identified in Section 7.3.

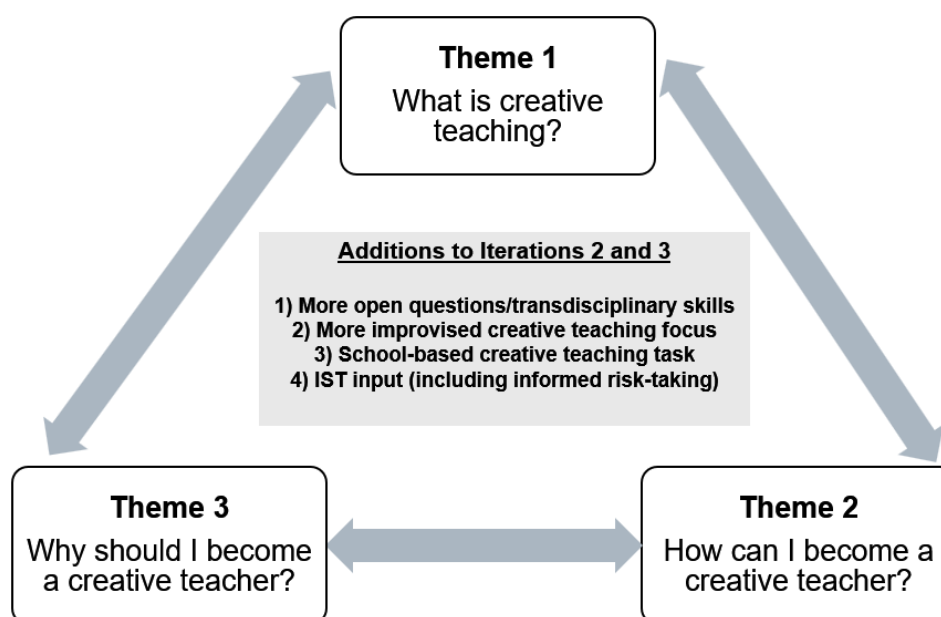


Figure 7.21 Four additions for Iterations 2 and 3 of the creative teaching package, to complement the three themes

7.4.3 Descriptions of the four additional tasks

Addition 1: Increased input for the use of open questions and transdisciplinary creative teaching skills Developing the PSTs' use of open questions and transdisciplinary creative teaching skills was already incorporated into the creative teaching package in Iteration 1. The teaching materials for these aspects were reviewed and the following adjustments made:

- greater use of literature to support the two aspects;
- greater emphasis and closer tutor monitoring of both aspects through all the tasks in the creative teaching package for Iteration 2 (for example, both aspects were built into live online discussions about each task);
- a focus on these aspects as part of Addition 3 (the school-based creative teaching task);

- a focus on these aspects as part of Addition 4 (the IST's presentation).

Addition 2: Increased input for improvised in-lesson adaptations Developing the PSTs' understanding and use of improvised in-lesson adaptations built upon the tasks that were already in the creative teaching package for this aspect. The following adjustments were made for Iterations 2 and 3:

- a new discussion task, focusing on PSTs' own examples of improvised creative teaching from school-based teaching placements;
- a new example of improvised creative teaching added to the scenarios tasks;
- a focus on improvised creative teaching as part of Addition 4 (the IST's presentation).

An example task for Addition 2 is in Figure 7.22.

Context of the task:

Following school-based experience at an early stage in the PGCE course, PSTs completed the following task, to strengthen their critical reflections on improvised creative teaching from school-based experiences.

Task brief for PSTs:

'Pre-task: Reflecting on your school-based experience so far, make notes of one example of improvised creative teaching that you either experienced yourself, or saw your school mentor using. Note this in your reflective journal and bring your example and notes to the live online tutorial, for discussion.

Consider the following questions:

- Why is it an example of improvised creative teaching? (reflect on the creative teaching techniques);
- Why was this improvised response needed? (Was there 'a critical incident'?);
- What resources were used? (these can be human as well as physical);
- Do you think you / the teacher would have the same improvised response if a similar situation arose again, or might a different action be taken?'

Tutorial and post-tutorial task brief:

PSTs reflected on their experiences of creative teaching using Mezirow's 10-step transformative learning process in the tutorial and as a follow-up self-reflection task, by considering the question:

'How do the 10 steps apply to your experiences of improvised creative teaching in a school environment?'

Figure 7.22 Addition 2 - an example creative teaching task

Addition 3: Creative teaching task completed on teaching placements, with a follow-up university-based peer discussion task For Iterations 2 and 3 of the creative teaching package, a creative teaching task was incorporated into school-based teaching placement tasks, to develop PSTs' actual use of disciplined and improvised creative teaching skills in a real-world setting, and strengthen their understanding of the achievability of creative teaching. The Addition 3 task aimed for the PSTs to be able to explain and exemplify the value of a creative teaching approach in their own practice, using examples.

The position of Addition 3 is shown in the revised diagram in Figure 7.23 (the original diagram is in Figure 7.8).

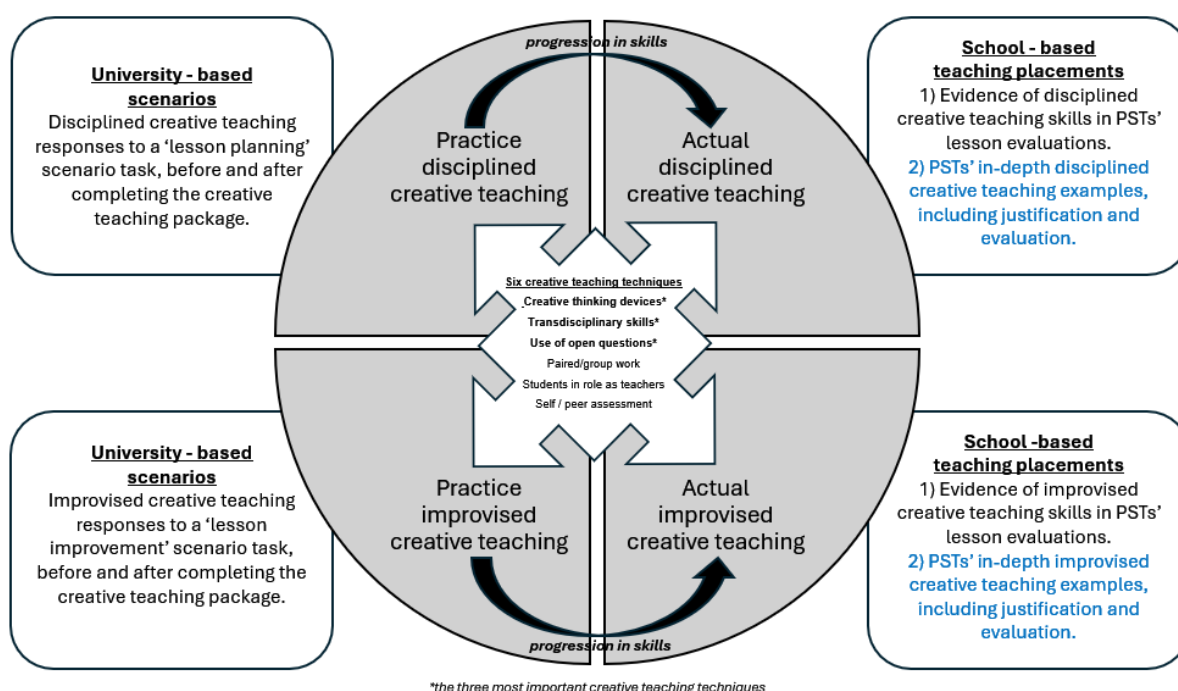


Figure 7.23 A revised diagram showing the progressional design of Theme 2's creative teaching package tasks (including Addition 3 in blue font)

The Addition 3 task is described in Figure 7.24.

Context of the task:

In Iterations 2 and 3 of the creative teaching package, Session 6 took place after the PSTs' first school-based teaching placement (see Table 7.13 for the timeline of the PGCE course). PSTs submitted examples of disciplined and improvised creative teaching from their teaching placement experiences, to demonstrate their application of their creative teaching skills and understanding in actual teaching contexts.

Task brief for PSTs

'Your school-based teaching placements will give you the opportunity to apply your creative teaching skills to your lesson plans, in-class teaching and lesson evaluations. Aim to apply the three main creative teaching techniques, and the other techniques where possible, to your lesson plans and your in-class teaching.

Select an example from your teaching placement of your disciplined use of creative teaching skills and your improvised use of creative teaching skills, explaining why these are examples of creative teaching. Attach some evidence that supports your answer (for example, an annotated lesson plan or evaluation). Be prepared to discuss your examples in a tutorial.'

Tutorial and post-tutorial task brief:

PSTs reflected on their experiences of creative teaching using Mezirow's 10-step transformative learning process in the tutorial and as a follow-up self-reflection task, by considering the question:

'How do these 10 steps apply to your experiences of creative teaching in a school environment?'

Figure 7.24 Addition 3 - the school-based teaching placement creative teaching task

Addition 4: Input from an expert IST, to increase PSTs' understanding of the achievability of creative teaching As the lead tutor of the creative teaching package, I collaborated with an IST from a partnership school⁸¹, to design the IST's input for the creative teaching package. This opportunity enabled me to work in a professional learning community (discussed in Chapter 3, (Stoll, 2015)), strengthening the creative teaching package by modelling to the PSTs the authentic links between the university-based and school-based creative teaching input, tasks and colleagues.

⁸¹ Partnership schools worked collaboratively with the PGCE course tutors on the PGCE course, and mentored PSTs during their school-based teaching placements. The expert IST was a teacher from the PGCE course's school partnership, with substantial experience of mentoring PSTs during their teaching placements.

The input is described in Figure 7.25.

Task explanation: Following a conversation with the researcher about the aims of the creative teaching package and areas for improvement for Iterations 2 and 3, the expert IST led a live online presentation, in the style of 'in conversation with' the tutor. The themes of the presentation comprised:

- the current relevance of creative teaching in schools, focusing on achievability and 'thinking inside the box';
- examples of creative teaching (both disciplined and improvised) from his own practice;
- use of open questions and transdisciplinary skills in examples of creative teaching;
- the importance of informed risk-taking - as part of the decision-making process - in creative teaching acts;
- collaboration opportunities for creative teaching in schools;
- responses to PSTs' input and questions.

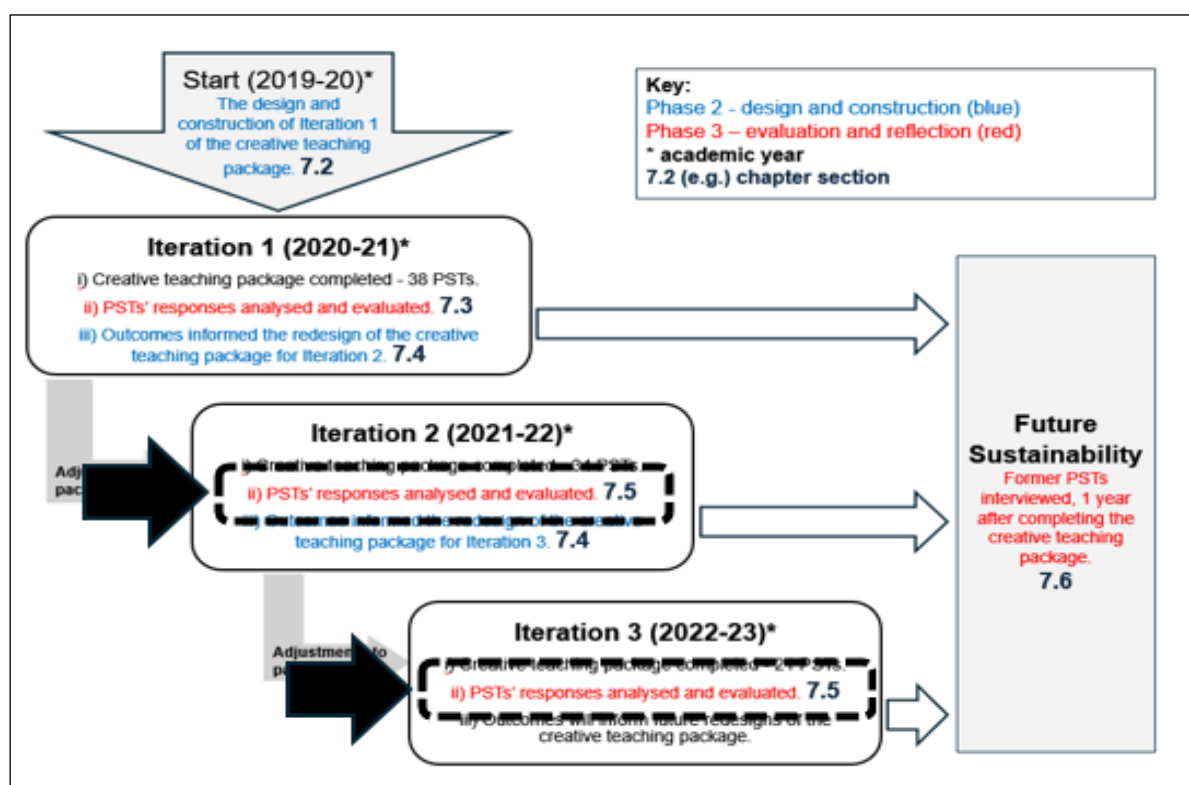
PSTs' task brief:

PSTs were asked to:

- contribute to the question-and-answer session, particularly considering three aspects in the context of creative teaching: use of open questions; transdisciplinary skills, and informed risk-taking;
- complete and submit a written evaluation following the presentation (for example, what they gained for their professional developments from the session);
- write an entry in their self-reflective journals and revisit their teacher identity diagrams, regarding any changes to own professional developments, and thought-provoking points raised.

Figure 7.25 Addition 4 – the expert IST's creative teaching presentation task

7.5 Evaluation of the creative teaching package Iterations 2 and 3 (Phase 3)



Overview of 7.5

Section 7.5 explains how the improvements made to Iterations 2 and 3 of the creative teaching package were evaluated by returning to Phase 3 of the project. This investigates the influence on PSTs' professional developments of creative teaching skills and values, by:

- presenting data analysis outcomes of Iteration 2 and 3 PSTs' responses to the aspects added to improve the creative teaching package;
- comparing Iteration 2 and 3 PSTs' outcomes to Iteration 1 PSTs' outcomes, to investigate how the re-design of the creative teaching package improved the PSTs' professional developments, compared with the development of PSTs' professional developments in Iteration 1 (where comparable data was available);
- considering two aspects for the improvement for Iteration 3 of the creative teaching package.

Summary of outcomes:

Evidence from multiple data sources provided strong indications of the beneficial influence of the additions to the creative teaching package on Iteration 2 and Iteration 3 PSTs' professional developments (creative teaching skills and values).

7.5.1 Research overview for RQ6

Research aims and questions The analysis of Iteration 1 PSTs' outcomes for the creative teaching package, in section 7.3, resulted in the following areas for improvement identified for Iterations 2 and 3:

- use of open questions;
- transdisciplinary creative teaching skills;
- improvised in-lesson adaptations;
- the value and importance of informed risk-taking;
- a specific creative teaching task, completed on teaching placements;
- input from an experienced IST.

These areas for improvement were incorporated into four additional tasks, described in section 7.4. Phase 3 of this project investigated how these additions to the creative teaching package influenced PSTs' professional developments in Iterations 2 and 3, through a process of evaluation of and reflection on data analysis outcomes of the creative teaching package. The following research questions were investigated:

RQ6: How did the improvements to the creative teaching package influence the PSTs' professional developments? Two parts:

-RQ6a) How did the PSTs' creative teaching skills improve?

-RQ6b) How did the PSTs' creative teaching values improve?

A comparison of Iteration 2 and Iteration 3 PSTs' responses to the four additional tasks concluded that the responses of the two cohorts were very similar; therefore, most of the data discussed below are presented together. However, the evaluation and reflection process also considered any further aspects for development for Iteration 3 of the creative teaching package, by revisiting the following research question at the end of Iteration 2:

RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?

An analysis of Iteration 2 PSTs' final written evaluations of the creative teaching package led to two minor additions for Iteration 3 of the creative teaching package. These additions are discussed in the final part of this section.

Sources informing the evaluation and reflection process

Participants Data from the creative teaching package were collected from the PST volunteer participant groups in Table 7.14 ⁸²:

Table 7.14 PST participants who completed Iterations 2 and 3 of the creative teaching package (Iteration 1 included for comparison)

Iteration	Academic Year	Volunteer participant number	Cohort number
2	2021-22	34	52
3	2022-23	21	43
1	2020-21	38	58

Characteristics of the participant PSTs for Iterations 2 and 3 were compared with the entire cohort. The results (in Appendix N) demonstrated that the participant groups' characteristics were representative of their cohorts' characteristics.

Data sources Data were selected to investigate the influence of the additions to the creative teaching package for Iterations 2 and 3. The data sources were Iteration 2 and 3 PSTs' written responses to tasks, evaluations and questionnaires built into the creative teaching package, and analyses of PSTs' creative teaching examples and lesson evaluations from school-based teaching placements. Data were analysed using quantitative and qualitative methods (described in Chapter 5, section 5.3.2), with the results from quantitative statistical analysis of emerging patterns in large data sets being investigated using qualitative methods, to strengthen the evidence by providing illustrative in-depth examples (Biesta, 2021; Cohen et al., 2018). Specific data sources are explained below, as each research question is addressed.

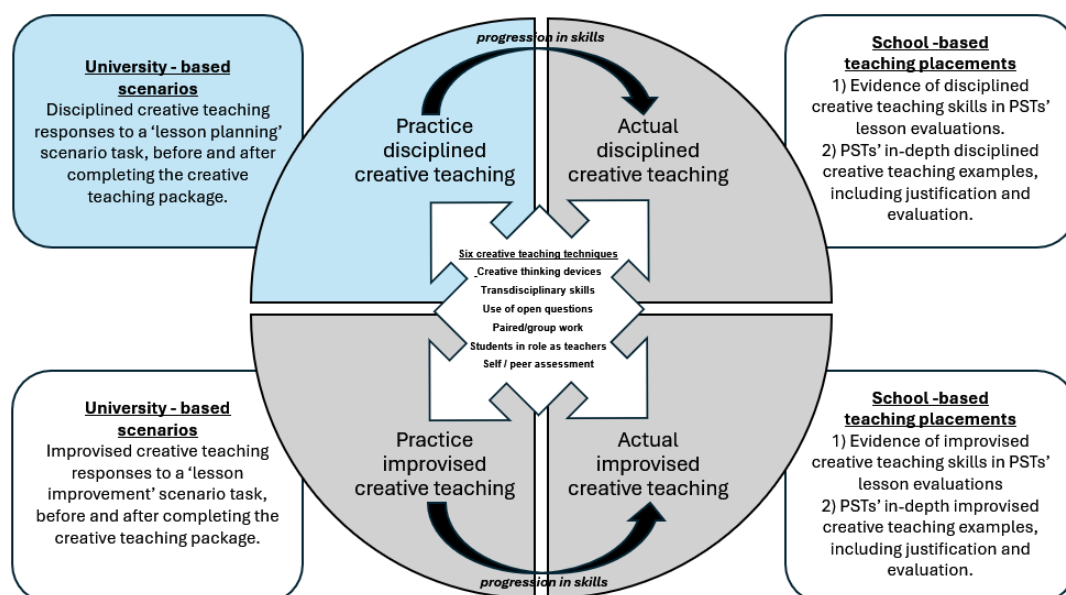
7.5.2 Findings: RQ6a) How did the PSTs' creative teaching skills improve?

To investigate the influence of the re-designed creative teaching package on the development of the PSTs' creative teaching skills, the PSTs' responses to the same tasks analysed in Iteration 1 were compared with Iteration 1 PSTs' Findings (section 7.3). As in 7.3, these tasks were taken from each of the four categories shown in the diagram in Figure 7.23, analysing PSTs' developments of creative teaching skills, firstly in university-based practice scenarios of the creative teaching package, followed by applying the skills to school-

⁸² As with Iteration 1, all PGCE PSTs in each cohort were required to complete the creative teaching package; the volunteer participants consented to their data being used in the project.

based teaching placements. The new school-based task for Iterations 2 and 3 (a specific creative teaching task completed on teaching placements) was also analysed.

7.5.2.1 Practice disciplined creative teaching



These Findings provide evidence for Iteration 2 and 3 PSTs':

- improved use of open questions
- improved use of transdisciplinary creative teaching skills

in a disciplined creative teaching context.

The 'science lesson plan' scenario task described in Figure 7.10 and analysed for Iteration 1 (section 7.3.2.1) was completed by PSTs in Iteration 2 (n=34) and Iteration 3 (n=21) of the creative teaching package. The statistical analysis method (χ^2 test with 1 df) was applied to the PSTs' science lesson plans, to compare PSTs' use of creative teaching techniques in the two lesson plans (before and after completing the creative teaching package). The results indicated a statistically significant increase in Iteration 2 and 3 PSTs' uses of all six creative teaching techniques, when comparing the lesson plans before and after the creative teaching package input (a χ^2 test with 1 df returned $p < .001$ for each creative teaching technique). Unlike Iteration 1's results, this included a statistically significant increase for open questions, shown in Table 7.15.

Table 7.15 A comparison of PSTs' use of open questions in science lesson plans, before and after completing the creative teaching package (with Iteration 1 results for comparison)

PST iterations	% of PSTs' science lesson plans that included open questions		P-value significance at $p < .05$ (χ^2 test with 1 df)
	Lesson Plan 1 (before creative teaching package)	Lesson Plan 2 (after creative teaching package)	
Iteration 2 (n=34)	24%	82%	$\chi^2 (1, N = 34) = 23.61, p < .001$ statistically significant increase
Iteration 3 (n=21)	29%	86%	$\chi^2 (1, N = 21) = 14, p < .001$ statistically significant increase
Iteration 1 (n=38)	11%	26%	$\chi^2 (1, N = 38) = 3.15, p = .0758$ no statistically significant change

The graph in Figure 7.26 shows the percentages of PSTs who used the three main creative teaching techniques in Lesson Plan 2 per iteration.

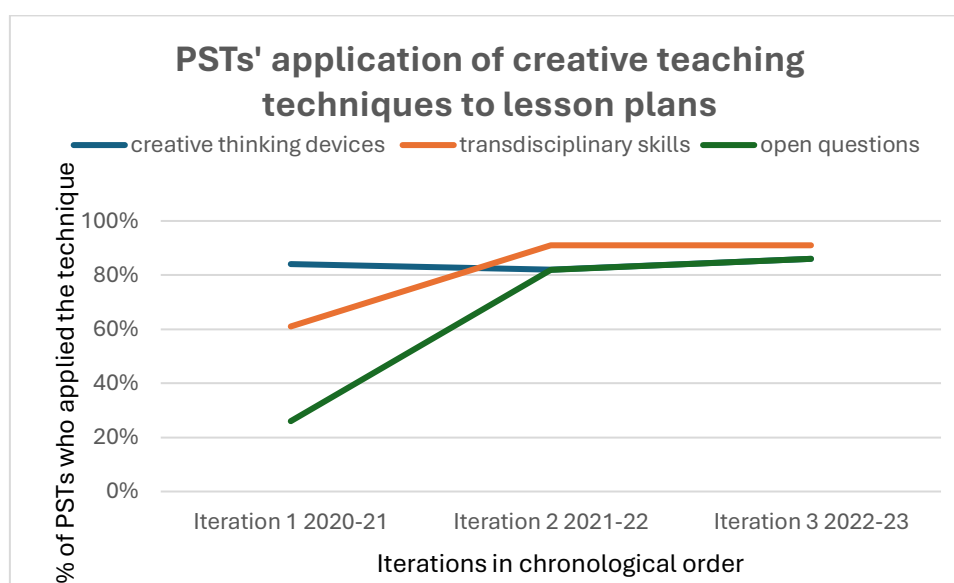


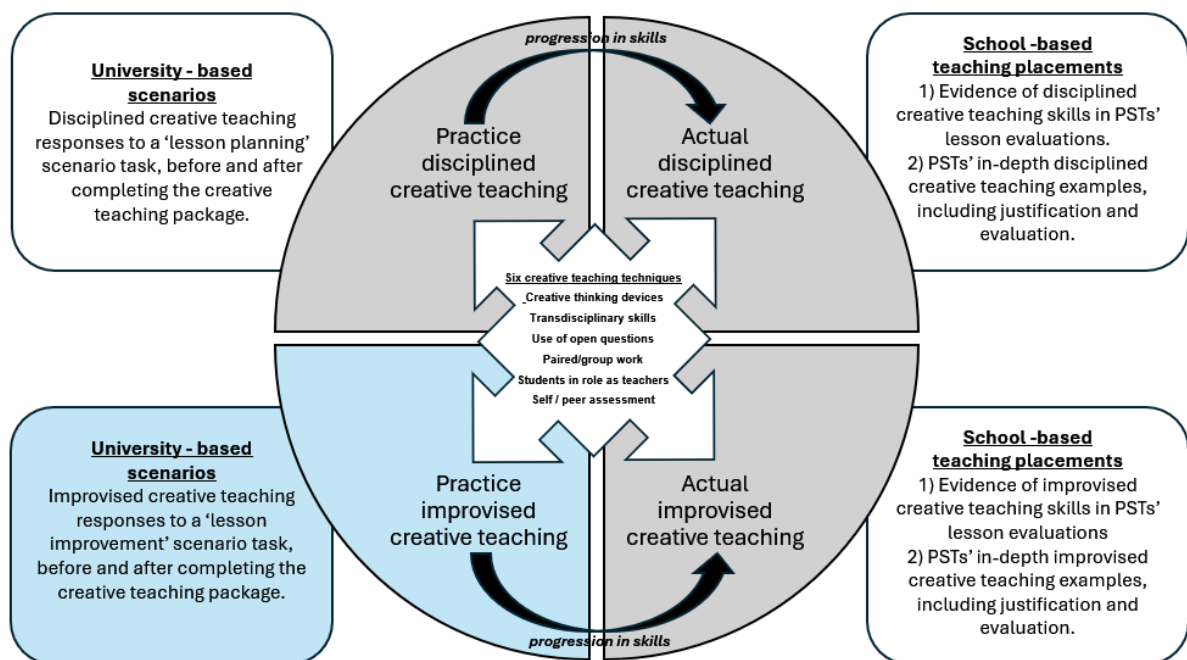
Figure 7.26 A graph to show the percentages of PSTs who applied the three main creative teaching techniques to Lesson Plan 2, per Iteration of the creative teaching package

The graph in Figure 7.26 demonstrates that the creative teaching package improved between Iterations 1 and 2, and this improvement was sustained thereafter. A statistical analysis comparing the frequency of creative teaching techniques used in Lesson Plan 2 by PSTs in Iterations 2 and 3 compared with Iteration 1 suggested that there were statistically significant increases for:

- transdisciplinary creative teaching skills (χ^2 tests with 1 df returned $p = .027$ for Iteration 2 and $p = .015$ for Iteration 3, when compared with Iteration 1);
- use of open questions (χ^2 tests with 1 df returned $p < .001$ for both Iteration 2 and Iteration 3, when compared with Iteration 1).

The high frequency of creative thinking devices used by PSTs in Iteration 1 was maintained in Iterations 2 and 3.

7.5.2.2 Practice improvised creative teaching



These Findings provide evidence for Iteration 2 and 3 PSTs':

- improved use of open questions
- improved transdisciplinary creative teaching skills

in an improvised creative teaching context.

The 'in-lesson adaptations' scenario task described in Figure 7.9 and analysed for Iteration 1 in section 7.3.2.2 was completed by PSTs in Iterations 2 ($n=34$) and 3 ($n=21$) of the creative teaching package. The same statistical analysis method (χ^2 test with 1 df) was used, to compare PSTs' use of creative teaching techniques in Response 1 compared with Response 2. The results indicated a statistically significant increase in the use of all six creative teaching techniques for both iterations, when comparing the PSTs' responses before and after the creative teaching package input (a χ^2 test with 1 df returned $p < .001$ for each creative teaching technique). Unlike Iteration 1's results, this included a statistically significant increase for open questions, shown in Table 7.16.

Table 7.16 A comparison of PSTs' use of open questions for an in-lesson adaptation scenario task, before and after completing the creative teaching package (with Iteration 1 results for comparison)

PST iterations	% of PSTs' responses that included the use of open questions		P-value significance at $p < .05$ (χ^2 test with 1 df)
	Response 1: (before the creative teaching package)	Response 2: (after the creative teaching package)	
Iteration 2 (n=34)	29%	79%	$\chi^2 (1, N = 34) = 17.13, p < .001$ statistically significant increase
Iteration 3 (n=21)	24%	81%	$\chi^2 (1, N = 21) = 13.74, p < .001$ statistically significant increase
Iteration 1 (n=38)	16%	29%	$\chi^2 (1, N = 38) = 1.89, p = .1687$ no statistically significant change

The graph in Figure 7.27 shows the percentages of PSTs who used the three main creative teaching techniques in Response 2 per iteration.

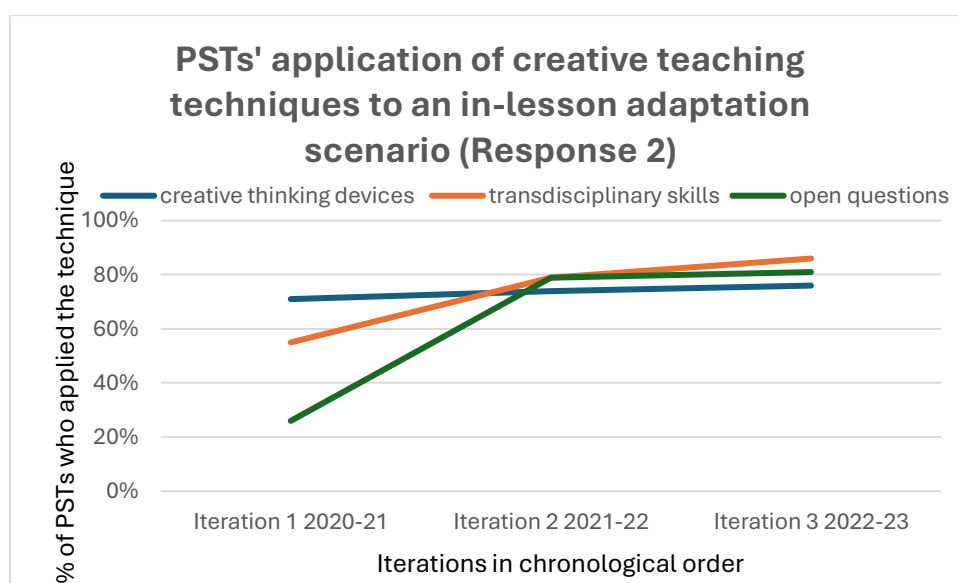


Figure 7.27 A graph to show the percentages of PSTs who applied the three main creative teaching techniques to their in-lesson adaptation scenario (Response 2), per iteration of the creative teaching package

The graph in Figure 7.27 demonstrates that the creative teaching package improved between Iterations 1 and 2, and this improvement was sustained thereafter. A statistical analysis comparing the frequency of creative teaching techniques used in Lesson Plan 2 by

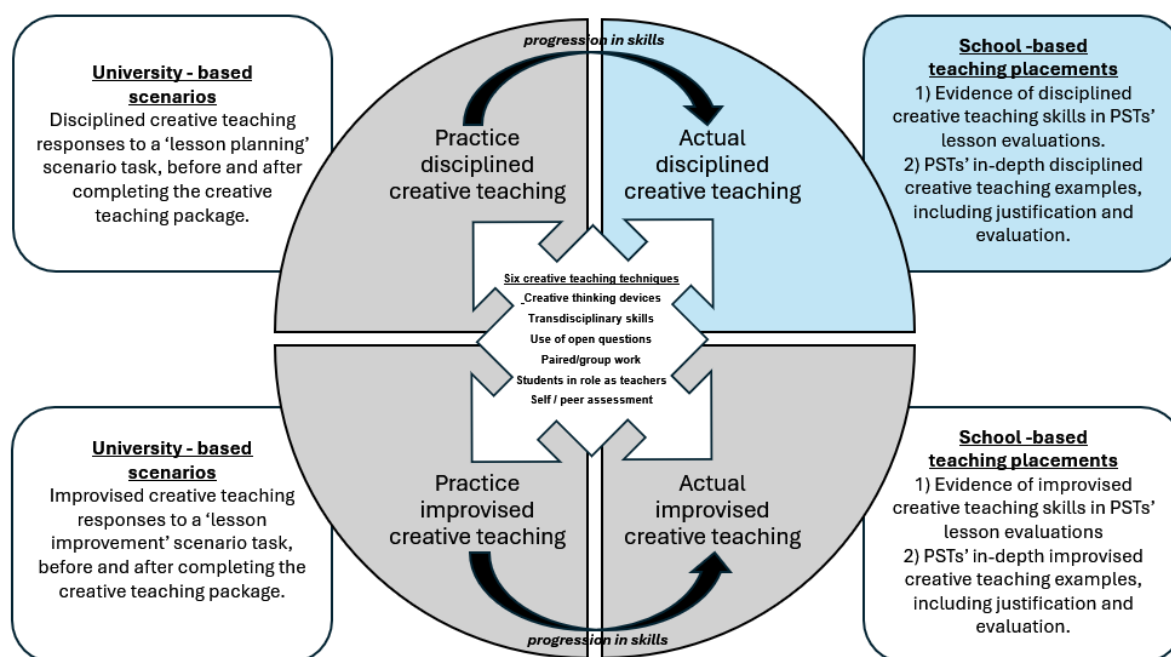
PSTs in Iterations 2 and 3 compared with Iteration 1 suggested that there were statistically significant increases for:

- transdisciplinary creative teaching skills (a χ^2 test with 1 df returned $p = .030$ for Iteration 2 and $p = .017$ for Iteration 3, when compared with Iteration 1);
- use of open questions (χ^2 tests with 1 df returned $p < .001$ for both Iteration 2 and Iteration 3, when compared with Iteration 1).

The high frequency of creative thinking devices used by PSTs in Iteration 1 was maintained in Iterations 2 and 3.

The data so far has provided evidence of Iteration 2 and 3 PSTs' potential creative teaching skills, in practice university-based scenario contexts. The next set of findings analysed data from Iterations 2 and 3, to provide evidence of PSTs' actual creative teaching skills, in school-based contexts.

7.5.2.3 Actual disciplined creative teaching



In the context of disciplined creative teaching, these Findings provide evidence for Iteration 2 and 3 PSTs':

- outcomes of a specific creative teaching task, completed on teaching placements;
- improved use of open questions;
- improved transdisciplinary creative teaching skills.

There was strong evidence that Iteration 2 and 3 PSTs applied the disciplined creative teaching skills they had developed in the university-based scenarios, to school-based

teaching placement contexts. This was demonstrated in the analysis of two teaching placement tasks:

- PSTs' disciplined creative teaching examples, from their teaching placements;
- PSTs' use of disciplined creative teaching skills in lesson evaluations.

PSTs' disciplined creative teaching examples, from their teaching placements The disciplined creative teaching task (described in Figure 7.24) was completed on teaching placements by PSTs in Iterations 2 and 3⁸³. This aimed to explore the PSTs' application of their disciplined creative teaching skills to their school-based teaching placements. The quality of the PSTs' disciplined creative teaching examples was judged by the tutors using criteria which reflected the creative teaching package's components. All PSTs' examples met the three initial creative teaching criteria (a novel approach; attempting to solve a problem, and an element of satisfaction), exemplified in Figure 7.28.

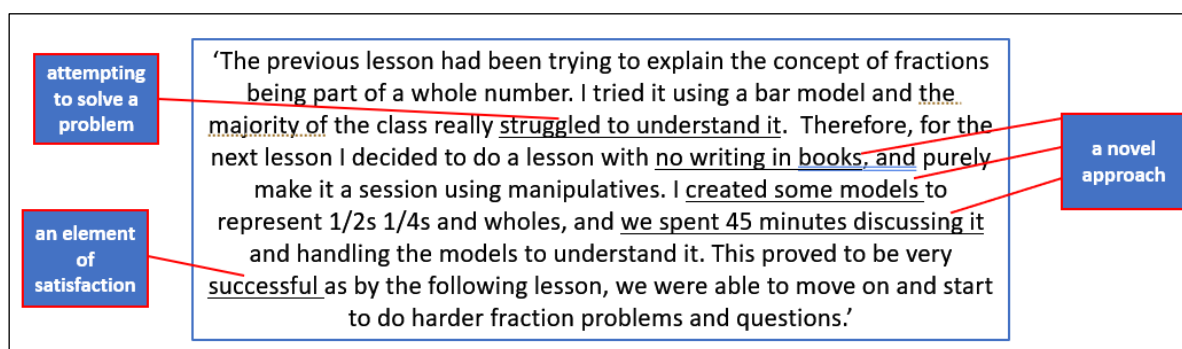


Figure 7.28 An extract from one PST's example of disciplined creative teaching skills, illustrating the three initial creative teaching criteria

The PSTs' disciplined creative teaching examples were then rated by tutors according to the six creative teaching techniques in Figure 7.5. A rating between 1-5 was assigned to each example (5 was the highest rating)⁸⁴. One PST's example of disciplined creative teaching is in Figure 7.29, with annotations of the creative teaching techniques used. This example was rated as 5.

⁸³ It was mentioned earlier in this chapter that Iteration 1 of the creative teaching package did not include this task due to Covid-19 restrictions placed on the PSTs' programme timetable.

⁸⁴ PSTs needed to include the three main creative teaching techniques (creative thinking device, one or more transdisciplinary creative teaching skills, use of open questions) plus two out of the other three techniques to score a maximum rating of five. This allowed for the possibility that all three additional creative teaching techniques might not be suitable for some classroom learning outcomes.

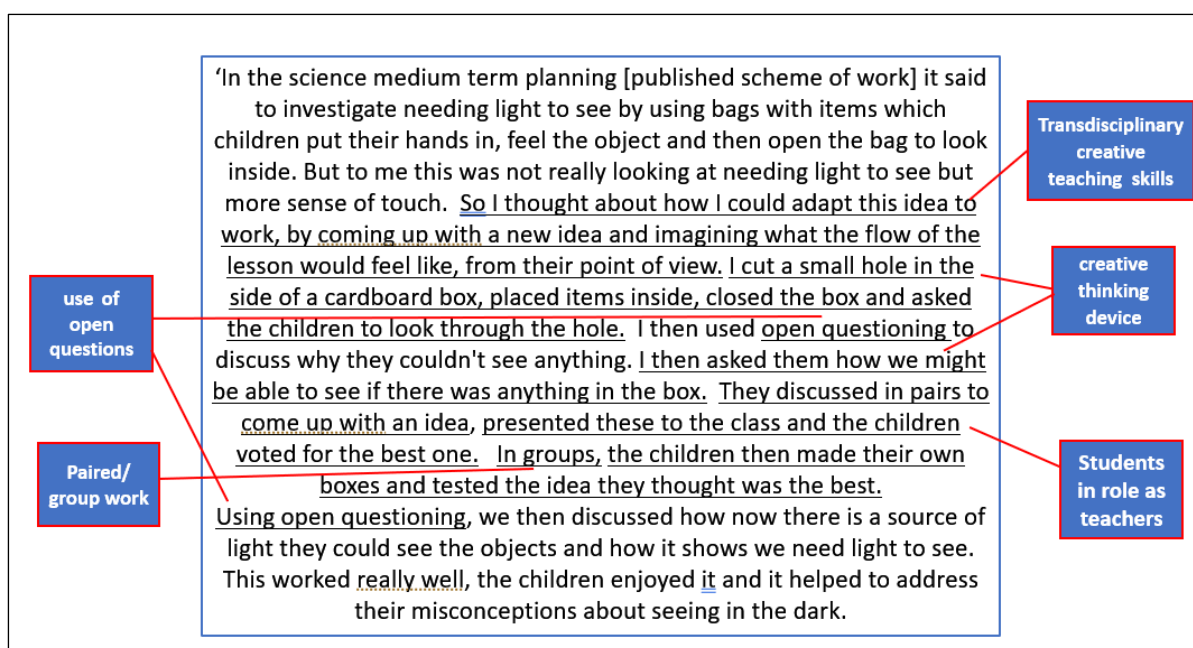


Figure 7.29 An example of one PST's use of disciplined creative teaching skills, illustrating five creative teaching techniques

The percentages of PSTs' responses that included the three main creative teaching techniques, and the mean ratings for the use of creative teaching techniques in the disciplined creative teaching examples, are summarised in Table 7.17.

Table 7.17 Iterations 2 and 3 PSTs' use of the three main creative teaching techniques in examples of disciplined creative teaching

The three main creative teaching techniques	% of PSTs' responses that included this feature	
	Iteration 2 (n=34)	Iteration 3 (n=21)
Creative thinking devices	88%	91%
Transdisciplinary creative teaching skills	85%	91%
Use of open questions	79%	86%
Overall mean rating for the use of creative teaching techniques (out of 5)		
	3.6	3.9

There were no statistically significant differences with $p < .05$ between the results for Iterations 2 and 3. The development of PST's use of open questions was a focus for improvement following Iteration 1, and an analysis of PSTs' disciplined creative teaching examples evidenced that a high percentage of Iteration 2 and Iteration 3 PSTs were using open questions strategies in their lesson plans.

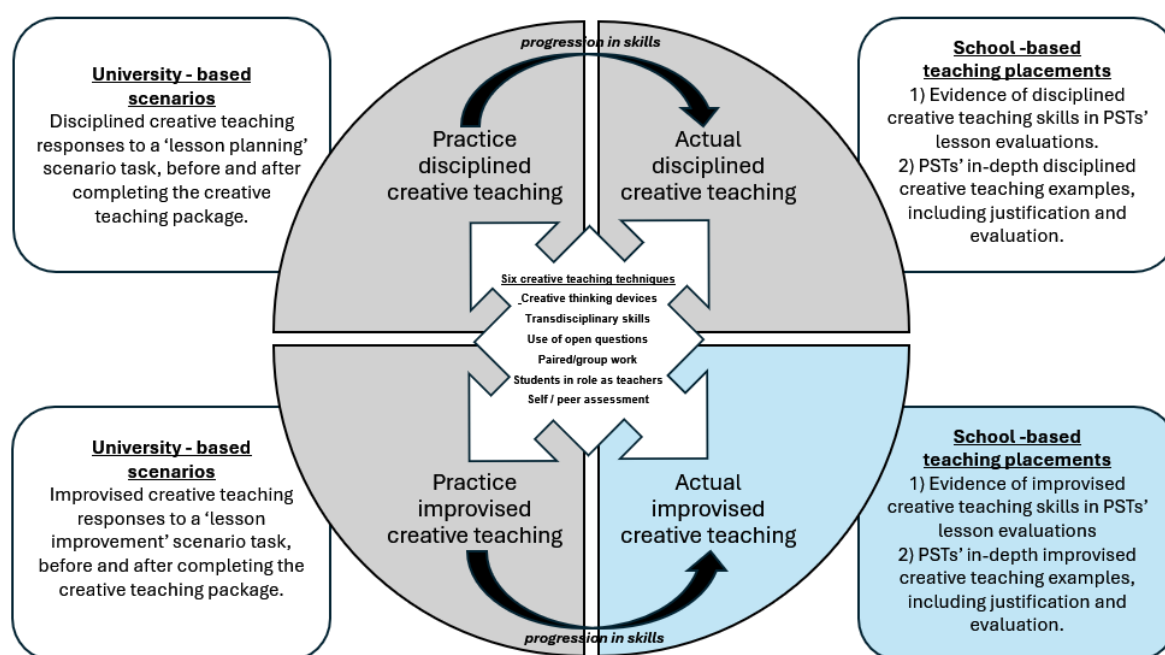
PSTs' use of disciplined creative teaching skills in lesson evaluations Analysis of Iteration 2 and 3 PSTs' lesson evaluations taken from teaching placement records identified

the frequency of PSTs' use of the three main creative teaching techniques (creative thinking devices; transdisciplinary creative teaching skills and open questions) in suggested adaptations for lessons. Using the same data analysis process described for Iteration 1 PSTs in 7.3.2.3, the results were consistent with those for Iteration1 PSTs:

- Iteration 2 – Mean = 3.15; Standard Deviation = 1.59
 - Iteration 3 – Mean = 3.3; Standard Deviation = 1.49
- (Iteration 1 for comparison – Mean = 3.05; Standard Deviation =1.56).

There were no significant differences with $p < .05$ between the three iterations' results (a T -test for two independent means returned a p -value of .9224 when comparing Iteration 1 and 2 samples, and a p -value of .6165 when comparing Iteration 1 and 3 samples). This suggested a consistency across the three Iterations of the high number of lesson plan adaptations suggested by PSTs using disciplined creative teaching skills.

7.5.2.4 Actual improvised creative teaching



In the context of improvised creative teaching, these Findings provide evidence for Iteration 2 and 3 PSTs':

- outcomes of a specific creative teaching task, completed on teaching placements;
- improved use of improvised in-lesson adaptations;
- improved use of open questions;
- improved transdisciplinary creative teaching skills.

There was strong evidence that Iteration 2 and 3 PSTs applied the improvised creative teaching skills they had developed in the university-based scenarios, to school-based teaching placement contexts. This was demonstrated in the analysis of two teaching placement tasks:

- PSTs' improvised creative teaching examples, from their teaching placements;
- PSTs' use of improvised creative teaching skills in lesson evaluations.

PSTs' improvised creative teaching examples, from their teaching placements The improvised creative teaching task (described in Figure 7.24) was completed on teaching placements by PSTs in Iterations 2 and 3⁸⁵. This aimed to explore the PSTs' application of their improvised creative teaching skills to their school-based teaching placements. The quality of the PSTs' improvised creative teaching examples was judged by the tutors using criteria, which reflected the key creative teaching package components. All PSTs' examples met the three initial creative teaching criteria (a novel approach; attempting to solve a problem, and an element of satisfaction), exemplified in Figure 7.30.

'Context: a primary history lesson comparing two different periods in time, using artefacts (pottery) and open questioning to understand, compare and contrast lives in the two periods.

'Pupils used inference and deduction to draw conclusions, and answer questions. Some wrong answers were given, which revealed possible misconceptions (these mainly related to lifestyles that were from a different era). All answers were valued, but wrong answers were explored sensitively, by asking the pupils to take on the roles of 'historians'. I gave some open questions, so the pupils could explore in pairs which answers might be wrong and why this might be, using their prior knowledge to help them. They were very engaged during the lesson, loving handling the artefacts, and exploring and investigating the artefacts to find clues. They really enjoyed acting as historians and felt a sense of achievement in identifying and correct mistakes. I found this very rewarding.

attempting to solve a problem

a novel approach

an element of satisfaction

Figure 7.30 An extract from one PST's example of improvised creative teaching, illustrating the three initial creative teaching criteria

The PSTs' improvised creative teaching examples were then rated by tutors according to the six creative teaching techniques, using the same rating method described in section 7.5.2.3, with a maximum rating of 5. One PST's example of improvised creative teaching skills is in

⁸⁵ It was mentioned earlier in this chapter that Iteration 1 of the creative teaching package did not include this task due to Covid-19 restrictions placed on the PSTs' programme timetable.

Figure 7.31, with annotations of the creative teaching techniques used. This example was rated as 5.

Context: 'My understanding of improvised use of creative thinking skills is a teacher's spontaneous in-class responses, to support pupils' needs which emerge during each lesson. An example of this was during a maths lesson on money - giving change. After a whole-class introduction, the pupils started to work independently on a set of questions (for example, how much change from £1 would I get if I bought a book for 45p, a pencil for 20p and an eraser for 15p?).

As I monitored the lesson, I noticed that around ten pupils weren't grasping the idea of giving change. I thought the best idea for these pupils to understand was to role play giving change. I quickly created a space in the classroom so it looked like a shop. Five pupils played the cashiers, with mini whiteboards and pens, and five played the customers. I began popping post it notes on items around the class including a mixture of pounds and pence, and asked the 'customers' to pick three items and take them to the tills. Each child had a bag of money which contained [pretend] notes, pound coins and pence. The cashier added up the cost of the items, and the customer checked it was right. The customer paid for the items, the cashier then had a whiteboard to work out how much change they needed to give the customer; they gave the customer the correct change and the customer checked it was right. The pairs corrected any mistakes they spotted together. The pupils then swapped roles.

When they had understood this, I then added more open questions, like: 'Which pair can buy the most items for £1?' and problem-based questions: 'What if the cashier ran out of 5ps?' At the end of the lesson, the pairs told the rest of the class what they'd been doing, how they had met the lesson's success criteria and any mistakes they had made and corrected.'

creative thinking device

use of open questions

self/peer assessment

Transdisciplinary creative teaching skills

students in role as teachers

paired/group work

Figure 7.31 An example of one PST's use of improvised creative teaching skills, illustrating the creative teaching techniques

The percentages of PSTs' responses that included the three main creative teaching techniques, and the mean ratings for the use of creative teaching techniques in the improvised creative teaching examples, are summarised in Table 7.18.

Table 7.18 Iterations 2 and 3 PSTs' use of the three main creative teaching techniques in examples of improvised creative teaching

The three main creative teaching techniques	% of PSTs' responses that included this feature	
	Iteration 2 (n=34)	Iteration 3 (n=21)
Creative thinking devices	82%	81%
Transdisciplinary creative teaching skills	76%	85%
Use of open questions	82%	85%
Overall mean rating for the use of creative teaching techniques (out of 5)		
	3.2	3.6

A statistical analysis comparing the frequencies of creative teaching techniques in Table 7.18 (improvised creative teaching) with the frequencies in Table 7.17 (disciplined creative teaching) did not identify any statistically significant differences between the two (a χ^2 test with 1 df returned $p > .05$).

The development of PST's use of open questions was a focus for improvement following Iteration 1, and an analysis of PSTs' improvised creative teaching examples, showed that a high percentage of Iteration 2 and 3 PSTs were using open questions techniques confidently, for example:

'I found thinking of open questions much easier 'in the moment' of the lesson, as I could devise the open question as a response to the pupils' responses. For example, some pupils needed a further challenge in my science lesson because they had clearly met the learning objective. So, I gave them a 'What if...' question, that had arisen during our initial class discussion.'

Analysis of the PSTs' written responses to the task suggested that they viewed both disciplined and improvised creative teaching as an essential skill to solve problems in their professional practice. Problems mainly focused on one of three issues:

- changing the teaching approach to enable students to understand the learning outcome;
- countering a misconception;
- adjusting a learning experience to increase students' engagement.

PSTs' use of improvised creative teaching skills in lesson evaluations Analysis of Iteration 2 and 3 PSTs' lesson evaluations taken from teaching placement records identified the frequency of PSTs' uses of the three main creative teaching techniques (creative thinking devices; transdisciplinary creative teaching skills and open questions) for in-lesson improvised adaptations. Using the same data analysis process described for Iteration 1 PSTs in 7.3.2.4, the number of in-lesson adaptations was a statistically significant increase for Iteration 2 and 3 outcomes, compared with Iteration 1, shown in Table 7.19.

Table 7.19 A statistical comparison of actual improvised in-lesson adaptations, between Iteration 2, Iteration 3 and Iteration 1

Iteration	Mean (M) and Standard Deviation (SD)	Comparison with Iteration 1 P-value significance at $p < .05$ (T-test for two independent means)	Effect size (Cohen's d)
Iteration 2 sample 2021-22 (n=20)	M = 2.85 SD = 1.37	p-value = .004038 statistically significant increase	d = 0.97 large
Iteration 3 sample 2022-23 (n=20)	M = 3.05 SD = 1.54	p-value = .001958 statistically significant increase	d = 1.05 large
Iteration 1 sample (n= 20) M = 1.45 SD = 1.50 (data included for reference)			

This evidence indicated that the improvement to the creative teaching package of an increased focus on improvised creative teaching skills in Iterations 2 and 3 was effective.

7.5.3 Findings: RQ6b) How did the PSTs' creative teaching values improve?

These Findings provide evidence for Iteration 2 and 3 PSTs' improved professional developments of creative teaching values due to:

- the input from an experienced IST (focusing on the achievability of creative teaching);
- an increased focus on the value and importance of informed risk-taking.

To investigate the influence of the re-designed creative teaching package on the development of the PSTs' creative teaching values, the PSTs' written responses to the new tasks for Iterations 2 and 3 - the input from an experienced IST - was analysed.

Input from an experienced IST was considered to be a positive inclusion to the creative teaching package by 96% of the Iteration 2 and Iteration 3 PSTs (total number of Iteration 2 and 3 PSTs: n=55), for example:

'I enjoying hearing the experience of a teacher currently in the field: It gave a real-life, practical viewpoint on creative teaching. His advice and guidance felt realistic, achievable and hopeful. I really liked the idea of 'thinking inside the box!'

one PST's written response

The main benefits of the IST's input, perceived by the PSTs, are summarised in Table 7.20.

Table 7.20 Benefits of IST's input for Iteration 2 and 3 PSTs (data taken from PSTs' written responses to the input)

Benefits of creative teaching identified in PSTs' responses	% of PSTs who included this (n=55)	Example quotes from PSTs' responses
Improvised creative teaching		
A greater understanding of the importance of improvised creative teaching.	84%	<i>'[The presentation] helped me to understand that creativity often comes in the moment and cannot always be planned. It never looks the same but should be at the core of any lesson.'</i>
Being open-minded and adaptable, with a willingness to take risks:		
Expect to adapt (teaching skills and identity), in response to contextual factors (e.g. curriculum changes; a school's priorities; external factors).	82%	<i>'I learnt that education and society are constantly changing, and it is important that as a teacher, I adapt to those changes. The Covid-19 pandemic situation was an example of the importance of teachers' flexibility - in their thinking and methods of teaching. I can see how my creative thinking skills will help me to make such changes.'</i>
View informed risk-taking as a necessary and positive aspect of creative teaching.	78%	<i>'I have learnt that creative teachers are risk-taking all the time, and that this is important if I want to be the best teacher possible. I understood from the presentation about informed risk-taking – this made it a lot less scary and more achievable!'</i>
Real-world examples of achievable creative teaching:		
Adapting teaching continually, in response to students' individual (unpredictable) needs.	84%	<i>'I learnt that it is alright - and even expected - for some planned learning activities to not work initially, as long as you can see what the children do or do not understand and find a new angle. I can see how I would use this improvised aspect of creative teaching.'</i>
Use of open questions	82%	<i>'It was good to hear examples of open questions in different subjects, and ways to support or challenge students if they have misconceptions or have achieved the learning objectives.'</i>
Planning some lessons with new ideas, suited to the needs of the students.	75%	<i>'The idea of using my own ideas for lesson plans, and not just published schemes, is exciting! The teacher's input explained that my new ideas will often be adjustments to things I have already tried, but these adjustments are important for students' learning.'</i>
Developing a unique and authentic teacher identity, that has fluidity:		
Expect to develop a unique teacher identity.	75%	<i>'I will take away [from the IST's presentation] that when I am observing and learning in my placements, I shouldn't think I need to be exactly like someone and that having my own style is okay. Being confident in my own creativity will be an important part of this.'</i>

Benefits of creative teaching identified in PSTs' responses	% of PSTs who included this (n=55)	Example quotes from PSTs' responses
Aim to be authentic with students and colleagues (i.e. a teacher identity reflecting professional personality and values).	69%	<i>'I have learnt that when teaching the children, it is important to present an authentic true picture of yourself. and celebrate your own style. Then, the children will show you more of themselves.'</i>
Expect to adapt your teacher identity and values	64%	<i>'It is nice to know that you may not always be the teacher identity you expected yourself to be. Mine [teacher identity] is definitely changing each week, which I wasn't expecting, but it is good to know that's normal! The teacher helped me to realise that creative teaching as a quality should help with this.'</i>
Collaborative and reflective practice, to develop creative teaching:		
Engage in peer support and collaboration.	64%	<i>'I loved the idea of working as a team with colleagues, including being creative together! Also, discussing problems with colleagues helped me to see the benefits of collaboration and gaining from others' ideas.'</i>
The value of professional self-reflection, seeing failures as learning opportunities	62%	<i>'I learnt that you should find time every day to reflect on what has happened. Learn from negatives to make them positives! I can see how my creative thinking skills would help with this.'</i>

Table 7.20 shows that 78% of PSTs highlighted the development of their understanding about informed risk-taking, due to the IST's input. Analysis of the PSTs' teacher identity diagrams at the end of the creative teaching package concluded that 78% of Iteration 2 and 3 PSTs had included informed risk-taking in their final teacher identity diagrams and descriptions, for example:

'I believe that in order to be a successful teacher, it is important to explore ways of creative teaching, and this involves taking some informed risks. Knowing that you don't always have to get it right and it is okay for things to go wrong, as long as you know where it went wrong and how it can be changed, is something that I will take with me as a developing teacher.'

one PST's teacher identity description

A comparison with Iteration 1 PSTs' results (37% included risk-taking in their teacher identity diagrams, discussed in section 7.3.3) gave a statistically significant increase (a χ^2 test with 1 df returned $p < 0.001$). This indicated an improvement in Iteration 2 and 3 PSTs' values of

informed risk-taking as a quality, potentially due to the additions made to the creative teaching package.

7.5.4 Researcher-IST mid-point check

An activity was completed by the researcher, to evaluate the strength of the creative teaching package at a mid-point of the three iterations. This aimed to check that the design and construction of the creative teaching package aligned with an expert IST's understanding of creative teaching, thus ensuring its continued application to the current education systems. The task was considered a wise time investment, due to the major disruptions experienced in education following the Covid-19 global pandemic (Reuge et al., 2021). It also enabled the researcher to experience working in a professional learning community with the IST (Stoll, 2015).

The task comprised the researcher and IST ranking ten creative teaching examples from Iteration 2 PSTs' disciplined and improvised creative teaching submissions from school-based teaching placements (Addition 3 task). Appendix P describes the ranking process, IST's profile, and detailed results. In summary, the researcher and the IST achieved a high level of agreement, with an Inter-Rater Reliability of 82% (the full calculation is in Appendix P). The outcomes of this task validated further the design of the creative teaching package and the judgements made by the tutors regarding the PSTs' examples of creative teaching, described in the outcomes above. The expert IST's summary comment below was a useful point to take into Iteration 3 of the creative teaching package:

'The simplest examples are the best – creatively making use of the resources around them (including the students); creating connections to previous learning, and responding creatively on the spot to the students' needs.'

7.5.5 Two additions for Iteration 3 of the creative teaching package

An analysis of Iteration 2 PSTs' final written evaluations of the creative teaching package led to two further additions for Iteration 3. Findings are presented separately for Iterations 2 and 3 from this point, as this section discusses:

- Iteration 2 evidence that informed the Iteration 3 additions;
- the design of the Iteration 3 additions;
- an evaluation of the two additions.

Here, the focus on re-design and re-construction of Iteration 3 returns to Phase 2 of the project, but has been included in this section, for fluency.

7.5.5.1 Iteration 2 evidence that informed the Iteration 3 additions

In the final written evaluation of the creative teaching package, Iteration 2 PSTs responded to the question:

'How could the creative teaching package be improved?'

76% of PSTs suggested input from a former PST who had completed the creative teaching package, and was now working in the Early Career Teacher (ECT) phase, for example:

'I want to hear from someone who is quite new in teaching, who has been in my shoes - about how they applied the creative teaching package in their school, and if they had any challenges that they had to overcome. I think this would help me to understand how important and how achievable it is.'

74% of PSTs suggested that they would benefit from gaining multiple perspectives, through a peer discussion activity following the school-based creative teaching task, for example:

'We could hear about everyone's experiences of creative teaching in different schools, and their different contexts, and complete a peer-to-peer review, to support each other. This could help us to understand its value from different perspectives, and give us a lot more examples of creative teaching, as well as presenting our own understanding and experience.'

Both suggestions for improvements aligned with the intentions of peer support and collaboration (with the ECT being viewed as a peer), working in professional learning communities, and gaining multiple perspectives (Nicol, 2014; Stoll, 2015).

7.5.5.2 Design of the Iteration 3 additions

With the aim of continuing to improve PSTs' understandings of the importance and achievability of creative teaching, two new tasks were designed for Iteration 3 of the creative teaching package, shown in Figure 7.32.

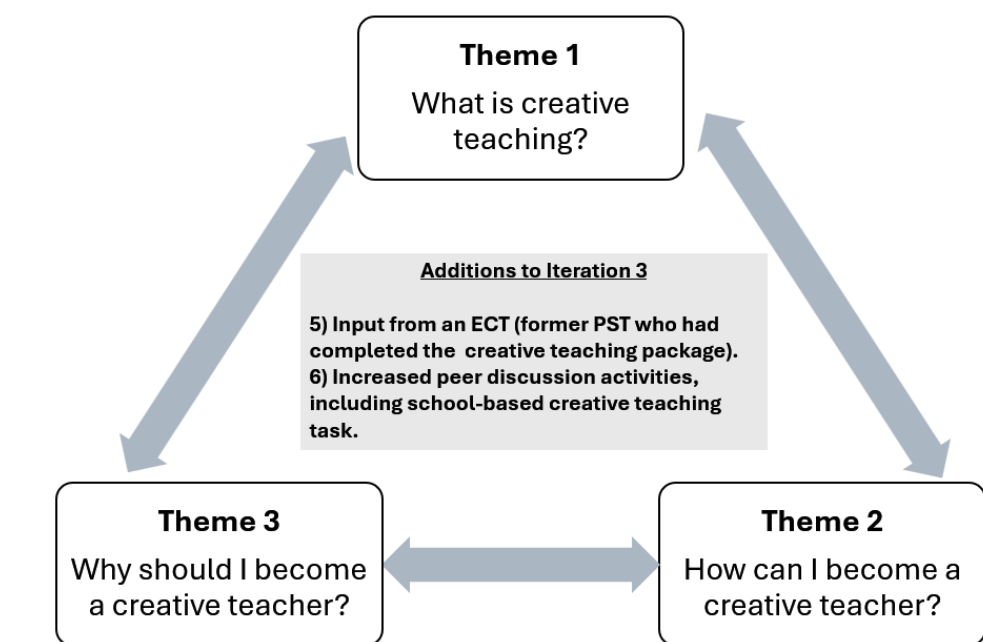


Figure 7.32 Two additional tasks for Iteration 3 of the creative teaching package, to support the three main themes

Addition 5: Input from an ECT (former PST who had completed the creative teaching package)

The researcher collaborated with an ECT - a former PST who had completed the creative teaching package in Iteration 2. The ECT's input aimed to strengthen the sustainability of the creative teaching package, by exemplifying its achievability and importance beyond the teacher training programme.

The ECT's input and PSTs' task are described in Figure 7.33.

Task explanation:

Following a conversation with the researcher about the aims of the creative teaching input and areas for its improvement, the ECT led a live online presentation in a university-based creative teaching session, in the style of 'in conversation with' the lead tutor. The themes⁸⁶ of the presentation comprised:

- the ECT's experience of moving the themes of the creative teaching package into the ECT phase;

⁸⁶ The themes for the ECT presentation deliberately matched those of the expert IST's presentation (Addition 4), to reinforce the main areas for the improvement of the creative teaching package, through two teachers' perspectives.

- the current relevance of creative teaching in schools, focusing on achievability and ‘thinking inside the box’;
- examples of creative teaching (both disciplined and improvised) from own practice;
- use of open questions and transdisciplinary skills in examples of creative teaching;
- the importance of informed risk-taking - as part of the decision-making process - in creative teaching acts;
- collaboration opportunities for creative teaching in schools;
- responses to PSTs’ input and questions.

PSTs’ task brief:

PSTs were asked to:

- contribute to the question-and-answer session, particularly considering three aspects in the context of creative teaching: use of open questions; transdisciplinary skills; informed risk-taking;
- complete and submit a written evaluation (for example, their view of the achievability of creative teaching, following the presentation);
- Write an entry in their self-reflective journals and revisit their teacher identity diagrams, regarding any changes to own professional developments, and thought-provoking points raised.

Figure 7.33 Addition 5: the ECT’s creative teaching presentation task

Addition 6: Peer discussion activity, following the school-based creative teaching task

A task asking PSTs to discuss their perspectives of creative teaching with peers, using their creative teaching examples from school-based teaching placements, was added to Iteration 3 of the creative teaching package. The task aimed to expand the PSTs’ understandings of creative teaching beyond their own experiences, by developing multiple perspectives (Nicol, 2014; Southworth, 2022). The task design incorporated main principles of peer review⁸⁷, to strengthen the transformative learning aspects of critical reflection and rational discourse, using an example from own experience (Mezirow, 2000; Nicol, 2014). The task is described in Figure 7.34.

PSTs’ task brief:

‘You will be asked to engage in a supportive peer discussion activity, to enable you to engage in rational discourse and critical reflection. For this discussion and follow-up task, be prepared to:

⁸⁷ As discussed in Chapter 4, peer review can be explained as peers reviewing and giving and receiving feedback of work in the same domain (Nicol, 2014).

- Work in peer discussion trios;
- Explain and justify your examples of creative teaching to your peers;
- Listen to your peers' examples of creative teaching, and make 'feedback' notes, regarding three strengths of their examples and one question (using supportive and constructive language);
- Orally present your feedback to your peers, and engage in a dialogue (this may include ways in which your perspective of creative teaching has adjusted).

Follow-up self-reflection task:

- Write an entry in your self-reflective journal and revisit your teacher identity diagram, regarding any changes to own professional developments, and thought-provoking points raised, through this task.

Figure 7.34 Addition 6: peer-to-peer discussion task, focusing on school-based creative teaching examples

7.5.5.3 Evaluation of the Iteration 3 additions

Input from an ECT (former PST) The ECT's presentation was considered to be a positive influence by 95% of the Iteration 3 PSTs in their written evaluations of the input, for example:

'The presentation, and question and answer session afterwards, were great because we could understand the value of creative teaching a couple of years down the line. This has really helped me to see its importance for my teaching career.'

one PST's written response

The main benefits of the ECT's input, perceived by Iteration 3 PSTs, are summarised in Table 7.21.

Table 7.21 Benefits of the ECT's input for Iteration 3 PSTs (data taken from PSTs' written evaluations of the input)

Benefits of creative teaching identified in PSTs' responses	% of PSTs who included this (n=21)	Example quote from PSTs' responses
Achievability	90%	<i>'The ECT's examples reinforced my understanding of creative teaching, and reminded me that this is a very achievable day-to-day occurrence in classrooms.'</i>
Real-world examples	86%	<i>'The examples of creative teaching given by the ECT were so helpful, including their mistakes, and what the ECT had learnt from these.'</i>
Importance of creative teaching	81%	<i>'It was great to hear from someone who had completed the creative teaching sessions and then continued to use this as an ECT after the PGCE course. This made creative teaching feel much more important and valued by schools.'</i>

Benefits of creative teaching identified in PSTs' responses	% of PSTs who included this (n=21)	Example quote from PSTs' responses
Informed risk-taking	81%	<i>'I picked up from the ECT in all of the examples where they had taken some sort of risk, but that 'risk' wasn't something to be afraid of because it was based on the needs of the children and the context of their learning environment.'</i>
Authenticity / teacher identity	67%	<i>'I enjoyed hearing from someone who clearly has creative teaching at the heart of everything they do as a teacher.'</i>
Collaborative	62%	<i>'Hearing about the support they received as a new teacher, and collaborative opportunities to develop their own creative teaching skills within the school, was very encouraging.'</i>

Peer discussion task focusing on school-based creative teaching examples Following the peer discussion task described in Addition 6 (Figure 7.34), Iteration 3 PSTs' responses to the question *'How beneficial did you find the peer discussion and feedback?'* gave a mean rating of 4.3, on a scale of 0 (not at all beneficial) to 5 (highly beneficial). The main benefits stated by the PSTs were:

- gaining new ideas for creative teaching (86%);
- clarifying and justifying own understanding of creative teaching (81%);
- gaining others' perspectives of what creative teaching means to them (76%);
- increased confidence with own creative teaching approaches (validation by peers) (76%).

The high percentages above indicated that the peer discussion session was considered a valuable addition to the creative teaching package by many PSTs, and this was reflected in PSTs' written feedback comments, for example:

'I think using others' teaching experiences to influence your own is creative. I think one main barrier for creativity as a pre-service teacher is that you simply do not have enough ideas yet, but the more you share with others the easier it will get.'

'I felt that the peer discussion task helped me to feel much more confident about my own understanding of creative teaching. It was very affirming.'

The influence of Additions 5 and 6 on Iteration 3 PSTs' professional developments was also evaluated by comparing each PST group's mean rating of the importance and achievability of creative teaching. At the end of the creative teaching package, PSTs in Iterations 2 and 3 responded to the same questions as Iteration 1 PSTs:

'How important do you think creative teaching is for you?'

‘How achievable do you think creative teaching is for you?’

on a scale of 0 (not at all important/achievable) to 5 (very important/achievable).

The graph in Figure 7.35 compares the results for the three Iterations, showing an increase in the PSTs’ mean ratings of importance and achievability as the iterations progressed, and a narrowing of the gap between the two aspects.

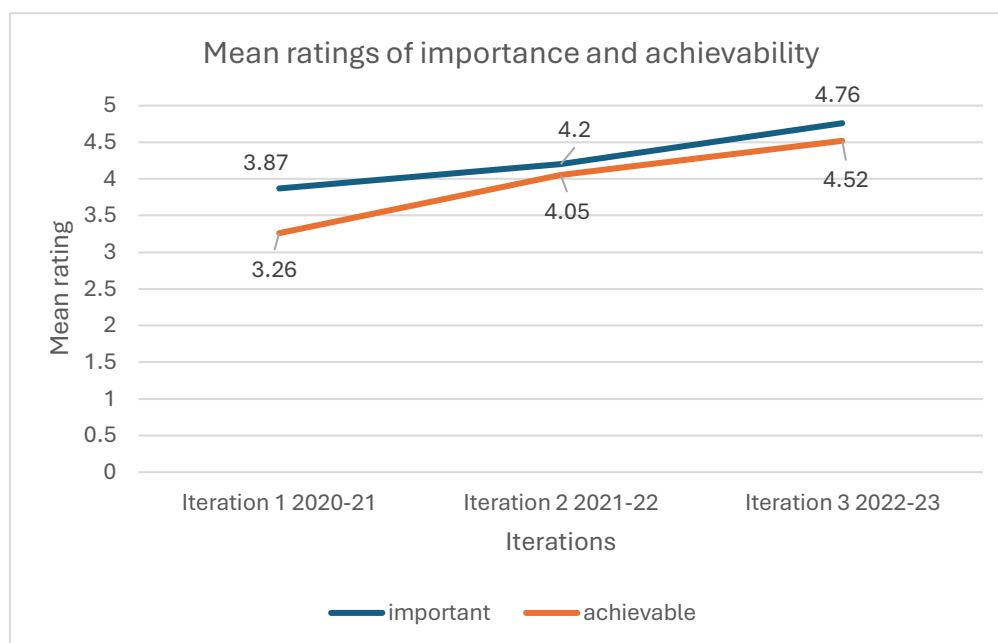


Figure 7.35 A graph to show PSTs’ mean ratings for importance and achievability of creative teaching, after completion of each Iteration of the creative teaching package

This increase in mean ratings as the iterations progressed was statistically significant, evidenced in Table 7.22, suggesting that the re-design of the creative teaching package improved PSTs’ views of creative teaching, including Additions 5 and 6 to Iteration 3.

Table 7.22 A comparison of PSTs' mean ratings of the importance and achievability of creative teaching, per Iteration

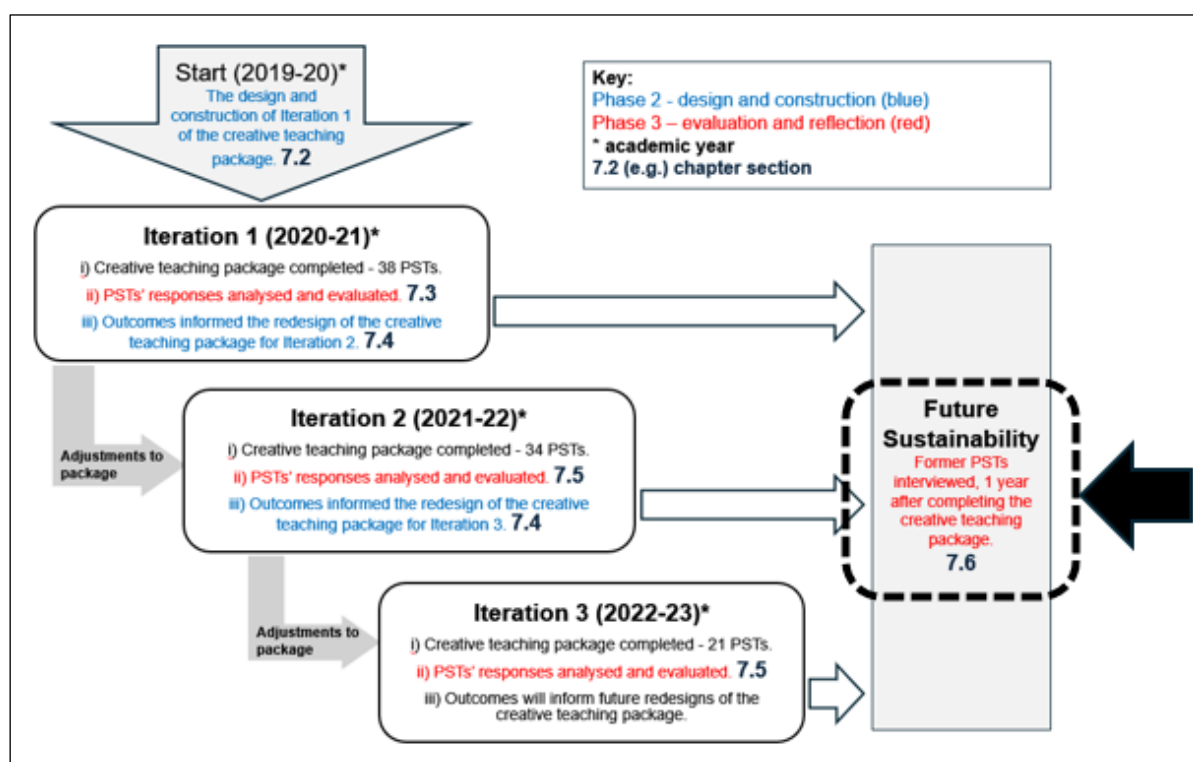
Categories	Mean Ratings (M) and Standard Deviation (SD)		P-value significance at $p < .05$ (T-test for two independent means)	Effect size (Cohen's d)
	Iteration 1 2020-21	Iteration 3 2022-23		
Important	$M = 3.87$ $SD = 0.70$	$M = 4.76$ $SD = 0.44$	p -value $< .00001$ statistically significantly higher	$d = 1.52$ large
Achievable	$M = 3.26$ $SD = 0.95$	$M = 4.52$ $SD = 0.60$	p -value $< .00001$ statistically significantly higher	$d = 1.59$ large
	Iteration 2 2021-22	Iteration 3 2022-23		
Important	$M = 4.2$ $SD = 0.81$	$M = 4.76$ $SD = 0.44$	p -value = .005485 statistically significantly higher	$d = 0.86$ large
Achievable	$M = 4.05$ $SD = 0.85$	$M = 4.52$ $SD = 0.60$	p -value = .033226 statistically significantly higher	$d = 0.64$ medium

PSTs' beliefs that a creative teaching approach was *achievable* were analysed at the end of Iteration 3, to investigate this aspect further, due to its particularly large increase from Iteration 1 to Iteration 3. Table 7.23 summarises the main reasons given by Iteration 3 PSTs in enabling creative teaching to be achievable in their practice, in their final written evaluations of the creative teaching package.

Table 7.23 Iteration 3 PSTs' reasons for the achievability of creative teaching

Factors enabling creative teaching to be achievable	% of PSTs who included this (n=21)	Example quote from PSTs' final written responses
Understanding adaptability	86%	<i>'Now I understand that creative teaching involves adaptability, and I understand what this means. This might be being able to adapt work in order to clearly differentiate within a classroom. I think creative teaching is fundamental to this.'</i>
Gain own experience of creative teaching	81%	<i>'By teaching actual lessons, you begin to develop a sense of when creativity and adaptation is needed.'</i>
Strong knowledge of the learners' needs	71%	<i>'The more I know my class, the easier it is to be creative in my lessons, and to adapt.'</i>
Gain ideas from other PSTs	71%	<i>'Through peer discussions I am discovering more and more examples of creative teaching.'</i>
Gain ideas from experienced teachers	67%	<i>'Learning from other teachers to build up a bank of ideas which I can use, particularly for instances when I realise I must use improvised creative teaching during a lesson.'</i>
Willingness to continually develop creative teaching as an explicit skill (sustainability)	62%	<i>'Creative teaching is a skill that can (and needs to be) developed and practised.'</i>
Understanding that creative teaching is integral to all decision-making	62%	<i>'I often think 'what other way can I explain this', or 'how can I show them this in a way that appeals to them'. I think this is achievable if I think about what I want the children to gain.'</i>

7.6 The sustainability of the creative teaching package (Phase 3)



Overview of 7.6

Section 7.6 presents data to investigate the potential sustainability of creative teaching skills and values for PSTs, beyond the teacher training programme. Outcomes were analysed from semi-structured interviews with ten former PSTs after one year of teaching, who had completed the creative teaching package. This section aims to strengthen Phase 3 of the project: the evaluation phase.

Summary of outcomes:

Evidence provided strong indications of the potential sustainability of a creative teaching approach, with suggestions that the creative teaching package influenced former PSTs' professional developments (creative teaching skills and values) beyond the training phase. Several issues are discussed regarding ways forward for a creative teaching approach in current education systems.

7.6.1 Research overview for RQ7

The aims of the creative teaching package considered three aspects of PSTs' professional developments, shown earlier in Figure 7.3: creative teaching skills, values and sustainability. To strengthen Phase 3 of the project, the potential sustainability of creative teaching skills and values beyond the programme was evaluated, by considering the following research question:

RQ7) Were there indications of the sustainability of a creative teaching approach, beyond the training phase?

Semi-structured interview data⁸⁸ were collected from ten ECTs (former PSTs who had completed Iterations 1 and 2 of the creative teaching package)⁸⁹. This sample of ECTs were volunteers who had responded to the researcher's request for participants.

The ECT interviews explored the potential sustainability of the themes of the creative teaching package, by considering:

- the influence of the creative teaching package on the ECTs' professional developments, beyond the PGCE year;
- challenges for the ECTs beyond the PGCE year for a creative teaching approach, and possible ways forward.

Interview transcripts were analysed using qualitative content analysis methods, to identify common themes, patterns and any differences (Bryman, 2016). Due to the nature of a semi-structured interview, an aspect that emerged in most interviews, but had not been pre-planned, was also explored – the ECTs' visions for their teacher identities as future education leaders, and the place of creative teaching in these identities.

The evidence below is taken from all ten ECTs' responses. The interview data were analysed to see if there were differences in the responses of ECTs who had completed Iteration 1 compared with Iteration 2 (considering the adjustments to the creative teaching package for Iteration 2). The two groups' responses mostly shared common themes, although some differences were identified, and these have been presented.

7.6.2 Findings: RQ7) Were there indications of the sustainability of a creative teaching approach, beyond the training phase?

⁸⁸ The semi-structured interview process is explained in Chapter 6, section 6.2.3, and demonstrated in Appendix H. The same approach was applied to this phase of the project.

⁸⁹ Five ECTs had completed Iteration 1 and five had completed Iteration 2 of the creative teaching package. All ECTs were interviewed after completing one year of teaching.

All ECTs said that the creative teaching package had continued to influence positively their teacher identities and professional developments after their PGCE year, for example:

‘Creative teaching is a habit now and part of what I am as a teacher.’

(ECT, Iteration 2)

‘The [creative teaching] sessions changed my way of thinking about creative teaching and are why this is now embedded in my teacher identity.’

(ECT, Iteration 1)

The ECTs’ descriptions of own creative teaching were categorised according to disciplined creative teaching, improvised creative teaching or both disciplined and improvised creative teaching - summarised in Table 7.24.

Table 7.24 A summary of the main aspect(s) of disciplined improvisation described by ECTs in their own creative teaching

	Disciplined creative teaching	Improvised creative teaching	Improvised and disciplined creative teaching
Iteration 1	1	4	0
Iteration 2	1	2	2

For six of the ECTs, the main reason for the importance of a creative teaching approach was linked to the improvised aspect of creative teaching: in-lesson responses and adaptations to meet students’ learning needs, for example:

‘I see it [creative teaching] as understanding the needs of my students, and constantly adapting my teaching in the lessons to help them to learn and understand.’

(ECT, Iteration 2)

These six ECTs used vocabulary such as: ‘*constantly*’, ‘*every*’ and ‘*integral*’, related to their creative teaching approaches. This suggested that creative teaching was in action continually in everyday ‘improvised’ teaching acts, and that the creative teaching package had inspired this, for example:

‘Adapting during every lesson has been really important: I am never flustered if something goes wrong as I will think of some other way of teaching it, which I think is directly from what we were taught [in the creative teaching package].’

(ECT, Iteration 1)

Two ECTs focused more on ‘disciplined’ creative teaching acts, for example:

'I like to put into some of my lesson plans the use of drama techniques to engage the children, such as role-play and hot-seating. They respond really well to these types of activities.'

(ECT, Iteration 1)

Two ECTs from Iteration 2 indicated a focus on both 'disciplined' and 'improvised' creative teaching acts, for example:

'It [creative teaching] is essential: every single part of my teaching life has to involve creative thinking. Whether it is planning how to differentiate the work, or in the moment of the lesson when they aren't understanding something – do I need to use a different teaching approach (for example, using a new resource or moving out of the classroom)? Constantly, I am thinking: "How might I change my teaching approach so they can understand this knowledge"?'

(ECT, Iteration 2).

When interviewed, the ECTs were asked the question:

'Would you change your responses to the final task⁹⁰ about creative teaching that you gave as a pre-service teacher, now you have been teaching for a year?'

Nine ECTs said that they would not change their responses, suggesting that their understandings of creative teaching at the end of the creative teaching input aligned with their experiences of this in their current practice, for example:

'My idea of creative teaching now is definitely what I left with at the end of the PGCE year, which developed from the creative teaching sessions.'

(ECT, Iteration 1).

One ECT changed an aspect of his understanding of creative teaching, shown in Figure 7.36.

The ECT's understanding of creative teaching at the end of the creative teaching package (as a PST): *'One obstacle to creative teaching is the way classes have to be differentiated. As my [teaching placement] class can have four groups of pupils at very different levels of attainment, it can be tricky to find creative ways for each aspect of the lesson [that will support all the students].'*

⁹⁰ The final task asked PSTs for their understandings of creative teaching, after completing the creative teaching package. As a reminder, their task responses were provided before their semi-structured interviews.

The ECT's understanding of creative teaching after a year of teaching (as an ECT):

'When I read it [the response above] I thought oh no, that's not right! Now I think that having pupils working at different levels forces you to be creative, by adapting an idea to meet all their needs.'

(ECT, Iteration 2)

Figure 7.36 An ECT's change in understanding of creative teaching, after a year of teaching

This ECT explained his use of disciplined creative teaching, to exemplify this change in his understanding of creative teaching (a vignette capturing the ECT's example is in Appendix Q).

An addition to Iteration 2 of the creative teaching package was a focus on 'thinking inside the box', to support PSTs' beliefs of the achievability of creative teaching. 'Thinking inside the box' was not used by any Iteration 1 ECTs in their interviews, compared with four out of the five Iteration 2 ECTs who used the phrase in their interview responses. For example:

'A possible challenge with creative teaching is that you might go too far and move away from the learning objective. 'Thinking inside the box' is really important – the learning needs to be meaningful and relevant for the children. My understanding of this developed during the creative teaching sessions [in the PGCE year] and it hasn't changed since then, but in practice I've improved.'

(ECT, Iteration 2)

"The biggest thing I've improved on this year is changing things on the spot – thinking how can I do this differently, so the children understand? I am 'thinking inside the box' all the time!"

(ECT, Iteration 2)

Another difference that was identified between the ECT Iteration 1 and ECT Iteration 2 responses was that the five ECTs who completed Iteration 1 discussed the use of a creative teaching approach to reduce the negative impact of the Covid-19 global pandemic on students' learning experiences. These ECTs had completed their first year of teaching in the immediate aftermath of the global pandemic. For example:

"I think creative teaching has been especially important this year, as the students have missed so much [due to school closures]. You are constantly, unexpectedly, filling in gaps because they didn't have the prior knowledge you'd expect from the previous year.'

(ECT, Iteration 1)

In contrast, this issue was raised by only one ECT who completed Iteration 2.

Challenges of using a creative teaching approach beyond the PGCE year, and

possible ways forward Five ECTs stated that their desired intentions to use a ‘disciplined’ creative teaching approach conflicted with their school’s values and priorities. The vignette from one ECT, in Figure 7.37, illustrates this.

[The commentary is an interpretation of the interview transcript, with ECT’s wording in italics]

The ECT had experienced a school that was very supportive of her use of a creative teaching approach during her pre-service teaching placement. She had experienced using imaginative and engaging ‘hooks’ to introduce the students to new topics: in her interview, she recounted clearly these examples of disciplined creative teaching. She then explained that, as an ECT, her current school’s priorities (*‘data driven’*) and context (*‘four-class entry meaning team planning, with limited opportunities to develop my own ideas’*) limited her use of creative teaching approaches, for example:

‘My ambition [for disciplined creative teaching] is still there, but the reality is not the same – because of the context of my school. The school is very data driven, with a large emphasis on phonics. The curriculum is very rigid.’

The ECT stated that her motivation to plan creative lessons remained part of her teacher identity, and would become a more dominant influence for her lesson planning approach, if she was in a school environment in the future that supported this.

(ECT, Iteration 1)

Figure 7.37 An ECT’s example of a school’s priorities conflicting with a disciplined creative teaching approach.

This contrasted with five ECTs’ experiences of schools supporting creative teaching approaches, and these examples were analysed in an attempt to find possible solutions to this challenge for others. For example, the following ECT’s quote suggested that school leaders advocating a creative teaching approach was essential for an ECT’s development of creative teaching skills:

‘One of the first things I was taught in my school was that they [the school leaders] didn’t mind how much is written in the books, as long as it [the learning experience] is good. You can use a range of resources and do physical things- like using mini whiteboards, or teaching outside – as long as there is some evidence, such as photographs. This allows me to be more creative in my planning.’

(ECT, Iteration 1).

School leaders' attitudes and actions emerged as a main influence, regarding possible successes and challenges of a creative teaching approach. Therefore, an additional question was posed during the semi-structured interviews: ECTs were asked for their views of the value of a creative teaching approach if they were to take any future leadership positions (for example: subject leadership, whole-school leadership). All ECTs stated that a focus on creative teaching would be essential for their future leadership identities. When asked what this might look like in practice, five ECTs discussed the use of creative teaching skills to move away from published schemes of work and towards more student-centred learning experiences, for example:

'There needs to be more space in the schemes of work for pupil-led learning, such as following pupils' questions, and helping with their misconceptions. This isn't the case at the moment as learning outcomes have to be decided months in advance.'

(ECT, Iteration 1).

Five ECTs referred to external pressures on the school's priorities, such as OFSTED's recommendations and the demands of standardised assessments. The following example from one ECT demonstrated the issue in depth, with a proposed way forward:

'I would like summative assessments to be more creative, rather than just assessing written work. For example, the outcome of a discussion can be so different to a written response. This could help students for whom English is not the first language. However, the school has strict expectations and restrictions about what the students' books should include and how work is presented, and an OFSTED recommendation is more evidence in the books. Some students have language barriers, and it takes them 30 minutes to write a paragraph, but they know so much. I've suggested [to senior leaders] that we audio record students' thoughts instead.'

(ECT, Iteration 2).

Table 7.25 summarises further challenges for a creative teaching approach raised by the ECTs, the number of ECTs who raised this, and an interview quote to illustrate the challenge. The final column gives an example of a counter-argument or possible solution to the challenge, that also emerged in the interviews.

Table 7.25 Challenges, counter-arguments and possible solutions for a creative teaching approach, raised by ECTs

Challenge	Number of ECTs raising the obstacle (n=10)	Example quotes from interviews	
		The challenge	Counter-argument or possible solution
Time needed to plan creative teaching ideas	6	<i>'I don't always have the time to make the change that's needed, so some lessons are not as creative as I want them to be.'</i>	<i>'You don't have time to <u>not</u> be creative. There is no point just using workbooks or textbooks as the students won't get it. If you aren't teaching creatively, then you'll have to repeat [the lesson] again in a different way, and you'll have to be creative anyway – there's an inevitability! Why not be creative from the start?'</i>
Access to resources / physical spaces	5	<i>'My school doesn't have a lot of resources, so it can be hard to implement different teaching approaches. I have to ask other teachers if I can borrow resources that I want to use, to make my lessons more creative.'</i>	<i>'Disciplined creative teaching doesn't have to be resource-heavy. It can be the use of drama techniques (for example, exploring the emotions of characters in stories), or planning to explore a 'What if...' question.'</i>
Convincing colleagues of the benefits of a creative teaching approach	4	<i>'For an English lesson, I wanted to be in 'the hot seat' as a famous children's author, to then enable the children to write reports about his work. But the more experienced teachers said: "Don't do it! You will have to put in more time and effort than the children".'</i>	<i>'I still want to do the hot-seating at some point but in a time-efficient way. I will need to facilitate it so the children are doing most of the work. I know I will need to show other teachers how a creative teaching approach can be time-efficient.'</i> <i>'Creative teaching approaches help children to master ideas within the spiral curriculum. It helps you to think of lots of different ways to build up the children's understanding of a concept.'</i>

7.7 Discussion of Phase 2 and Phase 3 outcomes

Sections 7.2 - 7.6 presented the outcomes and Findings for:

- Phase 2 - the design, construction and redesign of the creative teaching package;
- Phase 3 - the evaluation of the creative teaching package for its three iterations.

Section 7.7 will discuss a summary of the evidence presented in this chapter, in relation to the project's literature review (Chapters 2, 3, and 4), by considering strengths of the evidence, theory-practice connections, and ways forward for any issues. Section 7.7 comprises two main sections: a discussion of Phase 3 evidence, followed by a discussion focusing on aspects of Phase 2. To guide the discussion, the research questions for consideration are presented at the beginning of each section.

7.7.1 Phase 3 discussion

7.7.1.1 Introduction to Phase 3 discussion

Research questions for consideration:

RQ 3: How did the creative teaching package influence the PSTs' professional developments? *Two parts:*

-RQ 3a) *How did the PSTs develop their creative teaching skills?*

-RQ 3b) *How did the PSTs develop their creative teaching values?*

RQ4: Which aspects of the creative teaching package were strengths, and which could be improved for the next iteration?

RQ 6: How did the improvements to the creative teaching package influence the PSTs' professional developments? *Two parts:*

-RQ 6a) *How did the PSTs' creative teaching skills improve?*

-RQ 6b) *How did the PSTs' creative teaching values improve?*

RQ 7: Were there indications of the sustainability of a creative teaching approach, beyond the training phase?

The discussion for Phase 3 of the project focuses on the evaluation of the creative teaching package, and its potential sustainability. The research questions above aim to investigate the influence of the creative teaching package on PSTs' professional developments, and its potential sustainability. Therefore, the discussion for Phase 3 considers:

- the influence of the creative teaching package on the development of PSTs' creative teaching skills, and indications of improvements as the iterations progressed;

- the development of PSTs' creative teaching values, reflected in their teacher identities, and indications of improvements as the iterations progressed;
- indications of the sustainability of a creative teaching approach, beyond the PSTs' training year.

7.7.1.2 The influence of the creative teaching package on the development of PSTs' creative teaching skills, and indications of improvements as the iterations progressed

In this chapter, the influence of the creative teaching package on the development of PSTs' creative teaching skills was investigated through an analysis of PSTs' responses from each iteration of the package. Overall, there was evidence that the creative teaching package had influenced PSTs' development of creative teaching skills, compared with Comparison Group data⁹¹ and PSTs' own starting points before the creative teaching input. The evidence also demonstrated that the re-design of the creative teaching package resulted in an improvement in the PSTs' creative teaching skills as the iterations progressed. These outcomes will now be discussed, by considering the PSTs' developments of disciplined and improvised creative teaching approaches.

Disciplined creative teaching Disciplined creative teaching was discussed in Chapter 3 as the intentional use of a creative teaching approach in the lesson planning stage (Beghetto, 2017), and the creative teaching package incorporated tasks designed to enable PSTs to develop this skill. For Iteration 1 PSTs, the evidence from the disciplined scenarios lesson planning task (Table 7.6 and Figure 7.26) demonstrated that, by completing the creative teaching package, PSTs had developed their understanding and application of creative teaching techniques. These techniques included creative thinking devices and transdisciplinary skills, discussed as key components of creative teaching in the literature review (Henriksen, 2016; Lucas & Spencer, 2017; Wegerif, 2010). Similar creative teaching developments were not identified in the Comparison Group's work. In the same scenarios task, PSTs demonstrated their abilities to practice disciplined creative teaching approaches to develop students' creative thinking skills, with the shift from a teacher-led to a student-led focus in lesson planning strongly aligning with a main ambition for creativity in current education systems (Beghetto, 2017; Lucas & Spencer, 2017).

PSTs' disciplined creative teaching skills then moved into a real-world school context. Their abilities to evaluate own lessons by suggesting adaptations - indicated by the statistically significant larger number of suggested adaptations compared with the Comparison Group (Figure 7.16) - suggested that the PSTs were developing a main intention of the creative

⁹¹ As noted in section 7.3.1, the Comparison Group had similar characteristics to the PST groups who had completed the creative teaching package.

teaching package: to become open-minded problem-finders, and crucially, problem-solvers (Runco & Nemiro, 1994). In this task, PSTs demonstrated their abilities and willingness to adapt - a quality identified in the literature review as essential for creative teaching (Clack, 2017).

This positive indication of PSTs' potential to improve their teaching by adapting lesson ideas, was substantiated with evidence from Iteration 2 and 3 PSTs, with an analysis of PSTs' actual use of a disciplined creative teaching approach during their teaching placements. Again, PSTs demonstrated problem-finding skills, with problems aligning with a main motivation for a creative teaching approach: teachers making adaptations to maximise students' outcomes and engagement (Beghetto, 2017). Another important motivation was also evident in all the PSTs' examples of disciplined creative teaching - an element of satisfaction for the teacher (Acar et al., 2017).

In Iteration 1, evidence indicated PSTs' strengths in their use of creative thinking devices and transdisciplinary creative teaching skills, but there was less evidence of their use of open questions in the disciplined creative teaching context (Table 7.6). A re-designed creative teaching package for Iterations 2 and 3 resulted in an improvement in PSTs' use of open questions (Table 7.17), with more PSTs focusing on the strategies of possibility thinking and enquiry-based learning, advocated in creative teaching literature (Clack, 2017; Grigg & Lewis, 2018).

Improvised creative teaching Improvised creative teaching was discussed in Chapter 3 as the spontaneous use of a creative teaching approach in response to unpredictable in-lesson occurrences (Beghetto, 2017), and the creative teaching package incorporated tasks designed to enable PSTs to develop this skill. For Iteration 1, the evidence from the improvised scenarios tasks (Table 7.7 and Figure 7.27) demonstrated that, by completing the creative teaching package, PSTs had developed their understanding and application of creative teaching techniques. These techniques included creative thinking devices and transdisciplinary skills, discussed as key components of creative teaching in the literature review (Henriksen, 2016; Wegerif, 2010). However, this was not as evident for Iteration 1 PSTs when the use of improvised skills moved into a school context, where the number of improvised adaptations evidenced by the PSTs in their teaching placement lesson evaluations showed no statistically significant differences compared with the Comparison Group (Table 7.9). There could be several explanations for this. PSTs may be less likely to make spontaneous in-lesson adaptations in this early stage of their training, due to confidence or skills. Alternatively, competent teachers tend to improvise subconsciously and

continually throughout lessons; therefore, PSTs may have not recalled or reported all the adaptations they made, when they evaluated their lessons (Henriksen, 2016; Hill, 1993).

The potential issues above were addressed in the redesign of the creative teaching package for Iterations 2 and 3, through a more explicit emphasis on the development of PSTs' improvised creative teaching skills. The outcomes for Iterations 2 and 3 indicated strong evidence of the adjustment's effectiveness, with a statistically significant increase in PSTs' number of in-lesson adaptations in their teaching placement evaluations, when results for Iterations 2 and 3 were compared with Iteration 1 (Table 7.19). These findings were strengthened by an analysis of PSTs' examples of improvised creative teaching from teaching placements, demonstrating that PSTs were applying, with competence, improvised creative teaching skills to school-based environments. Evidence indicated that PSTs were using improvised creative teaching approaches to make in-lesson adaptations that accommodated the complex network of interactions and behaviours within the learning environments (Beghetto, 2017; Lucas & Spencer, 2017; Paek & Sumners, 2017). The PSTs' actions through their improvised creative teaching resonated with elements of 'lesson unplanning' (Henriksen & Mishra, 2018, p.544).

Overall, evidence indicated that most PSTs demonstrated a consistent understanding of disciplined and improvised creative teaching in theory as well as in practice, alleviating the concern raised in the literature of potential misunderstandings of creative teaching for some teachers (Reilly et al., 2011; Tanggaard, 2011).

7.7.1.3 The development of PSTs' creative teaching values, reflected in their teacher identities, and indications of improvements as the iterations progressed

In this chapter, the influence of the creative teaching package on the development of PSTs' creative teaching values was investigated through an analysis of PSTs' responses from each iteration of the package. Overall, there was strong evidence that the creative teaching package had influenced Iteration 1 PSTs' inclusion of creative teaching skills in their teacher identities, compared with Comparison Group data and PSTs' own starting points before the creative teaching input (Figure 7.18). This suggested that PSTs recognised the value of creative teaching skills, and were potentially willing to invest time and professional development in developing this attribute (Huang & Yang, 2019; Nias, 1993). Including creative teaching skills in teacher identities also indicated that PSTs viewed this as a conscious and deliberate decision-making tool, to be used intentionally (Beghetto, 2017; Henriksen, 2016).

For creative teaching to become part of PSTs' teacher identities, leading to enactment in practice, it was crucial for PSTs to understand its meaning. A comparison of Iteration 1

PSTs' understandings of creative teaching before and after the creative teaching package (Figure 7.18) indicated that PSTs had gained in their understanding and articulation of disciplined and improvised creative teaching through the training package, and its value for both students' learning experiences and their own professional developments (Beghetto, 2017; Cremin & Barnes, 2018). Iteration 1 PSTs identified strongly with The Engager, The Responder and The Adapter categories of creative teaching (Table 7.10), identified in Phase 1. In common with PSTs in Phase 1 of this project, PSTs particularly identified with The Adapter category, recognising that a holistic blend of disciplined and improvised adaptability was the essence of creative teaching (Beghetto, 2017; Lucas & Spencer, 2016). The interesting lack of statistically significant differences between Iteration 1 PSTs and the Comparison Group for The Responder, The Adapter and The Risk Taker categories (Table 7.10) may suggest that PSTs tended to relate to the creative teaching categories in a similar way – however, the creative teaching package then provided a training mechanism to translate these intended values into practice. The statistically significant decrease in Iteration 1 PSTs' ratings of The Performer category, compared with the Comparison Group, reflected a move away from this teacher-centred 'performer identity' that was dominant in early views of creative teaching (Opulente, 1965; Rowen, 1968).

PSTs' values of creative teaching were investigated through two aspects: the importance of creative teaching to the PSTs and their perceptions of its achievability. In all three iterations of the creative teaching package, PSTs recognised and articulated the importance of creative teaching (Figure 7.35). Benefits of a creative teaching approach to teachers were recognised (including increased professional motivation and engagement, by becoming more effective and adaptable teachers, and improving decision-making skills), alongside benefits to students (including improved engagement and learning experiences). These benefits were all raised in the literature review (Beghetto, 2017; Cremin & Barnes, 2018; Henriksen, 2016; Lucas & Spencer, 2016). Some Iteration 1 PSTs were less confident in the achievability of a creative teaching approach (Figure 7.20), raising potential concerns such as the support of schools and colleagues (Keamy, 2016). Iteration 1 PSTs had not been able to experience a specific creative teaching task in their teaching placements as part of the creative teaching package, due to Covid-19 related restrictions to the teacher training course. Although scenarios tasks were valued by the PSTs, adding school-based creative teaching experiences was an important addition to the creative teaching package for Iterations 2 and 3, to convince PSTs of its achievability and strengthen its position in their teacher identities.

Evidence indicated that the addition to the creative teaching package of an experienced IST's (Iterations 2 and 3) and ECT's (Iteration 3) input was a pivotal moment for some PSTs,

providing confirmation from school colleagues of the importance and achievability of creative teaching (Tables 7.18 and 7.19). An analysis of PSTs' reflections on these presentations indicated that they had developed a deeper understanding of key attributes linked to creative teaching, for example, adaptability, risk-taking, open questions and openness (Beghetto, 2017; Desailly, 2015; Henriksen, 2016). An additional aspect to emerge was the value of a teacher's authentic self, with the caveat of the need for adjustment to accommodate the school's context and priorities (Clack, 2017).

Through the IST's and ECT's input, PSTs also developed their understanding of the value of creative teaching within collaborative professional learning communities (Stoll, 2015). The addition of a peer discussion task in Iteration 3 reflected some of the aims of collaborative professional development, with PSTs benefitting by gaining new ideas and approaches of creative teaching through exposure to peers' perspectives, as well as developing their own justification and reasoning skills (Nicol, 2014). Another positive outcome of the peer discussion task was receiving validation of their own understandings of creative teaching – essential for creative teaching to then become embedded in their teacher identities (Boyd et al., 2015).

The importance of informed risk-taking as a necessary attribute for creative teaching was raised in many examples in the literature review (Beghetto, 2018b; Henriksen, 2016; Sawyer, 2012). After identifying that informed risk-taking could be more prominent in Iteration 1 PSTs' teacher identities, there was evidence that the increased emphasis of this attribute in subsequent iterations of the creative teaching package was reflected in PSTs' teacher identities (discussed in section 7.5.3).

Overall, there were strong indications that the additions to the creative teaching package in Iterations 2 and 3 resulted in an increase in the PSTs' perceptions of the achievability of a creative teaching approach (Figure 7.35).

7.7.1.4 The sustainability of a creative teaching approach

To investigate the potential sustainability of a creative teaching approach for PSTs beyond the training year, qualitative data was analysed from semi-structured interviews with ten ECTs who had completed the creative teaching package as PSTs. The Findings (section 7.6) indicated that the creative teaching package was sustainable, as it continued to influence PSTs' understanding, application and value of creative teaching, beyond the training programme. ECTs' discussions of creative teaching being an essential everyday teaching skill - particularly in the spontaneous and improvised creative teaching context - aligned with an apparent shift from a conscious creative teaching approach to a more subconscious, as the ECTs gained more teaching experience (Hill, 1993). This suggested

that an improvised creative teaching approach may have become embedded in the ECTs' professional identities, with strong indications of transformative learning processes in action for most interviewed ECTs (Mezirow, 2000).

In the earlier discussion of the potential influences on their teacher identities, some PSTs recognised that their teacher identities were likely to change once they were in schools. Aligning with the redesigned creative teaching package for Iteration 2, the ECTs' focus on 'thinking inside the box' potentially helped them to adjust their creative teaching responses according to contextual factors in schools (Boyd et al, 2015; Cremin & Barnes, 2018). This indicated that this addition to the creative teaching package was important and had been applied to the ECTs' practice.

Using a disciplined creative teaching approach in schools was raised by some ECTs as potentially challenging. ECTs viewed that its success was largely dependent upon the priorities and values of the school, which were often driven by the accountability pressures on school leaders, and this agreed with views in the Literature Review (for example Keamy, 2016). Despite some potential barriers for a disciplined creative teaching approach, there were indications that the view of creative teaching being a complementary blend of disciplined improvisation was a strong outcome for Iteration 2 ECTs' teacher identities, with any dormant aspects potentially gaining dominance in future leadership roles (Biesta, 2015).

Some ECTs demonstrated their developing 'wisdom in practice', by suggesting ways forward for the challenges of a creative teaching approach (Beghetto, 2017, p.561). The determination the ECTs expressed in finding solutions to issues for creative teaching suggested that they viewed creative teaching as a skill worthy of a teacher's investment, for example by using creative teaching skills to find time-efficient and cost-effective solutions to the challenge of meeting the increasingly diverse needs of all learners (OECD, 2025). The issue raised by Iteration 1 ECTs regarding unforeseen and uncontrollable circumstances in education, such as the global Covid-19 pandemic, provided an example of a significant disruption that teachers had to navigate (Reuge et al., 2021). This strengthened the ECTs' arguments for the sustainability of a creative teaching approach, which was seen as a valuable skill to potentially minimise the impact of both large and small-scale disruptions.

7.7.2 Phase 2 discussion

7.7.2.1 Introduction to Phase 2 discussion

Research questions for consideration:
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RQ 2: How can a training package be designed and constructed to enable PSTs to develop creative teaching skills and values?

RQ 5: How can a training package be improved through re-design, to enable PSTs to develop creative teaching skills?

This discussion for Phase 2 of the project focuses on an analysis of the design of the creative teaching package, and its improved redesign, reflected in the research questions above. Due to the inter-connection between Phase 2 and Phase 3 of the project, the discussion of Phase 3's outcomes (section 7.7.1) has already demonstrated that the design and redesign of the creative teaching package overall was successful in achieving its aims. To avoid repetition, the following discussion of Phase 2's outcomes will focus on an analysis of the main theoretical framework that underpinned the design of the creative teaching package (discussed in section 7.2.2), by considering how transformative learning processes, and the openness, intellect and multiple perspectives these required, were applied to the tasks in the creative teaching package.

7.7.2.2 The theoretical influences on the design of the creative teaching package

The design and structure of the creative teaching package intended to introduce PSTs from the outset to the notion of 'teacher identity', and enable to them to engage with transformative learning processes. This aimed to give PSTs the opportunity to think deeply about their professional developments, by understanding the potential malleability of their emerging teacher identities from the outset of their training course (Huang et al., 2019; Oleynick et al., 2017). Careful consideration of the order of the tasks and introduction of the themes reflected the constructivist approach used, to enable PSTs to develop creative teaching skills in situations of increasing complexity (Kroth & Canton, 2014). Mezirow's 10-step transformative learning process (Chapter 4, Figure 4.1) was applied to each creative teaching package task, sometimes with adaptations according to the nature and context of each task, and the stage of the PSTs' professional developments.

An example of an adapted model of the 10-step transformative learning process was demonstrated in the improvised creative teaching scenarios tasks (Table 7.5). The scenarios tasks provided PSTs with the opportunity to learn, practise and evaluate their creative teaching skills in a university-based environment, by developing the skills of designing in-lesson adaptations and responding to contextual clues. By definition, scenarios were not first-hand experiences for the PSTs, but provided a disruption of the PSTs' early perceptions of teaching, aiming to 'stimulate uncertainty, ambiguity and doubt' (Cranton & Taylor, 2012, p.9).

The scenarios tasks were designed to develop two key skills of the transformative learning process – rational discourse and critical reflection – as PSTs were asked to justify their

professional decisions, consider those of their peers, and then engage in self-reflective tasks (Mezirow, 1995). These skills were strengthened by the development of PSTs' decision-making capacities - viewed as a competence that could be practised and improved (Newton, 2017). Through their task responses, the majority of PSTs demonstrated the professional intuition expected at (and sometimes beyond) their stage of teacher training. This led to competent decisions based on the given information in the scenario tasks, alleviating concerns that PSTs' limited experiences could be a barrier to problem-based learning experiences at an early stage in their training (Sato et al., 1993).

Chapter 4 discussed the importance of building up PSTs' openness as a personality characteristic, to enable confident participation in all aspects of transformative learning (Henriksen, 2016; Oleynick et al., 2017). PSTs' openness to transform was integral to the design of all tasks in the creative teaching package, and this was reflected strongly in the evidence presented earlier in the chapter, particularly in the PSTs' self-reflections regarding their professional developments. The evidence that PSTs viewed their teacher identities as fluid, adjusting and evolving according to the contexts in which they would work, aligned with PSTs' frequent references to the need for flexibility in their teacher identities (Newton & Newton, 2019). This justified the creative teaching package's focus throughout on developing PSTs' openness, alongside their use of intellect – which, in this context, was their understanding of creative teaching (Oleynick et al., 2017; Root-Bernstein et al., 1993). The benefit of gaining multiple peers' perspectives emerged from improvised scenarios tasks, as PSTs were exposed to varying peers' responses, and required to articulate and justify their own ideas (Nicol, 2014). There were strong indications that this supported the development of PSTs' own creative behaviours, as they became open-minded to a variety of - potentially successful - solutions (Oleynick et al., 2017).

For some creative teaching package tasks, the 10-step transformative learning process was directly applicable, for example the creative teaching tasks completed during PSTs' school-based teaching placements (Figure 7.23 and Figure 7.24). The direct applicability of the 10-step process to these tasks was due to PSTs being at a more advanced stage of their training, and the centrality of experience (the school-based teaching placement) providing opportunities of a first-hand, disorientating dilemma for the PSTs to solve.

An important addition to the creative teaching package design process at the end of Iteration 2 was the researcher-IST ranking task of creative teaching examples, designed as a quality check in response to a large-scale disorientating dilemma (the Covid-19 global pandemic) that had disrupted all education systems (Reuge et al., 2021). Strong evidence from this task indicated that PSTs' understandings and practice of creative teaching continued to be

applicable to the current context of education systems, and that the PSTs' transformations (into teachers who valued creative teaching skills) were relevant and needed.

This discussion may offer insights for designs of future teacher training resources, which aim for PSTs to experience transformations in their professional developments. Aspects will be discussed further in Chapter 8, which presents a summary of main theoretical insights.

7.8 A summary of points for Phase 2 and Phase 3

There was strong evidence that the creative teaching package achieved its aims, regarding the development of PSTs' creative teaching skills and their value of creative teaching in their teacher identities. There was little statistically significant evidence that these creative teaching skills would have developed without the creative teaching package. PSTs' responses to the creative teaching package demonstrated that they were capable, willing and intuitive during the training package, and that their creative teaching capabilities should not be underestimated. The ability and willingness to adapt was a key theme of the creative teaching package, and PSTs developed a fundamental understanding of the knowledge required for successful adaptation: what needed to be adapted, why it needed adapting and how to do it using a creative teaching approach.

The evaluation of the creative teaching package at the end of each cycle, to inform the next, led to improvements reflected in the PSTs' improved outcomes as the iterations progressed. The additions of inputs from school colleagues, alongside a specific creative teaching task during teaching placements, strengthened the creative teaching package. Interviews with ECTs provided a positive outlook for creative teaching beyond the pre-service training year, strengthening the argument for the sustainability of professional developments regarding teachers' creative teaching skills.

In Phase 2 of this project, the theoretical framework centred around Mezirow's transformative learning theory, guiding the design of the creative teaching package. Aspects of this theory were built into the construction of each task, to enable PSTs to understand the meaning of creative teaching, and to develop their creative teaching skills and values – for some tasks the 10-step transformative learning process was adapted to suit the context and the PSTs' stages of professional development. A quality check at a mid-point in the creative teaching package development cycle was viewed as an important response to disorientating dilemmas for education systems. This concluded that the creative teaching package was relevant and important to PSTs' professional developments throughout its three-year cycle.

Main outcomes that have been presented and discussed in this chapter will now be considered further in Chapter 8, in the context of theoretical insights and a summary of outputs, to date, of the project.

Chapter 8: Theoretical Insights and Outputs

8.1 Introduction to Chapter 8

This chapter considers main theoretical insights according to the project's processes and outputs, including dissemination opportunities. Insights are offered that may support teacher educators in the design and use of training packages to develop pre-service teachers' creative teaching skills and values in the future, as well as optimising their overall curriculum design for teacher training courses, through application of a transformative learning framework.

The outputs of this project comprise the practical output of a refined creative teaching package for pre-service teachers, and its dissemination, and a refined understanding of the theoretical framework that underpinned the project. The position of the outputs and dissemination in the overall EDR project is shown in Figure 8.1, taken from the diagram in Figure 5.1 (Chapter 5).

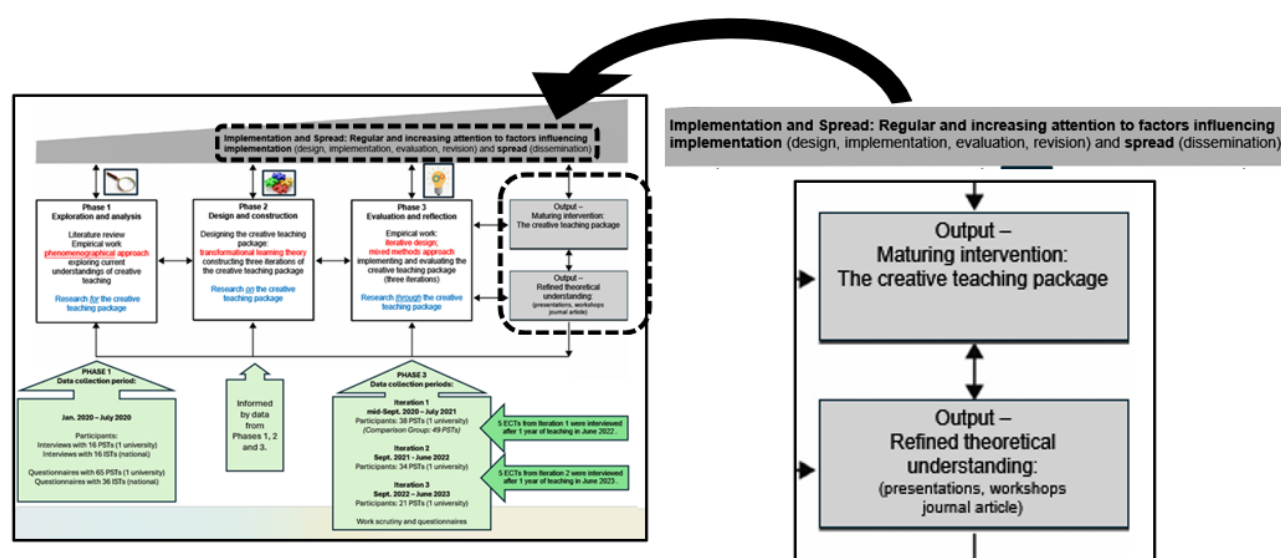


Figure 8.1 An extract from the EDR diagram – outputs and dissemination of the project

The practical output of a maturing intervention (the refined creative teaching package) was described and analysed in depth in Chapter 7. Therefore, the following discussion will mostly focus on the development and refinement of theoretical ideas that occurred during the project. Some adjustments to the project's theoretical framework were expected, aligning with the project's iterative EDR approach, and according to contextual factors. These adjustments presented opportunities for theoretical insights to be proposed, for each phase of the project.

8.2 Outputs of the project: refined theoretical understanding

Outcomes from the three phases of the project provided theoretical insights, when compared with the Literature Review in Chapters 2, 3 and 4. A main insight⁹² that emerged from each phase is shown in Figure 8.2.

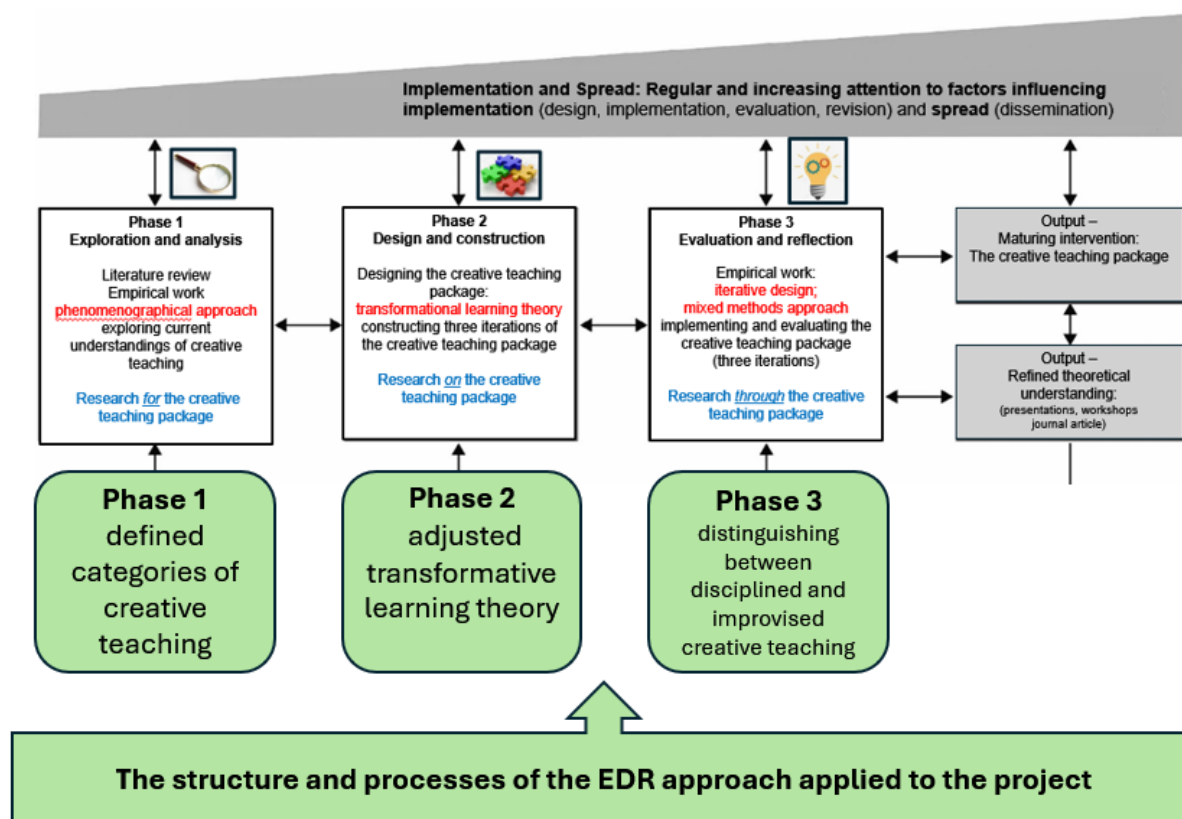


Figure 8.2 Main theoretical insights per phase (shown in green shaded boxes)

The refined theoretical ideas shown in Figure 8.2 are discussed below. The application of the structure and processes of the EDR approach is also considered, to explore whether the approach was adjusted or not, according to its context.

8.2.1 Theoretical insight for Phase 1: defined categories of creative teaching

The aim of Phase 1 was to explore teachers' current understandings of creative teaching using a phenomenographical approach. The outcomes of defined and distinct creative teaching categories informed the content of the creative teaching package in Phases 2 and 3. The categorisation of PST and ISTs' creative teaching understandings potentially provided a new perspective of creative teaching and the creative teacher. Analysis of

⁹² A main theoretical insight has been chosen that emerged from each Phase. Other theoretical insights were also evident and have been discussed in previous chapters.

examples of creative teaching in the reviewed literature and research (Chapters 2 and 3) indicated that a range of different creative teaching approaches were evident in teachers' practice. However, categorising and defining the different creative teaching approaches was not evident in the literature and research reviewed in this field, and this could be a valuable next step.

Although a holistic approach to creative teaching could be viewed as an ideal (such as 'The Adapter' creative teaching category in Phase 1, Chapter 6), the ECT interviews, and tensions presented in the Literature Review, indicated that in real-world education settings this is not always be possible. PSTs may experience a diverse range of levels of transformation for each professional quality that they acquire, ranging from minor adjustments of teacher identities to more major shifts in world views. It could be argued that a PST embedding some type and amount of intentional creative teaching competence into their professional teacher identity is beneficial, if it fulfils the criteria discussed in this project of being novel, serving a purpose and giving satisfaction.

Another theoretical insight to emerge from Phase 1 was the development of a model comparing PSTs' and ISTs' categories of creative teaching (Chapter 6, Figure 6.6). Although there were some differences between the two groups' categories (accounted for by the different stages of teaching experience of PSTs and ISTs), common links between the creative teaching categories were clearly seen. It may be useful for PSTs, ISTs and teacher educators to understand the connections between the two groups of creative teaching categories, to realise the expected progressional developments of PSTs as they gain teaching expertise.

8.2.2 Theoretical insight for Phase 2: adjusted transformative learning processes

In Phase 2, Mezirow's (1995) 10-step model of transformative learning processes was adjusted for some tasks in the creative teaching package, to optimise its application according to the nature and context of the task, and the PSTs' stages of professional development. For example, in the university-based 'scenarios' tasks, the disorientating dilemmas required as catalysts to transform meaning perspectives were not first-hand experiences for the PSTs, but instead an observation and analysis of the first-hand experiences of other teachers. Furthermore, principles of peer review were applied to some tasks in the creative teaching package (Nicol, 2014). These aimed to strengthen the transformative learning process, by enabling opportunities to gain others' perspectives and potentially adjust their own understandings, resonating with the idea of social transformation (Freire, 1970; Southwood, 2022).

Such adjustments of the 10-step model reflected the intended constructivist approach - enabling PSTs to develop progressional understandings and experiences, and also

Southworth's (2022) proposal that perspective-taking could initiate some instances of transformative learning. Adjustments to the 10-step model according to the context in which the transformative learning process was situated, resonates with Schnepfleitner and Ferreira's (2021) consideration of context as a fourth main element of transformative learning, and Hoggan and Finnegan's (2023) call for new iterations of transformative learning theory.

8.2.3 Theoretical insight for Phase 3: distinguishing between disciplined and improvised creative teaching

Phase 3 evaluated and reflected upon PSTs' responses to the creative teaching package tasks. The creative teaching package was structured to present disciplined and improvised creative teaching as two distinct approaches, whilst emphasising the holistic aim and complementary nature of the two aspects (Beghetto, 2017). The evidence presented in Chapter 7 indicated that this initial distinction was useful, because it provided PSTs with two perspectives of creative teaching, regarding skills and values. There was a variation in the quality of Iteration 1 PSTs' responses to improvised creative teaching tasks, compared with their responses to disciplined creative teaching tasks, with improvised creative teaching requiring a stronger focus in subsequent iterations. Examples of creative teaching in the reviewed literature and research tended to focus more on disciplined creative teaching as an intentional and explicit professional development skill⁹³, and the creative teaching package was able to address this imbalance.

Such a distinction between disciplined and improvised creative teaching was rarely discussed in the examples of creative teaching in the literature and research, and although there are commonalities in the skills required to achieve the two approaches, there are also important differences for teachers to recognise. The interviews with ECTs (Chapter 7, section 7.6) indicated that in real-world education settings, there may be some tensions to achieving both aspects of creative teaching in educational settings, particularly disciplined creative teaching if this approach does not align with the school's priorities. Therefore, although PSTs may strive for a complementary blend of the two aspects of creative teaching, if there are tensions in achieving this beyond their control, then achieving one aspect is still valuable.

8.2.4 Theoretical insight for the research approach: EDR as a research design tool

⁹³ For example, the creative teaching vignettes in Chapter 3: Dogger (Figure 3.2, Desailly, 2015); Settlers (Figure 3.3, Boyd, 2015); Skoda (Figure 3.6, Gill, 2017).

Chapter 5 (Table 5.2) discussed the five essential features of an EDR project: a theoretical orientation; interventionist; collaborative; responsively grounded and iterative (McKenney & Reeves, 2019; 2020; Van den Akker et al., 2006). These features were embedded in this project, resulting in a carefully-considered training package, developed through an in-depth investigation of themes and an iterative design process. Potential challenges of an EDR approach were identified and mitigated in Chapter 5 (Table 5.3). Therefore, in this project, gaining an understanding from the outset of the possible challenges of an EDR approach was essential, as these challenges did arise and the mitigations were required. The complex nature of an EDR approach enabled an in-depth iterative project to be completed. This required a lot of time, which was expected.

Overall, the EDR approach described in Chapter 5 was followed and led to a successful, in-depth project. The EDR approach was continually reviewed as the project progressed, and no aspects needed substantial adjustment. A detailed consideration of potential challenges and mitigations could be considered a main recommendation when preparing to undertake a project using an EDR approach.

8.3 Dissemination of outputs related to this project

An ethical consideration for this project discussed in Chapter 5 was its potential value to its participants and a wider audience, and the opportunities for the dissemination of its outputs. A main output of the project was the refined creative teaching package. Further outputs related to this project to date (up to January 2025) are presented in Table 8.1. These outputs include a journal article, conference presentations, and the application of the project's themes to school-based projects.

Table 8.1 Outputs to date (up to January 2025) related to this project

Output	Explanation	Intended Audience	Date
Journal Article: Simpson, R., Newton, D & Newton, L. (2022). Developing Creative Teaching Skills in Pre-Service Teachers. The International Journal for Talent, Development and Creativity. <i>(in Appendix R)</i>	A summary of Phase 3 of this project (Iterations 1 and 2 only).	Stakeholders in education; Researchers and academics working in the field of creativity in education.	Published 2022
Book Contribution: Contribution to Chapter 8, The Creative Tutor, in: Newton, D., Nolan, S., Rees, S.	My contribution comprised a 5-page response to a series of questions about 'the	Stakeholders in education; Researchers and academics working	Published 2022

Output	Explanation	Intended Audience	Date
(2022). <i>Creative Thinking in University Physics Education</i> . Bristol, UK: Institute of Physics Publishing.	creative tutor' in Higher Education.	in the field of creativity in education.	
Invited Conference Presentation (England): Simpson, R. & Newton, L. (2022). Title: Ask a Question! A case study exemplifying teaching for and with creativity to develop primary students' practical skills. Conference: 'Broadening the Practical Science experience for students from Early Years to Higher Education'	My contribution comprised a presentation of teaching with creativity, in the field of primary science education.	For: A science education research group conference Stakeholders in (science) education; Researchers and academics working in the field of (science) education.	2023
Invited Conference Presentation (England): Simpson, R. (2021). Title: Developing Creative Teachers and Becoming a Creative Tutor: Transformative experiences influenced by scholarly activity.	My contribution comprised a presentation of creative teaching and my research in this field to date.	For: A university's teaching and learning conference Academics within the university from a range of disciplines.	2021
Invited Presentation (England): Simpson, R. (2021). <i>The Creative Teacher, Seminar Presentation for a Masters in Education module</i>	My contribution comprised an overview of creative teaching and my research in this field to date.	For: a university's Masters Level module in education Masters students undertaking the module.	2021 2023 (delivered twice)
Invited Conference Presentation and Workshop (Thailand): Simpson, R. (2022). Teaching for Creativity and the Creative Teacher.	Keynote presentation, followed by an interactive workshop on the theme of the creative teacher and teaching for (students') creativity	For: an Education Faculty in a university in Thailand (online delivery) 100 teachers and school administrators in primary and secondary schools in	2022

Output	Explanation	Intended Audience	Date
		Thailand and academics working in the university's faculty of education.	
School-based project (England): Enhancing creativity in a network of primary schools through a funded project	A lead input role (my focus was 'creative teaching'), working in collaboration with the lead organisation.	For: stakeholders in involved schools (teachers, leaders, students, wider community, e.g. parents).	September 2019 to July 2023.
School-based project (England): Creative Enquiry in Primary Science	Lead creative practitioner for a primary school in a 'Rethinking Curriculum' project. Focused on Creative Enquiry in Science, leading CPD input (including teachers' creativity).	For: stakeholders in the project's school (e.g. teachers, leaders, students).	March – July 2024
I am an Associate of the Creativity, Culture and Education (CCE) organisation	Example contribution: providing a teacher training perspective at a Round Table event discussing 'Creative Leadership' (October 2024)	For: experts in the field of creativity in education, including stakeholders in involved schools (e.g. teachers, leaders, students).	From September 2024

8.4 Conclusion to the chapter

This chapter considered outputs of this project, focusing on refined theoretical ideas and understandings, to complement the practical output of the creative teaching package, presented in Chapter 7. Unlike most literature and research that discusses creative teaching, this project identified and defined distinct types of creative teaching approaches (categories of creative teaching In Phase 1 and the distinction between disciplined and improvised creative teaching in Phase 3), in relation to teachers' real-world experiences of creative teaching in education settings. In Phase 2, the theoretical framework of transformative learning processes, used to structure the design of the creative teaching

package tasks, was adapted where necessary to optimise the PSTs' professional developments according to their stages of training and experience, and the tasks' contextual factors. An EDR approach provided a structure for the project, and mitigations were considered to alleviate any challenges. There has been a range of outputs to date disseminating the project's themes to stakeholders, including a published journal article, conference presentations, workshops and school-based projects.

Chapter 9: Conclusion

9.1 Summary of research aims

This research project aimed to investigate a teacher training package for PSTs that could develop their understanding and experience of creative teaching skills, its potential benefits to their teacher identities, and the position of creative teaching as a sustained teaching approach beyond the teacher training phase. In contrast to the development of students' creativity, there is far less research into mechanisms to support teachers in the development of their creative thinking skills and values. The project aimed to begin to redress the balance, with a focus on developing creative teaching as a competence, that may enable teachers to adapt to the ever-changing priorities of current education systems, and meet the increasingly diverse needs of students.

The influence of a newly designed creative teaching training package on PSTs' professional developments was investigated through empirical work. The project combined theories and research in the fields of creativity in education, transformative learning theory, and teacher identities and roles, to develop the content and the structure of the creative teaching package and its tasks (Phase 2 of the project). The outcomes of an initial empirical study exploring teachers' current understandings of creative teaching (Phase 1 in the project) also influenced the design of the creative teaching package.

The creative teaching package aimed for primary education PSTs to develop and value sustainable creative teaching skills and attributes, namely being skilled with creative teaching techniques, and open-minded and prepared to adapt their teaching, to maximise student engagement and learning experiences, whilst establishing a sense of own teacher identity. Although it is acknowledged in education systems that there is an expectation for teachers to be creative in some way, the training package aimed to make a creative teaching approach an explicit and valued competence, with a defined set of skills to be used with intent.

The use of an iterative EDR approach aimed for the development of an optimal creative teaching package, through the design, implementation, evaluation and re-design of three iterations of the creative teaching package, completed by three successive cohorts of PSTs. In Phase 3 of the project, the analysis of data for each iteration (including some comparisons with similar PSTs who had not completed the training package) provided evidence that the PSTs were experiencing beneficial professional developments because of their engagement with the creative teaching package. The project also aimed to explore the potential sustainability of creative teaching skills and values, as part of PSTs' teacher identities,

beyond the training programme. The views of former PSTs who had completed the creative teaching package, were gained through interviews a year into their teaching careers; an analysis of their responses gave indications of its potential sustainability.

Aligning with the principles of an EDR approach, the project had two main aims regarding outputs, offering:

- **practical solutions:** by designing, implementing, evaluating and improving a high-quality creative teaching package, which enabled PSTs to use creative thinking skills to enhance their practice and to value creative teaching as part of their teacher identities;
- **refined theoretical insights:** by exploring and categorising the current perceptions of creative teaching for PSTs and ISTs; and understanding the characteristics of a high-quality creative teaching package for PSTs, by applying a model of transformative adult learning theory.

The Covid-19 global pandemic began in the second year of this project. Although the research aims remained unchanged throughout the project, some adjustments had to be made to the structure and content of the creative teaching package in Iteration 1. These adjustments were explained in Chapter 7.

The project's potential contributions and suggested recommendations will now be considered, as well as unresolved dilemmas, possible questions for further research and final thoughts.

9.2 Contributions and recommendations

9.2.1 Practical

Contribution: The benefits for the PSTs who completed the training package Evidence discussed in Chapter 7 indicated that by completing a creative teaching training package, PSTs increased their understandings of creative teaching, and enhanced their creative teaching competences through the lens of disciplined improvisation, to support learners' needs. Overall, PSTs also increased their values of creative teaching by completing the creative teaching package, with many locating creative teaching as a valuable skill within their teacher identities. The creative teaching package focused on developing PSTs' responsible decision-making skills, in the context of using a creative teaching approach. This was considered to be crucial for PSTs' professional developments, achieved by enabling PSTs to evaluate different types of creative teaching, including the aims, purpose and outcomes of each creative teaching approach. There were indications that the value of

creative teaching was sustained beyond the teacher training programme by PSTs who had completed the training package, as a sample group of ECTs demonstrated their application of creative teaching skills to their first year of their teaching.

Contribution beyond the project The outcomes of this project suggest that a creative teaching training package is a necessary component of a teacher training programme, if the aim of that programme is to prepare teachers to be innovative problem solvers, and to be able to adapt to the many changes that they will experience in education systems. Chapter 7 discussed in-depth the design, implementation, evaluation and re-design of the creative teaching training package. This fulfilled the practical aim of this project - to provide an outcome of a new training package that could develop the creative teaching skills and values of PSTs on teacher training programmes. Due to the EDR approach, the creative teaching package was tested three times, with adjustments improving each subsequent iteration. This resulted in a robust training package. The detailed descriptions, explanations and outcomes of this package facilitate its application by teacher educators who are considering incorporating a similar training package into their own teacher training programmes. Aspects of the creative teaching package could also be adapted (and have already been) for in-school training for experienced teachers.

Recommendations If a creative teaching package is used for teacher training purposes in the future, the following recommendations may support teacher educators with its design and implementation. Teacher educators should carefully plan opportunities and allocate sufficient time that will allow PSTs to explore the idea of transforming into a teacher with creative teaching skills and values. The model in Figure 9.1 (taken from Chapter 7, Figure 7.4) was an important guide for the design and construction of the creative teaching package (its content and its implementation), and this could be applied by teacher educators in the design of future creative teaching packages.

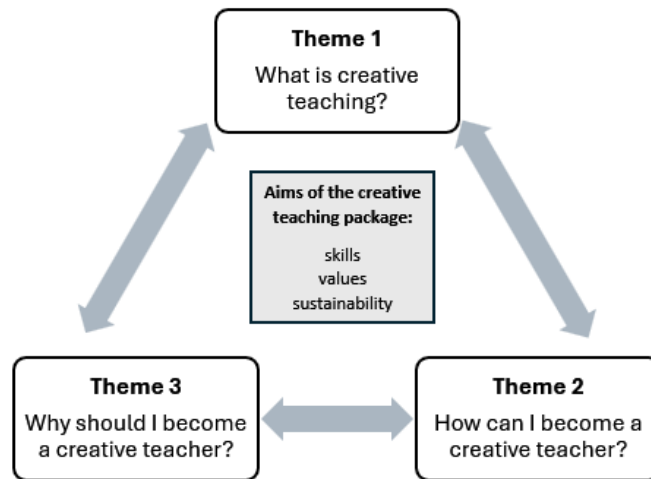


Figure 9.1 The three inter-connected themes and aims of the creative teaching package (a replication of Figure 7.4).

To complement the themes in Figure 9.1, the checklist in Figure 9.2 (below) may also help teacher educators to plan a training package that enables PSTs to achieve a deep level of engagement in the development of creative teaching as a valuable skill.

To develop and sustain creative teaching skills and values, PSTs need opportunities to:

- develop an understanding of a creative teaching approach (initial variations in understandings and some misconceptions of creative teaching should be expected, and the views of some PSTs may need to be reconstructed);
- identify their initial beliefs and values of teaching, learning and education, and consider these in the context of developing a creative approach to teaching (i.e. values and beliefs that may enhance creative teaching, as well as potential barriers requiring adjustment);
- prepare to have their views of teaching potentially disrupted and respond positively to this challenge;
- scrutinise aspects of their teacher identities in early stages of training, by considering what, how, why and when different values, beliefs and skills develop;
- develop an understanding of creative teaching techniques;
- develop creative self-efficacy;
- prepare to consider others' views of creative teaching, and reflect on these regarding their own teacher identities;
- engage in activities that allow a deep level of self-reflection;
- view decision-making as a specific competence, that can be practised and improved as experience is gained;
- be prepared to make mistakes and learn from these (which may be due to PSTs extending their boundaries).

Figure 9.2 Checklist for a creative teaching training package

Furthermore, for PSTs to achieve authentic engagement in the development of a creative teaching approach, it is important for them to recognise the potential benefits of creative teaching, to their own professional developments and also to their students' learning experiences. These benefits should focus on both disciplined and improvised aspects of creative teaching. This may help PSTs to understand why they should invest in developing a creative teaching approach in their teacher training phase, and sustain this throughout their teaching professions.

9.2.2 Theoretical

Contributions Possible contributions of refined theoretical ideas and understandings gained through this project were discussed in Chapter 8. These are summarised below.

Most literature and research focusing on creative teaching does not distinguish between different types of creative teaching approaches, or attempt to categorise or compare approaches. Through a phenomenographical research approach, this project identified and defined distinct types of creative teaching approaches, and developed categories of creative teaching, in relation to real-world teaching experiences in education settings. The relatability of these categories was tested by a wider group of PSTs and ISTs, and also retested through the incorporation of the PSTs' categories into the creative teaching package. Therefore, the outcomes of creative teaching categories - defined in Chapter 6 and applied to the creative teaching package - could be considered robust, and relevant to PSTs and ISTs who are training and working in current education systems.

Mezirow's (1995) 10-step transformative learning processes model was applied to the creative teaching package tasks, and adapted where necessary to optimise the PSTs' professional developments, according to their stages of training and experience, and the tasks' contexts. Adaptations included adjustment of the steps in some instances, and incorporation of peer review opportunities, to account for context and acquire perspectives. Adjustments to the transformative learning processes are discussed in Chapter 8, enabling teacher educators in the future to consider the purpose of the adaptations and their potential effectiveness, in relation to their own training courses.

Recommendations It is recommended that teacher educators present different perceptions of creative teaching to PSTs, including a brief discussion of categories that might not be relatable in current education systems, alongside those that are more relevant. This may provide an opportunity for in-depth analysis of what creative teaching means and how it might apply in different current education contexts and scenarios.

A further recommendation regarding different creative teaching approaches is that disciplined and improvised creative teaching are considered separately in a training package, with a view of a teacher eventually developing a holistic approach, aiming to incorporate both aspects where appropriate. This separation is likely to be very useful to PSTs, particularly for those who have an initial perception of creative teaching from a disciplined creative teaching perspective only. An important outcome of a creative teaching training package may be PSTs gaining an understanding of the clear value of improvised creative teaching, as a skill that can be used continually to support students in their learning experiences.

Finally, the application of Mezirow's 10-step transformative learning process is recommended, to enable PSTs' in-depth engagement in the themes of the creative teaching package, which may contribute to its potential sustainability within their teacher identities, and their developing wisdom. Careful consideration by teacher educators of the inclusion of each step of the transformative learning process, and the order of the steps, according to the PSTs' contexts, is important for its effectiveness. Adaptations to Mezirow's (1995) 10-step model should be considered, to allow for perspectives to be gained, and a consideration of the context.

9.3 Unresolved dilemmas and limitations

There was substantial evidence in this project that indicated that PSTs experienced beneficial professional developments, as a result of completing a newly designed creative teaching package within their teacher training programme. There was also evidence that these professional developments had become part of their adjusted teacher identities during the training phase, and indications that creative teaching approaches may have been sustained as they moved into their teaching careers. Despite these benefits, a challenge for this project moving forward is that most current teacher training programmes are highly prescriptive (for example in England (DfE, 2019a)), and do not include a specific focus on or training in creative teaching skills (reasons for this were discussed in Chapter 3). This presents a main dilemma for the introduction of new professional development resources such as the creative teaching package in the future, as a system change would be needed, to enable an impact to be widespread and consistent (Lucas, 2022). Giving value to the professional developments of pre-service and in-service teachers is considered by many to be essential in driving the transformative changes that are required to address the current teacher recruitment and retention crisis (for example, Lucas, 2022; Patston et al., 2021). An investment in teachers' professional development opportunities, such as the creative teaching package, should be given serious consideration.

The second dilemma focuses on the sustainability of creative teaching skills for teachers, beyond the creative teaching training package, when all education systems – including individual schools - have different priorities. The importance of unique classroom contexts in which teachers may develop adaptive skills, and the connection between teachers' personal characteristics, their pedagogy and the ethos of schools when developing as creative teachers, have been discussed (for example, Cremin & Barnes, 2018). This focus on the education context in which each teacher experiences their professional developments - in particular, the school's ethos and priorities - indicates possible challenges for the sustainability of a teacher's creative teaching approach. The interview responses with ECTs in Chapter 7 (section 7.6) highlighted this dilemma, with results suggesting that although creative teaching skills would always be needed in some form (improvised creative teaching skills were considered particularly important), some aspects of creative teaching - such as disciplined creative teaching - may be less dominant, according to the school's priorities.

Similarly, it is important to acknowledge that each PST is likely to experience a set of unique professional developments, and these will be influenced by their personalities. For some PSTs, their emerging teacher identities during their training phase may favour a creative approach to teaching. PSTs may decide to occasionally use a creative teaching approach, or they may experience a long-term transformational life-change, if a creative teaching approach becomes embedded in their identities. Furthermore, some PSTs may not want to develop a creative teaching approach (although this was not the case in the participant groups for this project) – as teachers' identities differ, this needs to be acknowledged when planning a training resource to develop PSTs' creative teaching skills, with ways forward considered, to enable the engagement of all PSTs.

All research studies have limitations. The research approach used in this project was considered to be the most appropriate regarding achieving the aims of the project and answering the research questions. The design of this project, using an EDR approach, and the research methods used, have been reported accurately and in detail, including ways to mitigate potential challenges of an EDR approach. The detailed reporting of the project's Findings and outcomes (Chapters 6 and 7) aims to enable others to judge the quality of evidence, according to the origins of the evidence and the methods of analysis. As with most education research located in a real-world context, there are potential limitations within the participant groups. It is acknowledged that there may have been different outcomes with different participants experiencing different teacher training contexts, or different outcomes for those PSTs who completed the training package but did not volunteer for their data to be used in the project. Similarly, the ECT participant group comprised volunteer participants –

those who did not volunteer may have presented different views of creative teaching (Cohen et al., 2018).

9.4 Recommendations for future research

9.4.1 Proposals of future research to extend this project

Proposal 1: Creative teaching in secondary education This project considered the professional development of PSTs training to teach in primary education. The application of the creative teaching package for the professional development of PSTs training to teach in secondary education would be a reasonable next step. This could investigate:

- the relevance of the creative teaching skills identified in the creative teaching package to secondary PSTs' training;
- secondary PSTs' values of creative teaching;
- the potential for creative teaching to be sustained in secondary education systems;
- a comparison of secondary PSTs' teacher identities with those of primary PSTs (*discussed further in Proposal 7*).

Future research could also consider the adaptation of the creative teaching package for teachers working with adult students in Higher Education. Some aspects may be directly transferable, whereas others may need adjustment.

Proposal 2: Investigating Creative Pedagogical Domain Knowledge Chapter 3 discussed teachers' developments of Creative Pedagogical Domain Knowledge (CPDK) – explained as knowledge of a creative teaching approach specialised according to subjects, students and contexts (Beghetto, 2017). This aspect could be explored further in the context of this project. For example, there was evidence of PSTs' application of creative teaching skills to a range of subjects taught in primary education. These examples of the use of creative teaching skills, applied to different primary education subjects, could be compared, to identify commonalities and differences according to the nature of each subject.

Proposal 3: Longitudinal focus on creative teaching sustainability This project aimed to explore the potential sustainability of the creative teaching package, regarding its influence on PSTs' professional developments beyond their teacher training programme. The former PSTs who were interviewed as ECTs after a year of teaching were each experiencing a different context in which their education system was operating. Although this provided a useful insight into the applicability of their acquired creative teaching skills beyond the training package, further research of an extended longitudinal study could investigate long term sustainability, including application of creative teaching skills into future

leadership positions (Lucas et al., 2023). With variations in teachers' professional developments of creative teaching skills in mind, a greater consideration could also be given to the possible negative effects of teachers developing a creative teaching approach in the current education systems. This may enable mitigations to be applied to a future creative teaching package, to alleviate this potential issue.

Proposal 4 Re-testing the creative teaching categories The main creative teaching categories defined in Chapter 6 could be re-tested regularly, particularly when priorities in education systems change. This may establish if pre-service and in-service teachers continue to relate to all the categories, or if some categories should be removed, added or redefined. Furthermore, there could be further research into the transdisciplinary skills discussed by Henriksen (2016), in the context of the creative teaching package, and the creative teaching categories. This could investigate whether there may be some progression in the complexity of these skills, as indicated in Phase 1 (Chapter 6, Figure 6.5).

9.4.2 Proposals to extend the field of research into creative teaching

Proposal 5: Creative leadership in education An outcome of the analysis of the ECTs' interview responses in Chapter 7 (section 7.6) was a focus on the importance of creative leadership in education systems. This focus is logical - although a teacher may think and act creatively individually, the impact of their creativity is likely to be limited if a creative approach to teaching is not system-wide. A focus on creative leadership in education has increased in the last five years (Lucas et al., 2023). Aspects of the creative teaching training package may be adjusted and applied to enable professional developments for creative school leaders, for example, 'leader' could replace 'teacher' to adjust the three main themes of the creative teaching package:

- What is creative leadership?
- How can I become a creative leader?
- Why should I become a creative leader?

Similarly, adult learning approaches used in the creative teaching package, such as transformative learning, peer review, and scenarios tasks could be applied to develop education leaders' creative skills and values. Future research could include a comparison of creative teachers' professional identities with those of creative leaders, identifying commonalities and differences.

Proposal 6: Digital technologies and artificial intelligence Since the beginning of this project, there has been a large change in education regarding the use of digital technologies and artificial intelligence (AI) (Adarkwah et al., 2025; Newton & Newton, 2020). This is likely

to be an important area for future research, regarding implications for creative teaching skills, which may need to be applied to address students' learning needs in a different way. For example, AI is now being used by some teachers to generate lesson plans, and this is of increasing interest on teacher training programmes (Kehoe, 2023; Van den Berg & Du Plessis, 2023). Although this has potential benefits for the teachers and students (for example, time efficiency), it is crucial that teachers also use evaluative thinking skills to consider if the AI-generated outputs are 'fit for purpose' regarding meeting the needs of all students, including emotional needs. With innovative uses of digital technology and AI in education rapidly emerging (for example: Wright et al., 2025), questions that may be asked for future research, and by teachers, could include:

- Do the decisions and selections of AI tools align with the teachers' learning goals?
- Can the lesson plans generated by AI tools remain as they are, without the need for adaptations, to account for the students' choices and ideas?
- Can AI tools take every contextual feature for each student into account, and respond accordingly?

If the answer is 'no' to those questions, then it is likely that a teacher's use of creative thinking skills will serve a purpose (Newton & Newton, 2020).

Proposal 7: Future research to extend the field of research into teacher identity and transformative learning The focus on social aspects of transformative learning may be an important area for future research. This aligns with the consideration of a fourth core element of the sociocultural context, in which the transformative learning experience is situated (Ferreira, 2021; Freire, 1970), supporting the possible development of new iterations of transformative learning, advocated by Hoggan and Finnegan (2023). Also, teacher educators need to continually consider and adapt to the ways pre-service teachers learn, to develop meaningful professional preparation (Olsen, 2008). It is likely that pre-service teachers' own learning behaviours will differ, according to the era of their own education. Such differences need to be accounted for in transformative learning processes, which could lead to adapted models.

This project considered mechanisms that aimed to develop pre-service teachers' professional identities. A current gap in the field of teacher identity research is a focus on teachers' identities in primary education (Rushton, et al, 2023). The outcomes in Chapter 7 provided evidence of the potential value that a focus on pre-service teachers' identities could have within a teacher training course. The pre-service teachers in this project were training to become primary teachers – as discussed in Proposal 1, an interesting future study could compare the developments of the teacher identities of primary education pre-service

teachers with secondary education pre-service teachers. The following questions could be used as a comparison tool:

- What teacher identity developments occur?
- What are the influential factors leading to these teacher identity developments?
- How malleable are the PSTs' professional identities?
- Where is the position of creative teaching with the teacher identities?

9.5 Final thoughts

Having conducted this project, it is my view that enabling future teachers to respond to constant changes in education systems is essential if teachers are to survive and thrive professionally. Equipped with imagination and problem-solving skills, resourcefulness and resilience, teachers may contribute to reasoned decision-making processes and innovative practice, within the unpredictable and uncertain environments in which they are likely to work. The potential outcome is that these teachers will flourish, enjoy their work and stay in the profession, alongside engaged and motivated students. Although there is a rapidly increasing use of digital technology in education systems, the inter-connection between teacher and student should continue to be paramount in enabling optimal learning experiences.

I have endeavoured to undertake this project by applying my own creative approach:

- novelty (in designing a new training package, and using research approaches that were new to me);
- appropriateness (investigating a theme that could be considered timely given the teacher recruitment and retention crisis, and current changes in society that are having an impact on education);
- of value (to the pre-service teachers who completed the training package, and for the future use of teacher educators and teachers through wider dissemination).

I aimed to conduct my own creative approach in this project responsibly, by acquiring wisdom developed through deep engagement with the theme, alongside an understanding of the complexities for creative teaching in practice, by considering the contexts of current education systems. Facilitating discussions with pre-service teachers about the creative teaching approach, according to their professional contexts and their motives for using a creative approach, was crucial to the success of the creative teaching package.

The teachers (pre-service and in-service) who participated in the project were inspirational in the dedication, determination and enthusiasm they have for the teaching profession. One quote from a pre-service teacher remained with me, as embodying their role:

‘Always remember that every day you are improving the children's learning, and teaching them something that they will take away for the rest of their lives.’

It is hoped that the focus on creativity in education continues to increase, and that this will include robust professional development opportunities for teachers to develop their creative teaching skills and values, in their training stages, and beyond, throughout their teaching careers.

Appendices

Appendix A: Anthology of literature about the creative teacher and creative teaching, 1950-2009

Table A(i) 1950-1964

Date	Author	Country	Title	Journal	How the creative teacher is presented
1951	Hartley, H.	U.S.A.	The Creative Teacher	Pi Lambda Theta Journal <i>A keynote at the Biennial Council</i>	Discusses the teacher's inner adjustment, needed to transform his role and identity, by engagement in self-analysis and self-development.
1952	Melby, E.	U.S.A.	Education, Freedom and Creativity	Music Educators Journal	Matches the creative teacher to an artist, or a musician, emphasising the importance of being creative in all aspects of life. Highlights the conflict between the American vision of freedom and the reality of growing control and accountability in American education systems.
1953	Fox, R.	Michigan, U.S.A.	We'll Make Next Year Better!	Childhood Education	A creative teaching approach is important because teachers do not have: 'one year of experience twenty times!' (p.410). The context every year must be considered (fulfilling the criteria of appropriateness and value).
1954	Chasman, D.	California, U.S.A.	Stretching the Curriculum	The English Journal	Raises the challenge of 'the narrow confines of a set curriculum' (p.78) to the creative teacher. Gives a specific example of a creative teacher in action, demonstrating novelty, appropriateness and value. <i>(This was the only literature in the 1950s that demonstrated the creative teacher working in collaboration with a colleague.)</i>
1955	Strickland, R.	U.S.A.	Creative Activities in the Language Arts in the Elementary School	Elementary English	The creative teacher is the starting point for creative activities. She pursues enriching activities outside the classroom and is: 'interesting to others and interesting to herself' (p.148).
1956	Melby, E.	U.S.A.	Education Is the Ultimate Weapon	The Educational Forum	Discusses the need for educational changes in the context of the political situation with the Soviet Union and the emphasis of freedom in America. Responds to the need for change by nurturing students' creativity, alongside the approach of the

Date	Author	Country	Title	Journal	How the creative teacher is presented
					creative teacher: original, caring, optimistic, inspired.
1957	Hobelman, L.	U.S.A.	Three Creative Teachers	The Clearing House	The author draws upon her experience of a creative teacher, proposing that he might: get brilliant results; be proactive; give others an exhilarating learning experience; have a 'relentless zeal for personal success' p.161).
1958	Eisner, E.	Chicago, U.S.A.	What Is Art Education for?	The High School Journal	The creative teacher works in the same way as a creative artist: he assimilates and then reorganises experiences, for others to access. His 'unique personality' (p.5) and imagination are crucial influences in this process.
1958	Ingram, V. & Kilmer, S.	Michigan, U.S.A.	A Good Teacher Is a Creative Teacher	The High School Journal	The authors focus on the creative student, but state that this relies upon a creative teacher, who has freedom of opinion and autonomy when planning teaching and learning experiences. The creative teacher uses the environment around him and brings experiences to the students.
1959	Bond, J.	California, U.S.A.	Analysis of Observed Traits of Teachers Rated Superior in Demonstrating Creativeness in Teaching	The Journal of Educational Research	A research study comparing traits of student teachers demonstrating a creative teaching approach, compared with those who do not. <i>(This was the only literature in the 1950s that could be considered to be a research study.)</i>
1960	Syngg, D.	New York, U.S.A.	Creative Teaching in the Mechanized Classroom	The High School Journal	The author presents challenges for the creative teacher in the education context. The creative teaching approach is advocated but there is a lack of clarity about its purpose: 'The citizens and taxpayers who support our schools are not very clear about what they want the creative teacher to create' (p.53).
1961	Wendt, E.	New Jersey, U.S.A.	Teaching as a Creative Process	Peabody Journal of Education	The author compares the creative teacher to a creative artist, but makes the distinction: there is no tangible end-product. Five qualities of the creative teacher: immersion, dedication, inspiration, elaboration, openness to experience. Discusses the relevance of the classroom context to the creative teacher's development.
1961	Forslund, J.	U.S.A.	An Inquiry into the Nature of	The Journal of Education	The author rejects the idea of creativity linked to a genius mind,

Date	Author	Country	Title	Journal	How the creative teacher is presented
			Creative Teaching		instead focusing on creativity as a process of self-realisation. 'Curious, imaginative, free, yet requiring an internalised discipline.' (p73). The author states that creative teaching is important for students because teachers need to enable students to make unique discoveries and articulate these.

Table A(ii) 1965-1974

Date	Author	Country	Title	Journal	How the creative teacher is presented
1965	Baughman, M. & Eberle, R.	U.S.A.	The Open Classroom: Guidelines for the Creative Teacher	The Clearing House	This article focuses on the classroom as a mini-society, that should reflect equality rather than a hierarchical system of authority. The creative teacher must demonstrate the qualities they want their students to develop in an open classroom ('search, inquiry, investigation, reasoning, critical thinking', p.387). The importance of the teacher's personality is emphasised.
1965	Opulente, B.	U.S.A.	The Great Teacher Is a Creative Individual	Improving College and University Teaching	Focuses on the teacher being an actor and giving a creative performance. Distinguishes between the creative teacher: 'in whom the life of the subject lives' and the method teacher: 'in whom it does not' (p.89). A constructivist view: the creative teacher's personality shapes his knowledge.
1968	Hahn, R.	U.S.A.	Creative Teachers: Encouraged or Discouraged?	The Clearing House	The author describes the barriers for creative teachers. He particularly focuses on attitudes of school leaders towards teachers: 'the creative teacher becomes "a thing" rather than a personality', p.151. The creative teachers' ideas are seen as controversial and potentially against the norm.
1968	Rowen, B.	U.S.A.	The Creative State of Mind: An Application of the Stanislavski Acting Method to Teacher Education	The Journal of Teacher Education	The author describes training via the 'Creative Method', undertaken by pre-service teachers to achieve a 'creative state of mind' (p.47) and use this to develop their creative approaches to teaching.

Date	Author	Country	Title	Journal	How the creative teacher is presented
1970	Romey, D.	U.S.A.	What Is Your Creativity Quotient?	School Science and Mathematics	The author focuses entirely on the creative teacher. He offers a definition of creativity, applied to a teacher's context: 'Creativity is the ability to combine ideas, things, techniques, or approaches in a new way. This ability must be thought of from the point of the person who is actually doing the creating.' (p.4)
1972	Lennie, K.	Australia	How Can Creativity and Divergent Thinking amongst Staff Be Accommodated in a School System?	Australian Journal of Education	This article considers the creative teacher as a rare and gifted individual. It focuses on acceptance of the creative teacher and divergent ways of approaching teaching within a school community. It includes a training technique for teachers with creative aptitudes.
1973	Gregorc, A.	U.S.A.	Developing Plans for Professional Growth	NASSP Bulletin	This article discusses four phases of a teacher's development: becoming, growing, maturing, and fully functioning.

Table A(iii) 1975-1987

Date	Author	Country	Title	Journal	How the creative teacher is presented
1975	Slattenin, A.	Russia	Training Creative Teachers in the Union of Soviet Socialist Republics	Prospects	The author discusses the creativity of teachers needed to problem solve in their profession. He considers that (higher education) teachers need to demonstrate: 'flexibility and independence of thought and action, great creative energy, the ability to concentrate one's creative efforts and the desire to solve increasingly difficult problems.' (p.255)
1979	Yinger, R.	U.S.A.	Routines in Teacher Planning	Theory into Practice	The article explores the mental processes undertaken by teachers when planning lessons. The author presents a case study of one class teacher, deemed creative, and concludes that a teacher can use her time to develop creative lesson content if familiar routines are in place.
1982	Pollard, A.	England	A Model of Classroom Coping Strategies	British Journal of Sociology of Education	The article discusses the need for teachers' coping strategies, to adapt in response to changes in education systems and new demands on teachers. There is emphasis on the support of colleagues.

Date	Author	Country	Title	Journal	How the creative teacher is presented
1986	Reitman, S.	U.S.A.	Daring to Make Teaching an Art	The Educational Forum	The author views teaching as a creative art, beyond a professional endeavour, but that this is not seen in most U.S.A. schools. The teacher as a person is key to this. He blames bureaucracy for inauthentic teaching. He claims that most new teachers start as creative artists, seeking creative fulfilment but instead are experiencing creative burnout due to 'conformity and mediocrity' (p.139). Creative behaviour is viewed as dangerous for a teacher's position. The author suggests that schools need to be places allowing unpredictability in outcomes.
1986	Woodward, R.	U.S.A.	Excellent Teaching is Easy to Spot, Hard to Define	Educator	Describes an excellent teacher, which has many overlaps with previous descriptions of the creative teacher: patient; works painstakingly; creates an air of anticipation and uncertainty, and has this himself; has a love for learning and conveys this with infectious enthusiasm; lives and breathes his knowledge; thoughtful.
1982	Chamberlin, L. & Bergman, J.	U.S.A.	The Mystery of Creativity Revealed	The High School Journal	The article considers creativity in the classroom, and includes a definition of the creative teacher, and associated benefits for students, in line with earlier decades. The author cautions that the creative teacher is overlooked in schools.
1987	Henley, M.	U.S.A.	Something Is Missing from the Education Reform Movement	The Phi Delta Kappan	The author discusses the U.S.A. education focus on direct instruction, and measurable outcomes, enforced by politicians. He advocates a return to open education. Henley warns that creative teachers are leaving the profession.
1987	Mitter, W.	Germany	The Teacher and the Bureaucracy: some considerations concluded from a Soviet case	Compare	The author discusses the Soviet education system: since the beginning of 1984 'has been undergoing a reform which, ambitious and far-reaching in its aims, has emphasised the teachers' role in the innovatory process' (p.48). The teacher's role is discussed as very important, and teachers' creativity is acknowledged.

Table A(iv) 1988-1998

Date	Author	Country	Title	Journal	How the creative teacher is presented
1989	Slastenin, V.	Russia	The reorganization of teacher training in the U.S.S.R.	Prospects	Advocates a creative teaching approach, and the centrality of the teacher's role: 'What does exist is a creative, socially active personality--the teacher capable of original thought, of acting as a true professional and creating new social values. The school is a living cell of the social organism and the teacher the nucleus of this cell.' P.271
1991	Barrell, B.	U.S.A.	Classroom Artistry	The Educational Forum	Barrell presents the creative teacher in a positive light, as a risk-taker and in a classroom where failure is a motivational (and expected) outcome. The creative teacher will inspire students to be creative.
1992	Rajput, J. & Walia, K.	India	Assessing Teacher Effectiveness in India: Overview and critical appraisal	Prospects	In the context of 4.5 million teachers and 600,000 primary schools in India, this report emphasises the importance of nurturing a teacher's creative capabilities and innovative practice.
1993	Hill, J.	Ohio, U.S.A.	The Teacher as Artist: A Case for Peripheral Supervision	The Educational Forum	Hill considers the value of a supervisor working alongside the creative teacher, by observing her practice and engaging in reflective discussions after teaching episodes. The aim is to make unconscious acts and decisions conscious.
1993	Sato, M., Akita, K. & Iwakawa, N.	Japan	Practical Thinking Styles of Teachers: A Comparative Study of Expert and Novice Thought Processes and Its Implications for Rethinking Teacher Education in Japan	Peabody Journal of Education	This study considers the thought processes of expert teachers compared with novice teachers. The authors comment that the professionalism, autonomy and creativity of teachers in Japan needed to be developed, and has not been a focus historically. A teacher's creative approach to decision-making is considered to be an important part of his 'professional wisdom' and needs to be developed in teacher training courses through case study methods (demonstrated in this study) rather than lecture methods, to

Date	Author	Country	Title	Journal	How the creative teacher is presented
					help to develop theory-through-practice. The study concludes that expert teachers demonstrate creative thought processes whereas novices do not.
1995	Woods, P.	England	Creative Teachers in Primary Schools (book)	Publisher: OUP	Based on three decades of research, Woods uses case studies to discuss the creative teacher in primary schools in England, bringing this discussion into the current context of England's National Curriculum. The creative teacher is discussed, with the aim of working successfully within the National Curriculum's aims.
1997	Graf, M.	Switzerland	Switzerland: In a Changing World, Schools, too, are Gradually Changing	Prospects	Graf discusses reforms in the Swiss education system at a national level. These include greater use of formative assessment and more vocational training. The author emphasises the importance of teacher training to ensure teachers are prepared for the reforms and able to work collaboratively to enact these.

Table A(v) 1999-2009

Date	Author	Country	Title	Journal	Summary
1999	NACCCE	England	All Our Futures: Creativity, culture and education.	Government Publication, England: DEE	This report is seen as highly influential from its publication onwards, focusing on the development of students' creativity in schools in England, and beyond.
2000	Hargreaves, A. & Lo, L.	Canada & China	The Paradoxical Profession: Teaching at the turn of the century	Prospects	This article highlights the dilemmas faced by teachers in educational reform: expected to be creative and outward-looking, whilst adhering to prescriptive curricula and high stakes assessment-driven systems.
2001	Craft, A. Jeffery, B. & Liebling M. (Eds.)	U.K.	Creativity in Education (Book)	Continuum Publishers	This book focusing on creativity in education includes a chapter by Anna Craft: 'Little c Creativity'. Little c Creativity embodies the type of creativity most suited to students' creative developments in schools.

Date	Author	Country	Title	Journal	Summary
2004	Grainger, T., Barnes, J., & Scoffham, S.	England	A Creative Cocktail: Creative teaching in initial teacher education	Journal of Education for Teaching	The article gives an example of a case study of three teacher educators working with pre-service teachers to model a creative teaching approach. It concludes that creative teaching strategies can be developed, but pre-service teachers need a non-judgemental environment in which to experiment.
2004	Jeffrey, B. & Craft, A.	England	Teaching Creatively and Teaching for Creativity: Distinctions and relationships	Educational Studies	Although this article is more student-focused, one case study of a First School offers a perspective for teaching creatively, where a creative teaching approach is in action.
2004	Sawyer, R.	U.S.A.	Creative Teaching: Collaborative discussion as disciplined improvisation	Educational Researcher	The author proposes effective teaching as an improvisational performance, enabling creative teachers to work within more prescriptive education systems, by collaborating and responding to emergent themes. This accords with social constructivist theories. The approach is considered challenging to facilitate.
2005	Horng, J., Hong, J., ChanLin, L., Chang, S. & Chu, H.	Taiwan	Creative Teachers and Creative Teaching Strategies	International Journal of Consumer Studies	The study uses qualitative methods to explore three award-winning creative teachers' attitudes and skills. It concludes that creative teaching approaches can be taught and developed. It claims that beliefs in teaching, hard work and motivation are the key for the creative teacher.
2007	Craft, A., Gardner, H., & Claxton, G.	U.S.A.	Creativity, wisdom, and trusteeship: Exploring the role of education	Book: Corwin Press Publisher.	A consideration of the balance between creativity and wise actions, encouraging educators to develop students' 'wise creativity'. Contributors comprise experts in the field of creativity in education.
2008	Burnard, P. & White, J.	U.K. & Australia	Creativity and Performativity: Counterpoints in British and Australian education	British Education Research Journal	Focusing on teachers' agency, this article considers how teachers are balancing improving standards with promoting creativity through creative teaching. Suggests three elements to encourage creative teaching: 1) professional agency and pedagogical autonomy, 2) able to take risks, 3) creative

Date	Author	Country	Title	Journal	Summary
					colleagues and school community collaboration.
2009	Sen & Sharma	India	Teaching Preparation for Creative Teaching	Contemporary Educational Dialogue	A study of pre-service teachers and teacher educators, and their experiences of how a teacher training course in India could prepare them to teach creatively (although opportunities for this are considered limited). This study demonstrates the importance of considering the cultural context when trying to introduce new ideas and initiatives.

Appendix B: A comparison of traditional and progressive teaching approaches

‘Characteristics of Progressive and Traditional Teachers

	Progressive	Traditional
1	Integrated subject matter	Separate subject matter
2	Teacher as guide to educational experiences	Teacher as distributor of knowledge
3	Active student role	Passive student role
4	Students participate in curriculum planning	Students have no say in curriculum planning
5	Learning predominantly by discovery techniques	Accent on memory, practice and rote
6	External rewards and punishments not necessary i.e. intrinsic motivation	External rewards used, for example - grades i.e. extrinsic motivation
7	Teachers give as high priority to social and emotional development as academic attainment	Teachers give highest priority to academic attainment
8	Little testing	Regular testing
9	Accent on cooperative group work	Accent on competition
10	Teaching not confined to classroom base	Teaching confined to classroom base
11	Accent on creative expression	Little emphasis on creative expression’

(Delamont, 1987, p.48)

Galton et al (1989) highlighted dilemmas with this categorisation, claiming these to be ‘crude descriptions’ (p. 27) and too extreme, stating that most teachers’ styles were a blend of both.

Appendix C: The Creative Method (discussed by Rowen, 1968)

Description of method: A teacher educator delivered a CPD for experienced teachers titled: 'Workshop in Creative Method', using techniques similar to those used in the training of actors. This was based on Stanislavski's approach (the director of the Moscow Art Theatre), who devoted a lifetime to the development of exercises through which actors could achieve a creative state of mind. This was the method:

'Through training, the actor becomes a person with heightened sensitivity: his perceptions are sharpened, and his 'sense memory' helps him to recreate sensations so that his audience sees, hears, and feels along with him.

-Concentration: The ability to concentrate is the beginning step in inducing the creative state of mind.

-Sensory Awareness: sharpen senses in order to penetrate the nature of things and people.

-Observation: Look with penetration. Teachers must be taught to look at, listen to, and be aware of all that is going on around them.

-Emotional Memory: Teachers need to be able to empathize - it is not enough for a teacher to recognize a child's feeling; he must also sense the quality of the feeling.

-Relaxation of Muscles. techniques of muscle relaxation and control. Physical tenseness paralyzes action.'

(taken from Rowen, 1968, p.48-49)

Vygotsky's (1978) social constructivist principles could be seen in action through this method, as it focused on: heightening sensitivity, concentration, observation, and emotional memory, within the context of a given situation.

This is an extract from the article, demonstrating a creative approach, after the teachers had undergone training in the above aspects:

'In the second half of the course, students were asked to prepare and teach to the rest of the class a lesson from any area of the curriculum or for any age level. The one requirement was that it involve fully and creatively all members of the group, who, at this point, were capable of full participation without self-consciousness. For one of the lessons, a young man brought to class various shaped and sized cartons from the grocery store and asked the group to construct a community on the lawn in front of the college building. Students became excited about different ways of putting

on a roof or about the location of the railway station. They mapped out the community, lining up their structures along streets labelled North, South, East, and West Street. They were so involved in and excited about what they were doing that they did not notice people walking by and were unaware that pictures were being taken of them as they worked.

Several members of the class who had had experience with various ethnic groups were able to share these with the class. A young man who had worked on an Indian reservation constructed the atmosphere of a Zuni ceremonial rain dance. He had made masks similar to those used by the Zuni and had a recording of their music. He described the feeling of harmony with each other that the Zuni consider essential before the dance can be performed and made the class feel that they were actually participating in the ceremony as they moved to the music.'

(Rowen, 1968, p.58)

Appendix D: Notable themes related to ‘creative teaching’, 2020-2023

Introduction: The table below outlines some themes of relevance to this project, that emerged in publications for the time period of 2020-23. PSTs completed the creative teaching package during this time period, therefore, literature and research relevant to the project’s theme was reviewed, to ensure the creative teaching package continued to be relevant in current education systems.

Theme	Examples of evidence for the theme
Student-focused creative thinking skills	
Continued focus on purposeful and intentional use of students’ creative thinking skills in education.	Purposeful and intentional use of students’ creative thinking skills was emphasised in the OECD’s (2022) definition of creative thinking, as well as in the Durham Commission on Creativity and Education’s definition (James et al., 2019) ⁹⁴ , with clear links to critical thinking.
Assessment of students’ creative thinking skills in international tests.	In 2022, the Programme for International Student Assessment (PISA) for 15-year-olds included an optional test of creativity thinking skills for the first time, alongside reading, mathematics and science (OECD, 2022). 64 countries/economies participated (out of the 81 countries in which PISA was administered). England did not participate in the creativity assessments.
An increased focus on creativity in some countries’ national curricula.	Creative thinking gained prominence in several national curricula (e.g. Scotland, Wales, Ireland, Australia, Canada, Finland and Norway) (Lucas et al., 2023). These curricula tended to focus on competence-based transdisciplinary learning (e.g. skills such as communication, collaboration and creative thinking).
Student and teacher-focused creative thinking skills	
The development of inter-school creative collaboratives in education (England)	The Durham Commission on Creativity and Education (James et al., 2019) informed the launch of eight Creativity Collaboratives across England in 2021, in a three-year action research programme that aimed to embed teaching for creativity in schools. Teachers co-designed, trialled and evaluated innovative practices, using their own creative strategies to nurture creative thinking skills of their students. Factors contributing to the success of the Collaboratives were schools working in networks (aiming for widespread change), and substantial funding to enable this (Creativity Exchange, 2024).
Teacher-focused creative teaching skills	

⁹⁴ This report has been included here due to it being newly published and having an impact on education during 2020-2023.

Theme	Examples of evidence for the theme
Continued lack of research / practical CPD opportunities for teachers to develop a creative teaching approach.	<p>Lucas's (2022) report of the picture globally of creative thinking in schools stated: 'There is a growing recognition of the complexity and scale of changes needed at system and school level. We are only now beginning to understand the nature of the professional development and professional learning communities needed by school leaders and teachers to make significant progress in embedding creative thinking. Currently there is a huge unmet need for high-quality pre- and in-service training for teachers.' (Lucas, 2022, p.43).</p> <p>Patston et al., (2021) analysed 12 curricula and concluded that although schools were experiencing an increased focus on students' creative thinking skills, there was a lack of mechanisms to support teachers in enabling policy to become practice.</p>
Continued lack of focus on developing pre-service teachers' creative teaching skills and values in teacher training programmes.	<p>Two examples of teacher training programmes incorporating the development of pre-service teachers' creative teaching skills were stated by Lucas (2022) - Cumbria (England) and Sydney (Australia). These examples were considered to be rare (Lucas, 2022).</p> <p>In England, the government published the statutory Core Content Framework, for providers of teacher training, to implement from 2020 (DfE, 2019a). This framework had no focus on preparing teachers to develop students' creativity, or their own creative teaching skills (although it stated that the Framework was a minimum entitlement for teacher training programmes in England).</p>
Creative leadership focus in education	
An increased focus on school leaders' creative use of thinking skills, to cultivate creative educational environments.	<p>For example – the publication of Creative Thinking in Schools: A Leadership Playbook, linked to the Creativity, Culture and Education organisation (Lucas et al., 2023). This highlighted the complexities of effective leadership in cultivating a creative climate in education, and innovative ways forward.</p>

Appendix E: Definitions of the Seven Transdisciplinary Skills of Creative Teachers

Adapted from Henriksen (2016, p.214-215), Root-Bernstein & Root-Bernstein (2001) and Mishra et al (2011).

1) 'Observing' involves close attention to information gathered through the five senses, with intent focus and curiosity. Observation requires going beyond registering information to notice details and meanings.

2) Patterning includes both the act of recognizing patterns (an analytical act to identify a repeating form in a seemingly arbitrary arrangement of things or processes) and forming them (a creative act to create own patterns).

3) Abstracting aims to capture the essential nature of a thing—concentrating on one feature of a thing or process, to grasp its essence. This can also happen through creating analogies, by noticing the key similarities in seemingly dissimilar things.

4) Embodied thinking involves both kinaesthetic thinking (bodily thinking exemplified by sensations and feelings in the body, for example movement and balance) and empathizing (understanding another's point of view, for example imagining walking in their shoes, feeling what they feel).

5) Modelling creates a representation of something in real or theoretical terms in order to study its nature, composition, or purpose.

6) Play uses knowledge, body, mind, and abilities for the pure enjoyment of using them. When imaginative or innovative people play with things or concepts or processes, they [may] discover new ways of thinking and new insights. It can involve playing with ideas, distinctions, boundaries, unassailable truths, and the limits of utility. It may involve creating new rules or breaking the existing ones of established procedures.

7) Synthesizing is the cognitive tool that ties together the previous [skills], putting different ways-of-knowing together into a synthesized whole. When a person fully understands something, feelings, senses, knowledge, and experiences come together in a multi-faceted, cohesive way. A person feels what they know and knows what they feel.'

Appendix F: Notable themes related to ‘teacher identity and transformative learning’, 2020-2023

Introduction: The table below outlines some themes of relevance to this project, that emerged in literature linked to teacher identities and transformative learning for the time period of 2020-23. PSTs completed the creative teaching package during this time period, therefore, literature and research relevant to the project’s theme was reviewed, to ensure this aspect of the creative teaching package continued to be relevant in current education systems.

Theme	Examples of evidence for the theme
The current gaps in teacher identity research.	Rushton et al (2023) conducted a systematic review of 421 articles from 2000-2021, that consider the concept of teacher identity. They concluded that teacher identity research has grown, particularly since 2010, but current gaps include a focus on teachers’ identities in primary education, and a divide between teacher identity research and practice.
Proposal of a fourth core element of transformative learning: the context of the experience.	Schneppfleitner and Ferreira (2021) conducted a research-based analysis on Mezirow’s theory of transformative learning. They concluded that the sociocultural context in which the transformative learning experience is situated should be considered as a fourth core element (to complement the centrality of experience, critical reflection and rational discourse).
The potential role of perspective-taking in transformative learning processes.	Southworth (2022) proposed that perspective-taking can initiate some instances of transformative learning, and provided examples of mechanisms to enable this.
Future developments for transformative learning theory.	Hoggan and Finnegan (2023) presented an overview of literature and research from the late 1970s onwards that focused on transformative learning. They concluded that transformative learning is a very active area of research currently, with international interest. To make productive advances in this field, the authors call for new iterations of transformative learning theory.

Appendix G: Ethics Approval Notifications

Ethical approval was applied for and granted by Durham University's School of Education Ethics Committee, at four points in the project, to cover the collection of data over four academic years. The approval notifications were received by email, and copies of the ethical approval notifications, taken from those emails, are below:

The following project has received ethical approval by Durham University:

Project Title: *Exploring the Current Notion of The Creative Teacher*;

Start Date: *05 November 2019*;

End Date: *11 February 2020*;

Reference: *EDU-2019-10-05T05:26:12-qghq75*

Date of ethical approval: *18 October 2019*.

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

The following project has received ethical approval by Durham University:

Project Title: *Exploring Pre-Service Teachers' Responses to a Creative Teaching Approach*;

Start Date: *07 September 2020*;

End Date: *05 July 2021*;

Reference: *EDU-2020-08-06T09:56:11-qghq75*

Date of ethical approval: *03 September 2020*.

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

The following project has received ethical approval by Durham University:

Project Title: *Exploring Pre-Service Teachers' Responses to a Creative Teaching Approach*;

Start Date: *01 September 2021*;

End Date: *19 July 2022*;

Reference: *EDU-2021-06-22T13_02_02-qghq75*

Date of ethical approval: 30 June 2021.

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

The following project has received ethical approval by Durham University:

Project Title: *Exploring Pre-Service Teachers' Responses to a Creative Teaching Approach*;

Start Date: 01 September 2022;

End Date: 19 July 2023;

Reference: EDU-2022-06-14T12_48_10-qghq75

Date of ethical approval: 20 June 2022.

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

Appendix H: Semi-structured interview questions and an example response for Phase 1.

The interview questions for Phase 1 were part of a larger interview, which also included interview questions for Phase 2 of the empirical work. The questions below were preceded by exploring each participant's teacher identity (discussed in Chapter 7).

Interview questions for Phase 1:

- 1) What is your understanding of 'creative teaching'?
- 2) Have you experienced any examples of a creative teaching approach during your experience in schools so far? *(this can be own teaching or observing others)*

Additional questions were asked as part of the semi-structured interview approach, to allow participants' conceptions of creative teaching to be understood accurately, and to pursue a participants' response further. This is an example:

Planned interview question (1): *"What is your understanding of creative teaching?"*

Participant's response: *"Perhaps it's flexibility and adaptability according to the needs of the children. You have to think about something in a completely new way sometimes, and they ask you questions you've never thought of before, and you think yes that is how that works!"*

Planned interview question (2): *"Have you experienced any examples of using a creative teaching approach so far during your experience in schools?" (own teaching or observing others)*

Participant's response: *"We did persuasive writing, and we looked at the General Election [in England]. The purpose of this writing was to encourage everyone in the village to vote. I came up with it collaboratively with my teacher. She said she wanted to do persuasive writing, and I said that something about voting for an MP might be interesting. I came into the lesson with a lot of things I assumed they'd know, but they didn't know what an MP was, and that was at the beginning of the lesson. I had my lesson plan out, but I had to add an extra 15 minutes on, to explain things such as what does MP stand for and PM stand for? What is a voting system in England? This was very much a thinking on my feet lesson!"*

[A second example was then given, more briefly]

"The Christmas activities have also been lovely. I think it's amazing to watch what they do just with a blank piece of paper."

Example of unplanned interview question (3) to get clarification: *“In your first answer, you mentioned the words flexibility and adaptability when you talked about what you think creative teaching is. In your examples – the voting for an MP persuasive writing example and then the Christmas crafts example – do you think you, as the teacher, had to apply your flexibility and adaptability in both examples?”*

Participant’s response: *“I think that I was being much more creative in the persuasive writing example, as I had to change most of my lesson plan. So, yes, I was adapting my ideas and thinking creatively about how to help the children to understand the content of the lesson. Actually, I don’t think I was being that creative with the Christmas activities – that was more about the children’s creativity as they were following their own ideas. I didn’t change the way I had planned the content of that lesson really. Perhaps with that example I was thinking of the children’s creativity more.”*

Appendix I: Coding template for categorisation of PST interview responses

Creative teaching category title / definition	'Codes': Key indicators of the creative teaching category (bold text) and associated vocabulary	Example utterance from the interview data to illustrate the indicator
The Engager A teaching approach to plan one-off lessons, maximising student engagement.	<p>A distinct skill, part of other teaching approaches</p> <p>Occasional, intentional use in a disciplined context <i>occasional, one-off, sometimes, at the start of a topic, intended, planned</i></p> <p>Isolated learning experiences <i>one lesson, lesson 'hooks'</i></p> <p>Novelty for the teacher <i>novel, unusual, new idea, different</i></p> <p>Maximises student engagement <i>judged by PSTs' description of the outcome</i></p> <p>Playful <i>judged by activity, PSTs' tone of phrasing and level of engagement</i></p>	<p><i>'My teaching is creative sometimes; at other times I use other skills in my teacher identity.'</i></p> <p><i>'I saw creative teaching sometimes; it was planned into the beginning of each topic, to give it an exciting start.'</i></p> <p><i>'This [example of creative teaching] was called a 'Wow' lesson.'</i></p> <p><i>'I wanted to try it [a role play technique] having never done anything like this before.'</i></p> <p><i>'Their work was better; they had so many different ideas; they worked so well in a group.'</i></p> <p><i>'We did a lesson that used role play through hot-seating, it was so much fun, for me and the pupils!'</i></p>
The Responder A teaching approach using acquired problem-solving skills to respond to students' needs, by adapting learning activities during all lessons.	<p>Essential part of teacher identity <i>Essential, necessary, integral, mindset, automatically</i></p> <p>A teacher's use of problem-solving skills <i>Judged by PSTs' description of the outcome (for example, ability to use open questions to find out students' understanding, or elicit misconceptions).</i></p> <p>Continual use in the classroom <i>always, continual, in lessons</i></p> <p>intentional use in the classroom. <i>Judged by evidence of planned examples</i></p> <p>Responding to students' needs, in an improvised context <i>adapting, reacting, noticing, adjusting ideas, observing, listening, asking, relevant / meaningful / personalised / extending learning</i></p>	<p><i>'She just does it automatically.'</i></p> <p><i>'She is always asking "How did you get to that answer?" and "What do you think about this [gave an example of a theme being studied]" The pupils could each give a different answer to the question, and she encourages this.'</i></p> <p><i>'The teacher always asks open questions.'</i></p> <p><i>'She knows she's going to do it.'</i> <i>'The teacher planned to ask: 'What would you like to know about this science topic?' at the beginning of the lesson.'</i></p> <p><i>'I came into the lesson with lots of things I assumed they'd know. I had my lesson plan out, but I had to add an extra fifteen minutes on, because they didn't know what an MP was.'</i></p>

Creative teaching category title / definition	'Codes': Key indicators of the creative teaching category (bold text) and associated vocabulary	Example utterance from the interview data to illustrate the indicator
	<p>Ever-changing teaching experience <i>Fluid, dynamic, pro-active, spontaneous, openness</i></p> <p>Stimulating (for the teacher) <i>Novelty, new experience, buzz, exciting</i> <i>Judged by activity, PSTs' tone of phrasing and level of engagement</i></p>	<p><i>'[the teacher had to be] ...massively flexible - I try to go in [to the lessons] without deciding how to do things too much.'</i></p> <p><i>'Although I had to change my lesson plan a lot, it gave me a real buzz when I saw how much the children had learnt by the end of it, and that I was able to adapt things.'</i></p>
<p>The Adapter A holistic view of adaptable teaching by teachers with a creative nature - evident in all actions and thoughts.</p>	<p>Principal and intentional part of a teacher's identity, influencing all aspects in a disciplined and improvised context. <i>holistic view - a creative mindset is reflected in every decision, action and reflection</i></p> <p>Always ready and prepared to adapt. <i>Always, adaptable, flexible, fluid, dynamic, pro-active, spontaneous, improvise, on the spot</i></p> <p>Student-focused for effective learning outcomes. <i>Judged by indication of empathetic relationship with students (for example, embodied thinking, other transdisciplinary skills – observation, patterning, abstracting; open-minded).</i></p> <p>Creative teaching ideas developed through engagement in deep thinking <i>Judged by PSTs' description of thought processes (for example, concentrated/deep thought, iterations, length of time, ideas rejected, best ideas justified)</i></p> <p>Modelling creative thinking strategies to students <i>Judged by PSTs' description (for example, use of language in questioning: 'What do you think...?')</i></p> <p>Willing to take risks <i>Judged by PSTs' description (for example, expects occasional unsuccessful attempts)</i></p>	<p><i>'For me, being a creative teacher is about acknowledging difference: seeing lots of different ways to do things, and being open-minded enough to do this. I think like this all the time as a teacher.'</i></p> <p><i>'We sat round a campfire, and I got them to close their eyes and focus on their listening - what could they hear? Birds, someone trimming the hedge... then I decided to get up and walk around, crunching leaves and snapping twigs. I had to think on the spot!'</i></p> <p><i>'I always put myself in the students' shoes. You have to give them what they want to learn. If you want the students to write creatively, then they have to feel it!'</i></p> <p><i>'I was constantly thinking of the learning outcomes - what can I do to connect it? I come up with ideas, sometimes they're right, sometimes not [these are then rejected].'</i></p> <p><i>'I aim for them to be as curious as I am, I ask questions starting: 'What do you think...?' as much as I can. It's a powerful phrase'</i></p> <p><i>'[Ideas will] ...always need adapting for the students you're working with, but experimenting is important.'</i></p>

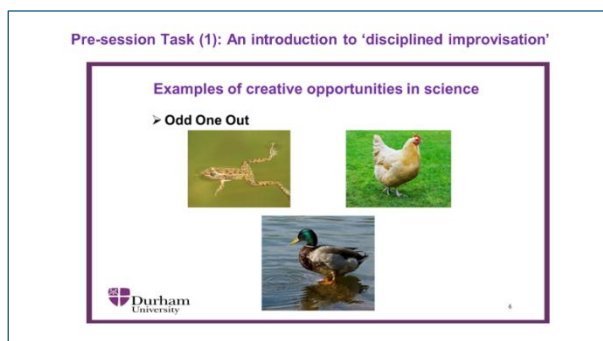
Creative teaching category title / definition	'Codes': Key indicators of the creative teaching category (bold text) and associated vocabulary	Example utterance from the interview data to illustrate the indicator
	<p>An integral part of own professional learning journey. <i>Judged by PSTs' description</i></p> <p>Stimulating (for the teacher) <i>Novelty, new experience, buzz, exciting, fun</i> <i>Judged by activity, PSTs' tone of phrasing and level of engagement</i></p>	<p><i>'I decided to take them outside [for an English lesson], I wanted to challenge myself; I think this [training year] should be a learning experience for me – finding fun ways to unravel information.'</i></p> <p><i>'For me, making learning so much fun is my fulfilment.'</i></p>
<p><u>The Performer</u> A teaching approach using a creative performance, achieved only by those with a creative personality.</p>	<p>Teaching as a performance <i>flamboyant, script, staged, lacks flexibility</i></p> <p>A creative nature being a non-negotiable part of a teacher's identity, influencing all aspects. <i>Judged by level of engagement - demotivated and fails to teach effectively if no creative opportunities</i></p> <p>Novel lesson planning <i>Judged by the activity</i> <i>new, different, unusual, 'out of the box'</i></p> <p>Risk-takers <i>risk(y), unpredictable, uncertain, adventurous</i></p>	<p><i>'[Teaching is] ...a performance: I get on stage and do it.'</i></p> <p><i>'The teacher said it was noticeable that you weren't as bouncy and flamboyant as you usually are. I agreed as it wasn't a subject I was mad about – it was a 'meat and bones' maths lesson and didn't have the creative opportunities that I need to deliver lessons.'</i></p> <p><i>'We did witness statements [in English] so I designed a murder mystery. I was the person who was murdered, and all the witnesses were teachers. Each group had a different witness statement, and they had to infer and deduce the information, to guess the murderer.'</i></p> <p><i>'There is an element of risk – but if you don't leave your comfort zone, then you'll never learn.'</i> <i>'Taking risks in my lessons gives me more confidence in my abilities'.</i></p>
<p><u>The Risk-Taker</u> A teaching approach used to plan complex, potentially risky teaching activities.</p>	<p>Only for experienced teachers <i>Challenging, not for PSTs</i></p> <p>A distinct teaching approach, used to teach part of a lesson <i>Judged by activity and its position in the learning experiences</i></p>	<p><i>'I wouldn't use creative teaching techniques as a PST in my lesson, I want to make sure I teach things so the children really understand, if this means in a straightforward way then that's what I would rather do. I think you have to be really experienced to teach creatively and I'm not there yet.'</i></p> <p><i>'We were doing history – it was historical inferences. They [the students] had to take an object out of a special bag and say what they thought about the person it belonged to. The objects and the mystery bag helped them to make inferences based on historical artefacts.'</i></p>

Creative teaching category title / definition	'Codes': Key indicators of the creative teaching category (bold text) and associated vocabulary	Example utterance from the interview data to illustrate the indicator
	<p>Complex specific teaching techniques or resources <i>Judged by the activity and attitude demonstrated towards the example</i></p> <p>Potentially detrimentally risky to students' learning <i>Confusing, convoluted, off-piste</i></p>	<p><i>'The teacher I'm with sometimes uses hot-seating – he stays in character throughout. I wouldn't know how to do this.'</i></p> <p><i>'The children were so confused. I think it was too complicated, and the teacher made a few mistakes, so it wasn't very clear. I don't think they learnt anything.'</i></p>

Appendix J: Absent indicators for each category

Category Title	Category Definition of Creative Teaching	The category <u>does not include</u> :
The Engager	A teaching approach used to plan one-off lessons, to maximise student engagement.	Use of creative teaching skills in all aspects of the teaching role. In-lesson responses to students' needs.
The Responder	A teaching approach using acquired problem-solving skills to respond to students' needs, by adapting learning activities during all lessons.	Planned creative teaching activities (e.g. one-off lessons, use of specific creative teaching techniques, such as role play). Use of creative teaching skills in all aspects of the teaching role. It only focuses on in-lesson adaptations, in response to students' needs.
The Adapter	A holistic view of adaptable teaching by teachers with a creative nature - evident in all actions and thoughts.	Creative teaching as a stand-alone quality in a teacher's identity. One aspect only of creative teaching (i.e. disciplined or improvised).
The Performer	A teaching approach using a creative performance, achieved only by those with a creative personality.	A teacher's adaptability. Consideration of students' in-lesson responses. Application of creative teaching skills to aspects of teaching that are deemed 'less creative'.
The Risk-Taker	A teaching approach used to plan complex, potentially risky teaching activities.	Continual adaptation to support the students' needs. A positive view of risk-taking. Consideration that creative teaching is for PSTs.

Appendix K: An extract of teaching input and tasks from the creative teaching package (Theme 1), introducing PSTs to the disciplined improvisation approach to creative teaching



Audio commentary transcript for slide 1:

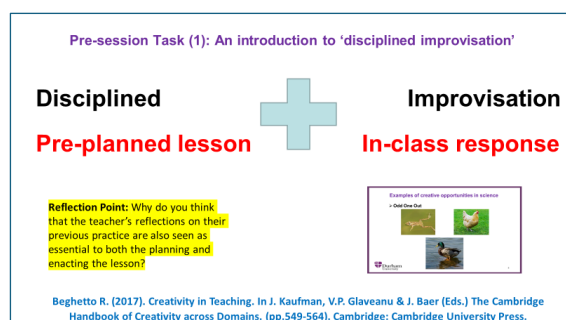
This first task will introduce you to the idea of 'disciplined improvisation', which is the main theme of today's session. The learning activity I am about to describe, and the classroom conversation that took place about the activity, will help to then explain the idea of disciplined improvisation. Have a look at the slide – this teaching activity is called 'Odd One Out' –

a great creative teaching technique to help to develop the students' thinking skills through the use of an open question. This is the commentary from the lesson:

A primary teacher wanted to find out what her 6-year old students already knew about animals' features and classification. She put 3 pictures of different animals on the board. This is the conversation that took place in the classroom between the teacher and her students:

- [Teacher's voice] A frog, a duck and a hen. Which could be the odd one out and why?
- The hen Stephanie? Because...? Of course, it doesn't live in water, does it? That's a good reason. The other two live in and around water.
- Can anyone think of another reason why the hen is the odd one out?
- Yes Susan, that's another good reason – it does not have webbed feet. The frog and the duck are similar because they both have webbed feet. Another reason?
- The hen because it's facing the wrong way? What do you mean the wrong way, Robin? Oh I see, it's facing the other way from the frog and the duck.
- The frog is the odd one out is it Nathan, and what is your reason? Because it does not have a beak – and it is not a bird – that is good thinking – you are right, birds have beaks but frogs don't.
- Feathers – it doesn't have feathers either, good one Paul. Birds have feathers too.
- Have you got any ideas Mark? The frog? Why is that? Because it lays eggs? But don't ducks and hens lay eggs too? Ahhh, but not in soft shells – I see what you mean. A frog's eggs are different from a bird's eggs aren't they?

taken from Wegerif (2010)



Audio commentary transcript for slide 2:

How does this activity illustrate the teacher's 'disciplined improvisation'? The idea of 'disciplined improvisation' is discussed by researchers in the field of creativity of education. For example, Ronald Beghetto suggests that an effective and creative teacher works on two levels: firstly, there is the planning of each lesson (which is seen as the disciplined aspect).

This combines with the teacher's spontaneous in-class responses, to support students' needs which emerge during each lesson. The teacher is improvising these

in-class responses, as each student's response will be unique in some way. As we have discussed before, the teacher's skill of being an effective decision-maker is crucial to disciplined improvisation. Also, the teacher's reflections on their previous practice are seen as essential to both the planning and enacting the lesson. Take a moment to consider why you think this is the case.

The Odd-One-Out vignette demonstrates disciplined improvisation in action. Firstly, careful planning of the task is needed before the lesson (for example, the choice of animals, the phrasing of the open question, and the learning outcomes of the in-class dialogue that the teacher is aiming to achieve). During the lesson, the teacher then has to improvise her responses as the students generate some potentially unpredictable answers, for example when she challenged Mark with his response about laying eggs.

Pre-session Task (1): An introduction to 'disciplined improvisation'

Disciplined

Pre-planned lesson

Examples of creative opportunities in science

> Odd One Out

Durham University

Improvisation

In-class response

"The hen because it's facing the wrong way? What do you mean the wrong way, Robin? Oh I see it's facing the other way from the frog and the duck."

Audio commentary transcript for slide 3:

Returning to student 'Robin' in the Odd-One-Out commentary – he gave an answer that was unrelated to the intended learning objective:

'The hen because it's facing the wrong way? What do you mean the wrong way, Robin? Oh I see, it's facing the other way from the frog and the duck.'

The teacher then moved onto another student.

The teacher was right to give value to his answer, but what do you think an alternative response might have been by the teacher, to demonstrate that Robin's answer would not always be correct? Note down an idea and bring it to the live seminar for discussion.

Examples of the PSTs' responses given later in the live online seminar:

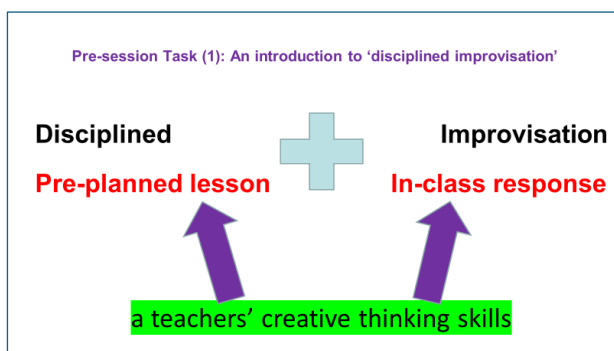
"The teacher could give encouragement for the answer but ask the child to think about things like physical features, where they live, what they eat and see if he can think of anything. If he doesn't have an answer straight away you can come back to him if he has come up with an answer."

"I would ask Robin what his thoughts would be if the chicken turned around or all the animals were moving around and what his answer might be now."

"I think I would have asked Robin to think about how hens walk around, that they are constantly going in different directions! What if that hen was facing the other way?"

"I would acknowledge he was right, but I would also mention that we could easily resolve that by turning the hen around. As you're trying to get the pupils to focus on anatomical differences between the animals, I would emphasise how easily and quickly we could resolve the fact the hen is facing the other way, compared to the fact that we can't change the animals features to make them fit."

"Yes! Well spotted. It's facing the opposite direction. What else do you notice?' and guide from there."



Audio commentary transcript for slide 4:

We can see from the Odd One Out example how disciplined improvisation is crucial to a teacher's role. When planning a lesson, a teacher has to adapt ideas for the lesson and the learning outcomes to fit the context they are working in (for example the school, the students, the environment). This adaptation requires

creative thinking by the teacher, as new ideas are likely to be necessary. During the lesson (i.e. the in-class response), effective teachers are also thinking creatively to adapt the content of the lesson, to ensure that each student is a successful learner. Sometimes the students' needs are known to the teacher before the lesson, but sometimes there are less predictable moments, like Robin's response to the Odd One Out task. The students' responses will often be a new experience for the teacher, hence the need for a teacher's creative thinking!

Appendix L: Creative teaching in primary mathematics: ‘The Dance Party’

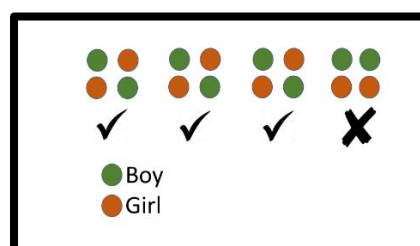
Vignette

‘The Dance Party’ Creative Teaching Vignette

A teacher taught a mathematics lesson to primary-aged students. The learning outcome focused on the students being introduced to the idea of sequencing. She started the lesson by playing music, and saying: ‘I’m having a dance party – and we’re doing a dance called a sequence dance’. She didn’t mention sequencing to the students at this point, but instead started to demonstrate the sequence by picking a girl standing opposite a boy and a boy standing opposite a girl, in a four (see diagram below). She repeated this twice more. Then, as the sequence went on, she deliberately made a mistake with the sequence, by putting the girls and boys in the wrong order. Some of the students immediately stopped her! She said: ‘What’s wrong?’ and they tried to tell her: ‘They’re in the wrong order!’ She rearranged them, but they were still didn’t match the sequence. She asked two students to help her, and they reorganised the group, so they matched the previous sequence. Then, the remaining students started sequencing themselves, in the correct order.

After that, the students helped the teacher to draw the sequence on the board (similar to the diagram below). The students then made up their own sequences, some were in lines, and some were in groups.

The teacher made it such fun – did the students realise that a mathematics lesson had taken place?



Taken from a former PST's (from Phase 1) example of creative teaching

Example of a PST's response to some of the 'Dance Party Vignette' task questions:

➤ **What are the possible benefits and challenges of this creative teaching approach – for the teacher and the students?**

Benefits: 'The students use their whole bodies to engage with the topic, which may help them to remember it more easily. Similarly for the teacher, this memorable activity will give them something to continually refer back to, as a hook for students' learning. This activity is fun for the students and may help them to change their conception of maths being difficult or worrying.'

Challenges: 'There may be classroom management challenges with this task, particularly as it involves a lot of movement around the class. I think you, as a teacher, need to be comfortable with your class, and for everyone to know each other well before engaging in this activity. There is also an element of risk associated with a creative teaching approach like this – if it doesn't go to plan or the students get confused, then it could be valuable lesson time used up, and misunderstandings would need to be corrected. It needs to be really well planned (which the teacher obviously did).'

➤ **How often / when would you consider using a similar approach?**

'I would aim to use a creative teaching approach like this some of the time, to engage the students at the start of a topic. It may be that some topics lend themselves better than others, nevertheless, I would look to engage the students with activities that build on their existing knowledge and gave them hooks to come back to as the topic progressed.'

Appendix M: PGCE Course Content Overview Academic Year 2020-21

The PGCE Primary programme's curriculum comprised:

- Research-Related Professional Practice input (*including a series of Professional Studies sessions; the Creative Teaching Training Package; a Reflective Practitioner Conference*);
- Subject knowledge and pedagogy input (*Core and Foundation Subjects in Primary Education*);
- Teacher Learning Community tutorials;
- School-based experience;
- Three PGCE modules at Masters' Level and associated assignments (*module input including two Conferences; academic skills resources including 'Questioning the Evidence'*).

Appendix N: Characteristics of PST participants compared with their PST cohorts, and the Comparison Group PSTs

	Comparison PST group	Participant PST groups					
Academic Year	2019-20	2020-21 Iteration 1		2021-22 Iteration 2		2022-23 Iteration 3	
	Comparison Group	Participant Group	Cohort	Participant Group	Cohort	Participant Group	Cohort
Number of PSTs	49	38	58	34	52	21	42
% of population	92%	66%	100%	65%	100%	50%	100%
Female	42 (86%)	30 (79%)	47 (81%)	28 (82%)	42 (81%)	18 (86%)	36 (86%)
Male	7 (14%)	8 (21%)	11 (19%)	6 (18%)	10 (19%)	3 (14%)	6 (14%)
Degree Class							
I	9 (18%)	6 (16%)	11 (19%)	7 (21%)	11 (21%)	4 (19%)	10 (24%)
2.I	32 (65%)	27 (71%)	39 (67%)	23 (67%)	33 (63%)	14 (67%)	26 (62%)
2.2	7 (14%)	5 (13%)	8 (14%)	4 (12%)	8 (15%)	3 (14%)	6 (14%)
3	1 (2%)	0	0	0	0	0	0
Degree Field							
Arts/humanities	16 (33%)	14 (37%)	23 (40%)	12 (35%)	19 (37%)	8 (38%)	15 (36%)
Social Science	28 (57%)	22 (58%)	31 (53%)	19 (56%)	27 (52%)	10 (48%)	23 (55%)
Science	5 (10%)	2 (5%)	4 (7%)	3 (9%)	6 (11%)	3 (14%)	4 (9%)


Appendix O: Spiders' Web scenario task

Task description, given to PSTs:

Pre-session Task (2): Focusing on a teacher's in-class response ('improvisation')

Scenarios Activity: Making decisions in classroom situations

Title of scenario: 'Spider web - What would you do next?'



This activity aims to help you to experience the decision-making situations faced by teachers in primary classrooms. You will need to complete the task and submit your response before the live seminar on 5th

November. Good luck!

Audio commentary transcript for slide:


This task focuses on the 'improvisation' part of a teacher's role, and give you an opportunity to experience this by responding to a teaching scenario. There is a task sheet for you to complete called 'Spider Web' - this slide has a screen shot of the beginning of the task sheet. This task enables you to step into a teacher's shoes as you will read about a challenge for a

teacher in the classroom, and suggest a possible response to the challenge. We acknowledge that you don't know the context of the students or the classroom environment, and this will limit your response, but this task is a way for you to engage with an unpredictable situation as a pre-service teacher.

Task sheet:

Scenarios Activity: Making decisions in classroom situations

Title of scenario: 'Spider web - What would you do next?'



This activity aims to help you to experience the decision-making situations faced by teachers in primary classrooms. You will need to complete the task and submit your response before the live seminar on 5th

November. Good luck!

The following commentary was written by an observer of a lesson for Year 1 pupils (ages 5-6). The lesson was led by teacher Carol. Please read the beginning of the commentary:

'Part of an activity for the children was for each to draw a spider web of white on a piece of dark blue paper. Soon children were at tables, desks, on the floor drawing expanding concentric circles on their papers with the white crayons and chalk. One boy, David, sat motionless at a desk with his blank piece of blue paper before him, crayon in hand and his eyes tracking left to right, left to right, as he stared straight ahead.

The teacher Carol passed David in her crossing of the room and touched him gently on the shoulder. David continued with eyes tracking for almost a minute. I wondered why Carol didn't do something! Make a move, I thought! Then I saw her bending down to talk to a child with her back to David, but she peeked between her arm and side to see what he was doing. He still hadn't drawn anything...'

(taken from Hill, 1993, p.217)

Imagine you are the teacher: what would you have done next to help David?

Submit your response by clicking the link below, explaining what you would do and why you have chosen to do this (your justification).

[spider web link](#)

The actual response teacher Carol gave will be shared at the live seminar.

Examples of the PSTs' responses to the task:

Please explain what you would have done to help David to start his drawing.	Please give a reason for your decision in Question 2 - did anything influence your decision?
<p>I'd initiate a conversation with David, ask him if spiders scare him, or what the biggest spider he's seen is to try and gauge his reaction. I'd offer my opinion on spiders and ask him what shape spiders webs are and if he needs a hand drawing one.</p>	<p>I'd engage in conversation focused on the task to see if that was the stumbling block for David. The questions would hopefully allow him to open up, if his response was still muted, it may give me a helpful indication that something beyond the classroom is bothering him.</p>
<p>I would discretely get David a different coloured piece of paper (black), I would then sit next to David on the carpet and engage in a conversation with him about spiders. He is clearly anxious about something, so I would want to comfort him and calm him before we started again. I would ask him if he likes spiders? Has he ever seen the movie Charlotte's Web? Is Spiderman his favourite superhero? etc etc....Once I feel that David is ready to proceed, I would begin by making sure he is comfortable with the drawing equipment, or would he prefer to draw it on his whiteboard? Then I would ask him to close his eyes and visualise a spiders web, can he remember seeing one in his house? Maybe on a garden fence? What is the basic shape? I would guide him into drawing a circle on his page, and suggesting that the 'pattern' he chooses to put inside the circle is the web. If I had a spider sticker to hand, I would put that on the tip of his pen so David has something abstract to visualise. I would then suggest to David that he takes that spider on a journey inside the circle he has drawn, and we can see the trail of web he leaves behind.</p>	<p>My main concern is that David is colourblind and he is struggling to see the white chalk against the blue paper. I would discretely change the colour of his paper and see if that helps. I would be conscious that something like that may have flustered David and caused him some upset, so I would make sure that I get down to his level and comfort him before re-setting the task by engaging in a conversation he can join in with. If he is struggling to think creatively, I would use the spider sticker on the end of the pen as a trick to get him to think more visually about the journey of a spider, weaving his web inside a frame. I would reiterate that there isn't a right or wrong answer, and that every single web will be unique. Hopefully this will alleviate any anxieties and allow him to continue with the task.</p>
<p>I would have given David the time he needed to plan the task in his head, (which I think he was doing with the eye movements, visualising drawing a web by moving his eyes from left to right,) when he seemed ready I'd encourage him to do a practice web on some scrap paper before moving on to drawing it on the blue paper. He may not even get to this stage of the task.</p>	<p>I think that Carol knew that David wouldn't be ready to start drawing straight away, perhaps he has learning difficulties and thinking or planning in his head is his usual response to a task. He may not achieve it on paper but was perhaps 'drawing in his head.'When she touched him on the shoulder but didn't interrupt what he was doing and slyly observed him, I thought that was her way of communicating that he should be ready to move on to the task and was waiting for clues in his behaviour to see if he was ready. If she had just told him to hurry up and start it would have broken his train of thought and prevented him from moving on to the task.</p>
<p>I would have asked David whether he was going to start at the middle of the web or the outside of the web.</p>	<p>I would have done this because it would get David thinking about a starting point. It would also acknowledge that I knew he hadn't started yet and give him a chance to discuss further if he needed any help without directly asking him or telling him to hurry up. The fact that the teacher patted him on the shoulder suggested that perhaps he often takes longer to start a task.</p>

Appendix P: A Researcher-IST Ranking Task of PSTs' Disciplined and Improvised Creative Teaching Examples

Introduction: A ranking task was completed by the researcher and an expert IST using ten creative teaching samples from Iteration 2 PSTs' examples of disciplined and improvised creative teaching from their teaching placements.

The IST's Profile: The IST had 20+ years' experience as a primary education teacher and school leader (including a head teacher role, subject leadership, and PST mentor). The IST's teaching approach was to plan lessons but continually improvise in-class to support the students' individual needs. The IST's expertise was considered highly relevant to this ranking task, as a current practitioner who viewed a creative teaching approach to be essential in achieving students' learning outcomes.

The Ranking Task Process

- 1) Five⁹⁵ PSTs were chosen randomly⁹⁶ by the researcher, and labelled with a letter.
- 2) To agree and establish the ranking criteria, the researcher discussed with the IST the understanding of creativity that had been used to inform the creative teaching package (e.g. Acar et al., 2017, and other relevant literature from Chapter 3).

Three initial filters were applied to the creative teaching examples:

- Filter 1: a novel approach (for the teacher)
- Filter 2: attempting to solve a problem (by the teacher)
- Filter 3: an element of satisfaction (for the teacher)

Filter 4 was then applied, comprising:

- *the six creative teaching techniques*

- Creative thinking devices;
- Transdisciplinary creative teaching skills;
- Use of open questions;
- Paired/group work;
- Students in the role of teachers;
- Self / peer assessment.

- *five non-creative teaching approaches*

- Teacher-led input to introduce the subject knowledge;

⁹⁵ Each PST provided two examples of creative teaching: disciplined and improvised.

⁹⁶ A random sample of five PSTs was chosen from the Iteration 2 PST group (n=34) using a random sample number generator. Although this sample was small, it was considered representative of the total participant group, given the variation in the results.

- Closed use of video resources;
 - Worksheets with closed questions;
 - Individual work;
 - Teacher-led assessment approach.
- 3) To test the ranking criteria and process, the researcher and IST applied the criteria to two examples of PSTs' responses who had not been included in the ranking sample. They discussed their judgements to ensure criteria alignment.
 - 4) The IST and researcher worked individually to apply the criteria to each lesson plan sample – firstly ranking the sample of disciplined creative teaching, followed by ranking the sample of improvised creative teaching.
 - 5) A comparison discussion followed the individual ranking task. The IST and researcher explained and justified their ranking decisions to each other, combined results and re-visited any that gained an equal placing.

The Ranking Outcomes

The ranking outcomes for the sample of 'disciplined' creative teaching approaches are below.

Strong evidence	Reasonable evidence	No evidence	Key: IST= in-service teacher; RES=researcher (numbers are raw scores assigned to each category)
2	1	0	
-2	-1	0	

Justification / identifiers (creative teaching in green; non-creative in red)	PST Sample (identified by a letter and primary subject of lesson focus)									
	A English		B Science		C history		D computing		E Mathematics	
	IST	RES	IST	RES	IST	RES	IST	RES	IST	RES
Filter 1: a novel approach										
Filter 2: attempting to solve a problem										
Filter 3: an element of satisfaction										
Filter 4: identifiers related to the value of the creative approach (listed below)										
Creative thinking devices										
Transdisciplinary creative teaching skills										
Use of open questions										
Paired/group work										
Students in the role of teachers										
Self / peer assessment										
Teacher-led input to introduce subject knowledge										
Closed use of video resources										
Worksheets with closed questions										
Individual work										
Teacher-led assessment										
Ranking Position (1=least 5=most creative)	5	5	3	4	4	3	2	2	1	1
Combined Ranking Score	10		7		7		4		2	
Discussion points that led to final ranking	PSTs B and C achieved the same combined ranking score. PST B's example was judged the strongest example of a creative teaching approach, because it had a higher raw score (30 points), compared with PST C's example (27 points).									
Final ranking position after discussion	5		4		3		2		1	

The ranking outcomes for the sample of 'improvised' creative teaching approaches are below.

Strong evidence	Reasonable evidence	No evidence	Key: IST= in-service teacher; RES=researcher (numbers are raw scores assigned to each category)
2	1	0	
-2	-1	0	

Justification / identifiers (creative teaching in green; non-creative in red)	PST Sample (identified by a letter and primary subject of lesson focus)									
	A Mathematics		B music		C science		E mathematics		D Computing	
	IST	RES	IST	RES	IST	RES	IST	RE	IST	RES
Filter 1: a novel approach										
Filter 2: attempting to solve a problem										
Filter 3: an element of satisfaction										
Filter 4: identifiers related to the value of the creative approach (listed below)										
Creative thinking devices										
Transdisciplinary creative teaching skills										
Use of open questions										
Paired/group work										
Students in the role of teachers										
Self / peer assessment										
Teacher-led input to introduce the subject knowledge										
Closed use of video resources										
Worksheets with closed questions										
Individual work										
Teacher-led assessment										
Ranking Position (1=least creative; 5=most creative)	5	5	3	4	4	3	2	2	1	1
Combined Ranking Score	10		7		7		4		2	
Discussion points that led to final ranking	PSTs B and C achieved the same combined ranking score. PST B's example was judged the strongest example of a creative teaching approach, because it had a higher raw score (26 points), compared with PST C's example (25 points).									
Final ranking position after discussion	5		4		3		2		1	

Ranking Task Commentary

Inter-Rater Reliability

The Inter-Rater Reliability (IRR) or level of agreement between the two raters was calculated using the following calculation:

$$115 \text{ (the number of matching judgements)} \div 140 \text{ (the total number of judgements)} \times 100 = 82\%.$$

The ratings were considered reliable as the result was >75% (Gwet, 2014).

Notable Points

All PSTs in the samples achieved Filters 1-3, demonstrating a strong understanding of the fundamental aspects of a creative teaching approach overall.

The PSTs were mostly ranked in the same order for the final ranking outcomes for their two examples. For example, PST A was awarded the highest rank for both disciplined and improvised lesson plans. The exception was the order for PSTs D and E: ranked 4th and 5th for disciplined creative teaching and 5th and 4th for improvised creative teaching. This suggests that the PSTs mostly did not differ in their ability to use creative teaching skills in disciplined or improvised contexts.

Appendix Q: One ECT's vignette describing a disciplined creative teaching approach in action

The commentary below is an interpretation of the interview transcript, with the ECT's wording in italics.

'This year the school tried a character-based topic curriculum, merging history, geography and PSHE around a central character. This included teaching character traits – respect, resilience, teamwork - as with Covid [disruption to education in the previous year] those social structures had gone. We do missions once a week – I run most of these in Key Stage 2. For example, in the Amazon Rainforest topic, the mission could be that the pupils need to cross the river. In the resource pack, I have the aim of the mission, the resources and the character traits they need to focus on, but I have to decide how to deliver the mission [the pedagogical approach]. I have to plan my teaching approach on a class-wide basis –to make sure I am including pupils of all levels of attainment and pupils with SEND [Special Educational Needs and Disabilities].*

One of my favourite missions was about Ernest Shackleton. The pupils competed against each other to free Shackleton from an iceberg, by knocking down 'ice blocks'. A main planning challenge for that mission was for a pupil with autism, who didn't like loud noises, or competitive activities. I created six different versions of that mission, so all the students could be involved and would learn. For example, one group did not have a competitive challenge aspect; one group had a problem-based learning question added in ('What do you think happened when...?')

The teacher indicated that he had a lead role in inspiring more experienced colleagues to engage with this disciplined creative teaching approach:

'Some teachers struggle with the missions - they are more experienced teachers than me, but they prefer a more academic and less practical approach to teaching. They weren't sure what to do with the mission material, so they asked me. I talked them through my approach, and said that they were welcome to use my ideas.'

The teacher felt confident and skilled in leading more experienced colleagues in such initiatives, and referred to the development of his understanding of creative teaching on the PGCE programme as being instrumental to the development of his professional creative thinking skills. He described the change he had experienced as an ECT, which

moved his creative thinking skills from a 'conscious' level as a PST to a more 'sub-conscious' level as an ECT:

'During the PGCE course we picked apart lessons, and saw how it was beneficial to the teacher to be creative – but I was thinking about it very consciously. This year it has been essential that I've used creative teaching on a day-to-day basis – I am thinking all the time: 'What can I do to get this knowledge across?' It [creative teaching] is now often on a more sub-conscious level.'

*Personal, Social, Health and Economic Education

Appendix R: Published journal article linked to this project

Document generated on 09/17/2025 10:19 a.m.

International Journal for Talent Development and Creativity



Developing Creative Teaching Skills in Pre-Service Teachers

Rachel Simpson, Douglas P. Newton and Lynn Newton

Volume 10, Number 1-2, August–December 2022

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Developing Creative Teaching Skills in Pre-Service Teachers

Rachel Simpson; Douglas Newton; Lynn Newton

School of Education, Durham University, Durham, England

Abstract

Teaching is an interactive process as teachers respond to diverse interests and needs of learners, alongside the changing demands of education systems. Giving teachers the opportunity to develop competence in creative teaching may enable them to prepare and improvise teaching to maximise learning. A package to foster creative teaching through various learning experiences was constructed and tested on pre-service teachers. The effect of the package on seventy-two pre-service teachers was assessed, largely by quantitative pre and post-tests and qualitative responses. This was supplemented by data from similar teachers who did not have this opportunity. There was strong evidence of worthwhile increases in the pre-service teachers' understandings and use of creative teaching approaches following their completion of the development package. Interview data suggested that a beneficial impact extended into the teachers' first year of teaching, and that creative teaching can become a part of teacher identity. The article describes evidence that creative teaching can be fostered and it concludes with a recommendation that teacher training and development should give it explicit attention. Some challenges and potential solutions are described.

Keywords: Creative teaching; teacher development; teacher identity; creative lesson planning; classroom improvisation.

Introduction

The need for teachers who are creative thinkers

A main purpose of education worldwide is seen as preparing students to participate fruitfully in society and lead independent lives (OECD, 2018; Valtonen et al., 2021). To be successful, students will need to construct and apply knowledge, understand and contribute to the solution of problems of the future (Silva, 2009; Van Laar et al., 2020), and make informed and wise decisions (Sadler, 2010; Newton, 2017). However, the widespread use of standardised tests, prescribed curricula, and high-stakes accountability provides tensions for teachers and school leaders in their attempts to meet these aspirational educational outcomes (Olivant, 2015; Keamy, 2016). Habits of thought and practice also add to a teaching inertia which maintains the status quo. Changing how teachers see and engage in their role is fundamental to breaking free from unproductive practices and achieving educational goals. Globally, a teacher's role has changed over time; once seen simply as a knowledge-provider (Nias, 1993), a teacher is now considered to be a learning activator (Hattie, 2012), and designer of meaningful learning tasks that require students to make knowledge-based decisions (Scardamalia et al., 2012). Crucially, for students to be successful, teachers need extensive subject and pedagogical knowledge

(Coe et al., 2014), and, for instance, an ability to model purposeful, productive thinking skills and decision-making competencies (Newton & Newton, 2018; Valtonen et al., 2021). However, they also need to be creative problem-solvers in order to meet the diverse learning needs which face them (Tanggaard, 2011; Henriksen, 2016; Beghetto, 2017). Merely repeating last year's lessons is not enough: teaching needs to be creative, responsive and dynamic as students, expectations, and the world change. Furthermore, an open-minded willingness to adapt, and the capacity to do so equips teachers with a frame of mind and skills that will prepare them for the inevitable changes they will meet in their working lives (Clack, 2017). But, can this be done? Can a creative frame of mind and capacity be fostered in teachers?

The nature of creative thinking in teaching

Acar, Burnett & Cabra (2017) reviewed the many definitions of creative thinking and distilled a consensus that it purposefully produces something *new* and of *value* (either to the creator or a wider audience). While these are essential components, successful creative thinking may also produce a kind of *satisfaction*. In the classroom, teachers could use creative thinking to design innovative learning experiences, and to adapt their teaching spontaneously according to students' needs (Paek & Sumners, 2017). Beghetto (2017) highlights these two, distinct roles as the use of creative thinking:

- when planning and evaluating learning experiences, which he describes as disciplined creative teaching; and,
- when responding spontaneously to situations in the classroom in an improvised, on-the-spot, application of creative thinking.

The perception of creative teaching in education has changed over time. In early literature, creative teaching was seen as a performance, a quality possessed by a gifted few (Opulente, 1965) and with a potentially high level of risk (Tanggaard, 2011). Now, creative teaching is seen as an appropriate skill for all teachers to develop and use (Cremin, 2015) with wise decision-making minimising the risk (Craft et al., 2008). Current thinking is also moving away from an emphasis on isolated experiences used to maximise students' engagement (Tanggaard, 2011), to the continual use of creative teaching skills to develop effective learning experiences that meet students' needs (Beghetto, 2017). This, however, assumes that a teacher's creative thinking can be developed and used intentionally and successfully (Beghetto, 2017). It is argued that training and opportunities are needed for teachers to understand, acquire, practise, and improve the competence of creative teaching (Henriksen, 2016). Although there is growing interest in the notion of creative teaching, there is little evidence that it is finding a place in training or practice so any potential benefits for both teachers and students may be lost (Henriksen, 2016; Beghetto, 2017). Some may even be sceptical about the value of fostering creative teaching at a time of intense monitoring and measurement of teacher performance in many education systems (Holloway, 2019).

We are of the view that uncreative teaching may support children's learning, but only up to a point. Teaching is an interactive process in which the teacher responds to diverse interests and needs. The creative teacher is more able to prepare, adjust, and improvise teaching to fit these interests and needs, to make the most of the learners' abilities, and maximise their learning. While a competence in creative teaching cannot be transmitted to others, we can provide opportunities to construct understandings and exercise creative thinking through discourse and activities. Accordingly, the aim of this study was to prepare, develop, and test a teacher development package which offered such opportunities. In particular, the package aimed to foster:

- an understanding of the meaning of creative teaching;
- an appreciation of the value of creative teaching;

- competence in creative lesson planning; and,
- notions of the role of the teacher (teacher identity) which include a favourable disposition towards creative teaching.

Method

The materials: a creative teacher development package

Pre-service teacher training is considered a critical time for developing and transforming novice teachers' professional values and identities (Bryson, 2014; Boyd et al., 2015). Consequently, a one-year postgraduate course for primary school, pre-service teachers in England was chosen as the testing ground for the development package. (English primary schools, for children aged 5 to 11 years, are similar to elementary schools elsewhere). The course focuses mostly on subject and pedagogical knowledge in practice (DfE, 2019). We are unaware of courses which also attempt to develop professional creative thinking in teachers in a systematic and deliberate way (see also Byman et al., 2021).

The construction of the development package was informed by Mezirow's (2000) transformative learning theory. In particular, it pointed to the value of: centrality of experience, critical reflection, and rational discourse. This led to four themes (Table 1). The constructivist approach of the package tasks was intended to support the active creation and interpretation of knowledge in the context of personal experience (Kroth & Cranton, 2014). To enhance the transformational experiences, tasks were structured to enable formative peer discussion, review and feedback, with opportunities for pre-service teachers to gain the perspectives of peers (Nicol, 2014). An illustrative selection of tasks is provided in Appendix A.

Table 1: Themes in the Training Package.

Themes in the preservice teachers' training package	Types of tasks	Literature used to support the tasks
1) developing an understanding of creative teaching	Critically reviewing and discussing with peers and tutors: former pre-service teachers' video vignettes explaining what creative teaching means to them; video clips of creative teaching in classrooms; relevant literature.	Beghetto (2017) Henriksen (2016)
2) problem-based learning tasks, to practise decision-making and creative thinking skills	Using creative teaching approaches to complete: scenarios tasks; lesson-planning tasks.	Newton (2017) Creative teaching examples in a range of literature (for example Wegerif, 2010).
3) recognising the importance of creative teaching in schools (<i>Iteration 2 of the teaching package only</i> <i>n=34</i>)	Critically reflecting on: own examples of disciplined and improvised creative teaching from teaching placements. question and answer session with experienced primary school teachers about creative teaching.	Application of the above.

4) self-analysis of own teacher identity (developments, influences, challenges), and the position of creative teaching within this	Critically reflecting on transformational learning theory and its application to own experiences through: teacher identity tasks: 'What kind of teacher do you aim to be?'; professional developments journal, including influences of peers and reflections on multiple perspectives.	Mezirow (2000) Nicol (2014)
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Training packages are unlikely to be optimal in the first instance. A design intervention strategy (Simon, 1996) was used to design, enact, evaluate and improve the package through two iterations. Teacher feedback and course leader observations informed the revision process.

The participants

An intervention group of 72 pre-service primary school teachers completed the package, providing pre and post-training data. Given that other things happen in teacher training courses which might be said to develop creative teaching competence, data from another 49 pre-service teachers who did not experience this training in a previous year were available for comparison. (A comparison of the two groups' degrees, ages, and experience showed them to be very similar.) There were also the data from semi-structured interviews with five teachers one year after they had completed the training package.

The training procedure

The training package was delivered by a tutor on the course. Experienced teachers also contributed by presenting in live sessions examples and benefits of creative teaching in their practice and the practice of the pre-service teachers they work with. An expert teacher also worked with the lead researcher to validate the quality of the pre-service teachers' examples of creative teaching from their teaching placements (Table 1: Task 3). The creative thinking and practice package was only a part of the overall teacher training course. The package took 42 hours over six days dispersed through the first twenty weeks of the course and comprised:

- interactive online presentations;
- completion of self-study tasks; and,
- live online teaching and discussion sessions.

Task responses were submitted through an online platform and the tutor chose examples for discussion at the live sessions, with the pre-service teachers' consent and input. The structure of the sessions enabled the pre-service teachers to revisit their ideas about creative teaching through a cycle of self-study, discussion with peers and the tutor, and a return to self-study to adjust their understanding according to others' input.

Analysis

These trainee teachers' pre-development and post-development responses to the package included qualitative and quantitative data reflecting the four themes (Table 1). For instance, pre-service teachers submitted written responses to the question: *What is your understanding of creative teaching?* at the beginning and end of the training package. A coding frame (shown in Table 2 below) was used to compare the frequency of the key features of creative teaching that occurred in the pre-service teachers' explanations. The percentages of the teachers' responses were reported. A Chi-square test of independence was used to examine the differences

between the pre and post-training understandings of creative teaching. The qualitative data enabled further comparisons and added meaning to the findings.

Results

The following represent data collected from the intervention group of pre-service teachers unless otherwise stated.

Theme 1: developing an understanding of creative teaching

Table 2 provides strong evidence of statistically significant increases in understandings of the main features of creative teaching after the intervention group of preservice teachers completed the creative teaching training package, compared with their earlier understandings.

Table 2: A Comparison of Pre-Service Teachers' Understandings of Creative Teaching Before and After their Completion of the Training Package (Intervention Group Data).

Coding Frame		Outcomes			
Feature <i>Creative teaching means a teacher...</i>	Vocabulary/ indicators	Percentage of preservice teachers' responses that included this feature (n=72)		P-value significance at $p<.05$ (χ^2 test with 1 df)	Example response from pre-service teachers at the end of the training package
		Before training package	After training package		
...has new ideas.	innovative, original, imaginative, new, different, thinking outside the box	36	68	$\chi^2 (1, N = 72)$ = 14.72, $p<0.001$	<i>'Creative teaching means thinking imaginatively about how you present curricular content, to ensure you deliver engaging and meaningful learning to your students.'</i>
...is adaptable (disciplined adaptability).	adapt, change, flexible, disciplined, controlled, thoughtful, considered	13	58	$\chi^2 (1, N = 72)$ = 33.06, $p<0.001$	<i>'It is important to be able to adapt to changing situations, in a well-thought out and controlled way.'</i>
...is adaptable (improvised adaptability).	adapt, improvise, unpredictable, spontaneous, disruption	8	57	$\chi^2 (1, N = 72)$ = 38.69, $p<0.001$	<i>Creative teaching is the ability to adapt a lesson on the spot, for example if there is a disruption of some kind.'</i>

...is thinking/ acting creatively in a holistic way.	teachers thinking /acting creatively in a holistic way, to solve problems.	25	57	$X^2(1, N = 72)$ = 15.19, $p < 0.001$	<i>'Creative teaching is the teacher being dynamic, problem solving and imaginative. It is not limited to subjects or age groups. It is involved in every step of a learning experience, from planning the methods used in the lesson to deliver the learning, the content, the outcomes and the way feedback is given.'</i>
...recognises the value of creative acts.	Teachers meeting learning outcomes; students' needs; teachers' gains.	14	42	$X^2(1, N = 72)$ = 13.85, $p < 0.001$	<i>'Creative teaching encompasses a teacher's ability to be prepared to adapt the lesson spontaneously to meet the needs of the students.'</i>
...is openminded when acting creatively.	open-minded, ready for change, dynamic, willingness to transform	8	31	$X^2(1, N = 72)$ = 11.35, $p < 0.001$	<i>'Creative teaching refers to the multidimensional nature of teaching, meaning the need to be flexible and open-minded in everyday teaching practice to maximise students' development.'</i>

After the training package, many pre-service teachers in the intervention group changed their explanations of creative teaching by focusing on their use of creative thinking to develop as effective teachers, rather than only focusing on the creativity of their students. An example of this change is in Figure 1:

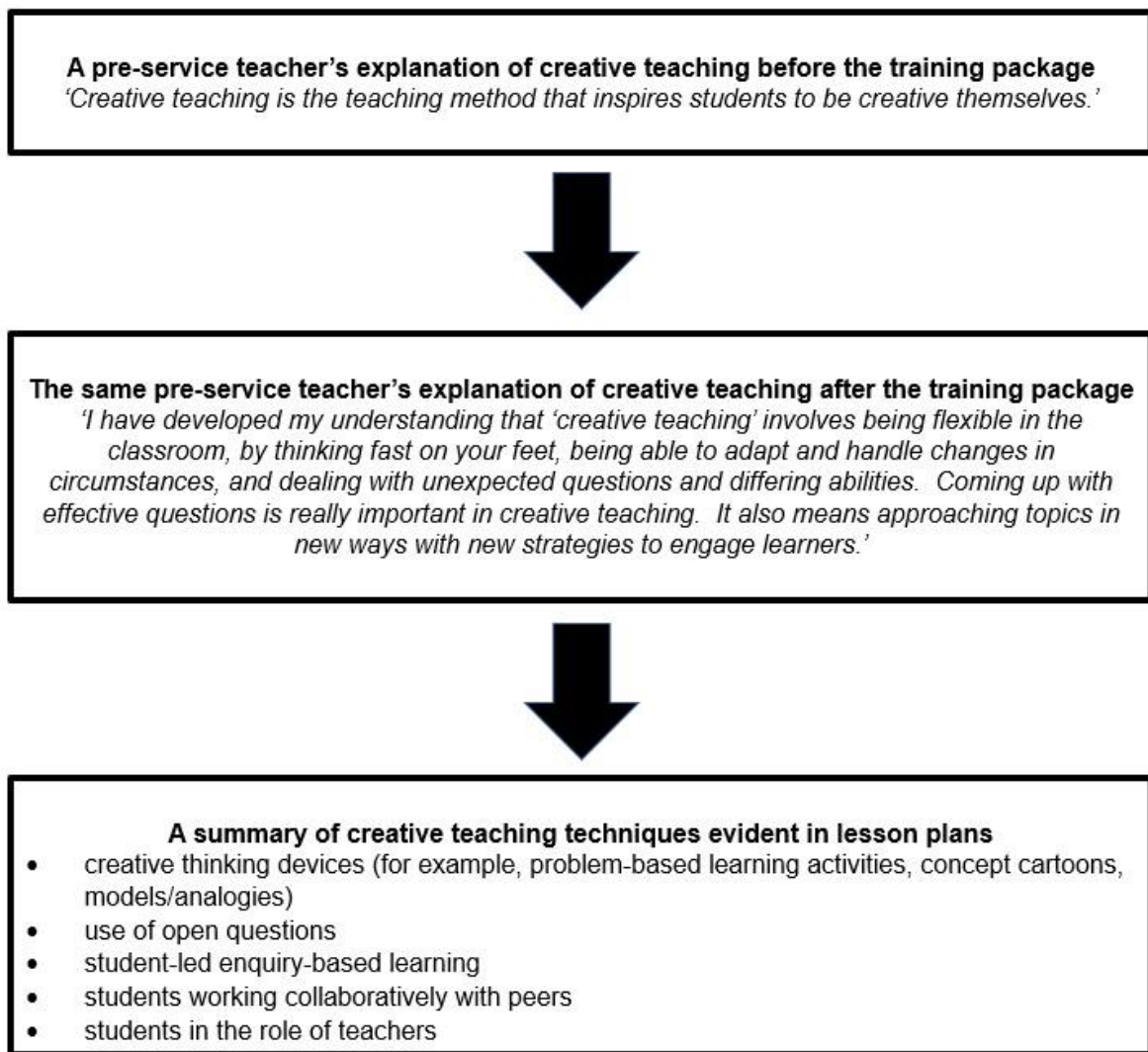


Figure 1: Creative Teaching Understandings and Techniques.

The pre-service teachers' understandings of creative teaching also moved away from the misconception of an arts focus by the end of the training package. An understanding of the connection between creative teaching and transdisciplinary skills had also increased, for example:

'I want to ensure that I am always thinking from the point of view of the students – through embodied thinking - and how an activity will come across to them, to ensure that it actually meets the objective and is engaging.'

Theme 2: problem-based learning tasks, to practise decision-making and creative thinking skills

Pre-service teachers in the intervention group completed a theoretical-lesson planning task to apply their understandings of creative teaching to their potential practice. Pre-service teachers' designs of two primary science lessons completed before the training package (Lesson Plan 1) and after the training package (Lesson Plan 2) were analysed, to enable a statistical comparison of frequency of creative teaching techniques. The results suggested that there was evidence of a statistically significant increase in the use of the creative teaching features in Figure 1 in Lesson Plan 2 compared to Lesson Plan 1 (a χ^2 test with 1 df returned $p < 0.001$).

The comparison group of pre-service teachers who had not completed the training package completed the same task of creating a lesson plan for science as a routine part of their training. The same statistical data analysis method (χ^2 test with 1 df) was applied to the science lesson plans from the comparison group. This enabled a comparison of statistically significant differences between those who received the teaching package and those who did not. For the comparison group, the results ranged from $p = 0.32$ to $p = 1.00$, suggesting that there was no evidence of a statistically significant increase in the use of the creative teaching features listed in Figure 1. This counters the argument that the observed effects were due to other events on the course.

Pre-service teachers in the intervention group also completed scenarios tasks in the training package, giving reasoned solutions to a range of teaching problems. For example, pre-service teachers were given a scenario in which student 'David' struggled to start his drawing of a spider's web in an art class. Pre-service teachers responded to the question: 'What would you have done to help David to start his drawing?' by presenting a possible solution and an explanation of their decision.

The solutions varied from:

- asking David a question:
'I would have asked David if he had ever seen a spider's web, and what was the biggest spider web he has ever seen?'
- to working with a partner:
'I might also encourage David to work with a peer to create a spider's web together.'
- to responding to the clues in the scenario's explanation of David's needs:
'I would have given David the time he needed to plan the task in his head, (which I think he was doing - visualising drawing a web by moving his eyes from left to right).'

Analysis of the pre-service teachers' responses to the spider's web scenario, and other similar tasks, suggested that there were three main areas in which these activities developed the pre-service teachers' professional skills:

1. Creative thinking: pre-service teachers practised the skill of designing a solution and response to solve a teaching problem;
2. Critical thinking and reasoning: pre-service teachers made and justified their decisions; and,
3. Gaining multiple perspectives of different (sometimes contrasting) approaches to the task: peers explained their decisions to others.

Theme 3: recognising the importance of creative teaching in schools

In Iteration 2 of the training package, pre-service teachers in the intervention group ($n=34$) submitted examples of disciplined and improvised creative teaching from their teaching placement lesson plans, which occurred after the final training package session. The task included self-reflections on the benefits of their creative teaching approaches. The examples of creative teaching were rated by the tutor and an expert teacher for creative teaching quality, to explore the pre-service teachers' capacities to apply the training package to their practice. The rating criteria incorporated Acar et al's (2017) explanation of creativity (a novel approach which attempted to solve a problem), alongside the creative teaching techniques in Figure 1.

In all the responses submitted, the pre-service teachers viewed their use of creative teaching as an essential skill needed to solve a problem in their practice. Problems included: changing

the teaching approach to enable students to understand the learning outcome; creating a new resource to model a concept, and designing a learning experience to increase students' engagement.

A rating between 1-5 was then assigned to each example (with 5 being highest rating). Although the quality of the creative teaching examples varied, the mean ratings of 3.4 (disciplined creative teaching) and 3.2 (improvised creative teaching) out of a maximum of 5 suggested that the pre-service teachers were developing their creative teaching skills in the context of real teaching placement experiences.

In the highly rated examples of improvised creative teaching, pre-service teachers moved away during the lesson from a pre-planned closed teaching input (for example, lengthy teacher-led explanations, or a highly scaffolded worksheet) to spontaneous modelling, increased student-led opportunities, or a more practical task. The highly rated examples of disciplined creative teaching demonstrated pre-service teachers using their creative thinking skills to maximise effective teaching, including planned open-ended questioning, and thoughtprovoking resources. Pre-service teachers' strong subject knowledge was reflected in the highest rated examples of creative teaching: it was apparent that this enabled them to think of imaginative alternative approaches.

Pre-service teachers in the comparison group who did not receive the training package also prepared and evaluated lesson plans at a comparable time in the course. The numbers of ideas for adapting each lesson to solve a learning problem were recorded, and Table 3 compares these results with the intervention group. Again, the difference between the two is statistically significant. The pre-service teachers who completed the creative teaching training package identified more adaptations for their lessons than pre-service teachers who did not have that opportunity. This is further evidence that the training package had a positive effect.

Table 3: A Comparison of Pre-Service Teachers' Number of Suggested Adaptations in Lesson Evaluations

	Intervention Group (n=34)	Comparison Group (n=49)	Comparison (χ^2 test with 1 df)
Mean	3.03	1.61	$p < 0.001$ Cohen's $d = 1.00$ (generally taken to indicate a large effect size)
Standard Deviation	1.60	1.19	

Theme 4: self-analysis of own teacher identity

Before receiving the training package, pre-service teachers in the intervention group described their perceived teacher identities through a written response to the question: 'What kind of teacher do you aim to be?' They revisited this question after the training package, by adjusting their written responses and explaining the influences on their adjustments.

A comparison of the two responses (Table 4) showed a large increase in the inclusion of creative teaching features after the pre-service teachers in the intervention group had completed the training package.

Table 4: Use of Vocabulary Associated with Creative Teaching, in Pre-Service Teachers' (n=72) Teacher Identity Responses Before and After the Training Package (Intervention Group Data)

Vocabulary Associated with Creative Teaching	Frequency of Vocabulary Used in Preservice Teachers' Teacher Identity Responses	
	Before training package	After training package
creative, innovative, imaginative, adaptable, flexible, thinking outside the box, try new things, risk, embodied thinking, play, spontaneous, open-minded	42 occurrences	176 occurrences

42% of these teachers included the term 'creativity' as an ideal quality for their teacher identity before the training package, compared to 94% after completing the training package. They explained why this change had occurred, for example:

'My development this term has taught me to change direction if things are not going to plan. I have learnt various ways to become a creative teacher to ensure children are engaging in meaningful and exciting learning experiences. I have learnt many different strategies of teaching and learning, which will allow me to hopefully solve various problems which I will encounter as a teacher. One of the biggest things the [training package] has taught me is to think outside of the box when teaching, always ensuring the children are at the forefront of every lesson, but to not be afraid to take risks, and to learn from mistakes.'

Many in the intervention group referred to the intention of the training package – to make creative teaching a conscious and deliberate decision-making tool – in their reflections about their teacher identities at the end of the course, for example:

'Although disciplined and improvised creative teaching may have occurred naturally in my practice, by having it explicitly explained ensured that I made a conscious effort to be creative both in planned and unplanned circumstances. This module made creative thinking go from a subconscious level (where it occurs instinctively, but perhaps with less thought and effort involved) to a conscious level (where teaching and learning opportunities are thoroughly thought about using creative thinking skills). I genuinely believe it [the training package] has allowed me to make more, and better, creative teaching choices both spontaneously and non-spontaneously.'

All acknowledged that their teacher identity would need to be adapted according to their future contexts, for example:

'Some [aspects of my teacher identity] will keep going in the same direction and some will be challenged. I realise that over time in practice my teacher identity attributes will look a bit different to how I initially imagined'.

They also reported that the task to complete a self-reflective journal (to help the preservice teachers to monitor the development of their teacher identities) was beneficial to their professional development, for example:

'I never considered the usefulness of a journal [before the PGCE course]. It has allowed me to self-reflect at the end of each day and sum up what I've learned and found the

most useful. I aim to continue with my self-reflective journal [after this term], to help me to keep exploring new ways to teach creatively and teach for creativity.'

Indications of sustainability

Five former pre-service teachers who completed Iteration 1 of the training package were interviewed towards the end of their first year of teaching. The semi-structured interviews aimed to explore indications of sustainability of a creative teaching approach. All teachers said that the training package had continued to influence their professional development after their training, and that a creative teaching approach was an essential part of their teacher identities, for example:

'My idea of creative teaching now is definitely what I was left with at the end of the PGCE year and had developed from the [training package] sessions. Those sessions changed my way of thinking about creative teaching and are why this is now embedded in my teacher identity.'

These teachers used vocabulary such as: '*integral*', '*under-stated*', '*constantly*' and '*subtle*' related to their creative teaching approaches. This suggested that creative teaching was in action continually in everyday 'improvised' teaching acts, evident in this example:

'Adapting during every lesson has been really important: I am never flustered if something goes wrong as I will think of some other way of teaching it, which I think is directly from what we were taught [in the training package].'

Contrary to some of the pre-service teachers' views (explained in Theme 4), the teachers discussed a change in their creative thinking skills from a very deliberate 'conscious level' as a pre-service teacher to a more 'sub-conscious' level as an early career teacher, suggesting that this had become an embedded quality.

All five teachers discussed the use of a creative teaching approach to reduce the negative impact of the Covid-19 global pandemic on students' learning experiences. For example:

'I think creative teaching is especially important this year, as the students have missed so much [due to school closures]. You are constantly, unexpectedly, filling in gaps because they don't have the prior knowledge you'd expect from the previous year.'

A barrier raised by some of the teachers to a disciplined creative teaching approach was the time needed to plan creative teaching ideas. However, one teacher provided a contrasting argument to the issue of time in his response, as he viewed a disciplined creative teaching approach to be time-efficient for the teacher:

'You don't have time to not be creative. There is no point just using workbooks or textbooks as the students won't get it. If you aren't creative, then you'll have to repeat [the lesson] again in a different way, and you'll have to be creative anyway – there's an inevitability! Why not be creative from the first lesson?'

Discussion

This study was situated in a real-world context of an initial teacher training course, with many other influences on the pre-service teachers' developments during their training year.

Nevertheless, the responses to the package showed encouraging and potentially useful changes in beliefs and creative teaching competences. Furthermore, comparisons with those who were not trained in this way provided evidence that these changes were due to the experiences provided by the package. To this extent, the training package achieved these ends.

We also point to the value of the iterative process in developing to the package. For example, a change from Iteration 1 to 2 was the addition of Theme 3, 'Recognising the importance of creative teaching in schools', due to an emergence of pre-service teachers' queries about the value of creative teaching in many of today's schools where the emphasis can be on test scores.

The following discussion points explore some of the themes presented in the introduction in relation to the results from the pre-service teachers in the intervention group.

Analysis of pre-service teachers' written responses to the training package tasks suggested that their understandings of creative teaching changed between the beginning of their teacher training course and the end of the creative teaching training package. The preservice teachers showed a significantly increased understanding of the need for a teacher to adapt, and think creatively in an immersed, holistic way, instead of viewing creative teaching as isolated opportunities. This aligns with the current role of a teacher: to continually adapt their teaching to respond to students' needs and the changes in the education systems in which they work (Clack, 2017). The quality of open-mindedness was discussed by some pre-service teachers, alongside the generation of new ideas, suggesting their readiness to transform (Mezirow, 2000). Pre-service teachers in the intervention group also changed their misconceptions of creative teaching at the end of the training package, adjusting their ideas to align with the current understanding of creative teaching as transdisciplinary across subjects and age phases (Henriksen, 2016).

The problem-based learning tasks allowed the pre-service teachers to practise their decision-making and creative thinking skills. The pre-service teachers' outcomes reflected the three main features of Mezirow's (2000) transformational learning theory, summed up in the table below:

Table 5: Features of Mezirow's Transformational Learning Theory, Matched to the Problem-Based Learning Tasks of the Training Package.

Features of Mezirow's transformational learning theory	Training package opportunity	Pre-service teachers' skill developments
centrality of experience	developing a response to solve a real-world teaching problem	<ul style="list-style-type: none"> • creative thinking • decision-making competencies
critical reflection	justifying their response decision	<ul style="list-style-type: none"> • critical thinking • reasoning
rational discourse	Explaining their response decision to others (peers, tutors)	<ul style="list-style-type: none"> • gains through multiple perspectives (ideas, viewpoints) • communication • negotiation

In the 'hypothetical scenarios' tasks there was evidence of an increased use of creative teaching techniques, as discussed by Henriksen (2016) and others, with greater use of open questions, creative thinking tools and student-led learning opportunities. Pre-service teachers'

explanations for their decisions demonstrated that they understood the value of creative teaching: to maximise the effectiveness of students' learning experiences (Beghetto, 2017). The scenarios tasks were completed in university-based sessions, without a specific school context. Aligning with Boyd et al's (2015) view, these tasks allowed the pre-service teachers to create thoughtful and innovative responses, in an environment of peer and tutor support. We considered this to be an important step: to allow ideas to emerge and be adjusted according to the perspectives and feedback of others, through the peer and self-review approaches advocated by Nicol (2014), before the context of teaching placements.

The pre-service teachers' application of creative teaching skills during teaching placements provided them with the experience of understanding the need to adapt their behaviours according to specific school contexts and parameters (Paek & Sumners, 2017). Encouraging pre-service teachers to reflect upon their use of creative thinking skills in two contexts - disciplined (lesson-planning) and improvised (in-class) - enabled them to recognise the value of creative teaching in the two ways discussed by Beghetto (2017). By reflecting on their creative practice, many pre-service teachers realised that a creative teaching approach could be essential to their professional success, due to its value to the learning experiences of their students (Cremin, 2015).

Strong subject and pedagogical knowledge was identified as a key determining factor of a pre-service teacher's ability to successfully adapt a lesson (both in preparation and improvised contexts). Although a teacher's role has moved from knowledge provider to learning activator (Hattie, 2012), the results suggested that strong subject knowledge enabled the pre-service teachers to create the most effective learning experiences, both at the planning stage and spontaneously in-class (Coe et al., 2014).

In the intervention group, the pre-service teachers' increased focus on creative teaching in their teacher identities was reinforced during the interviews with the Early Career Teachers after a year of teaching. Agreeing with Beghetto (2017), the Early Career Teachers focused on creative teaching as an essential everyday teaching skill. A shift from a conscious approach to subconscious suggested that creative teaching had possibly become embedded in the Early Career Teacher's identity and professional practice, and there were indications that this had been a transformational process for some Early Career Teachers. However, Early Career Teachers indicated that their use of deliberate creative teaching depended upon the teaching approaches valued by school leaders (see also Keamy, 2016).

The interviews with Early Career Teachers brought attention to contexts when creative teaching may not be appropriate: this may depend upon the senior leadership team's vision, values and priorities (Keamy, 2016). To address this issue, a part of the development package aims to help pre-service teachers understand the aspects of creative teaching that may become embedded in all teachers' identities (for example, thinking of new ideas to meet students' needs) regardless of their future schools' priorities. Recognising the difference between prepared and improvised creative teaching - and the potential value of each - may help with this. But it also points to a need to extend understandings of creative teaching to senior leaders in schools.

Conclusion

In a digital world where machines do more of the mundane tasks, creative thinking is being seen as a valuable, human asset and at a premium in both in the workplace and in everyday life. It may even help teachers adapt to change more successfully and less stressfully (James et al., 2019). This was a study of the effect of training pre-service teachers destined to teach younger children. There was evidence that it increased understandings of creative teaching, it enhanced competence in creative lesson planning and delivery, and it changed how teaching was perceived. While we cannot compel would-be teachers to think creatively, we saw in this

study evidence that by fostering pre-service teachers' understanding of what it means to be a creative teacher, by exercising the creative processes, by helping them to see creative teaching competence as an asset and a part of a teacher's identity, it is possible to increase the likelihood that they will display this competence in the classroom and continue to value it.

It remains to be seen if this will be successful with other groups of teachers, such as pre-service secondary school teachers and in-service teachers. But, teachers may meet obstacles to using their new-found competence. For instance, it is challenging to develop the skill of creative teaching in isolation, and some school leaders may not prioritise it if they do not recognise its value to the students' needs. We suspect that it may help if school leaders also had the opportunity to familiarise themselves the aims and nature of creative teaching. Creative teaching has a risk-taking aspect – a new idea is being tested and it might not always be successful. We have discussed that helping pre-service teachers to develop their decision-making competencies, and strong subject and pedagogical knowledge, may alleviate this concern. We recommend that teacher trainers consider providing a safe space for teachers to test creative teaching ideas, and develop an understanding of the value of this skill for the long-term benefit of themselves and their students.

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