Exploring New Frontiers of Affinity Spaces - Learning by Observing and Pitching In in Online Classrooms

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Exploring New Frontiers of *Affinity Spaces*

Learning by Observing and Pitching In in Online Classrooms

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Declaration:

This thesis results are entirely from my own work and has not been offered previously for any degree or diploma.

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千里之行, 始于足下

A thousand miles begins with a single step

And the support of these special people.

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Abstract

This thesis explores what learning looks like in online classrooms by pushing new literacies into formal schooling environments. These online classrooms were a spatiotemporal setup of an international high school that transitioned to full online operation during the global pandemic. By examining new literacies in formal education settings, this research addresses a gap in the existing literature. Employing a qualitative connective ethnography approach, the research utilises video recordings and literacy artefacts as methods to generate rich data characterised by its “thick” description. Key findings from this research reveal that the observed practices in online classrooms, as well as the design of these learning spaces are centred around collaboration. Everything that one does in online classrooms influences collaboration. Over time, the ongoing interactions and participant feedback also shape the design of these learning spaces, further enhancing their effectiveness for collaborative efforts. The digital affordances of online classrooms enable auxiliary practices such as navigation of learning spaces and resource mobilisation, which enhance collaborative endeavours. The more interactive these gateways to learning spaces and resources are, the more they facilitate dominant practices such as modeling and giving feedback, both of which are essential for effective collaboration. Learning in these classrooms unfolds as a dynamic process of appropriation, fostered by guided participation in an apprenticeship system. As our lives become increasingly intertwined with digital realms, the contemporary learning landscape continues to evolve, rendering new literacies ever more pertinent to formal education.

Chapter I: Introduction

> Rather than wait for society to adopt a radically new approach to literacy and learning…, it may be helpful, at least for the time being, to conform our understanding of affinity space to the current institutional school structures already in place. (Bommarito, 2014, p. 416)

This thesis describes a research that explored what learning looks like in online classrooms by expanding the walls of affinity spaces (Gee, 2004) - learning spaces that individuals gravitate towards due to common endeavours - to include online classrooms, pushing new literacies into formal schooling environments. These online classrooms were a spatiotemporal setup of a formal educational institution, specifically an international school that transitioned to full online operation during the global pandemic from 2019 to 2021. In order to construct an understanding of this online schooling phenomenon, this research adopted a qualitative ethnographic approach. The research utilised video recordings and literacy artefacts as methods to gather rich and detailed descriptions of lived experiences in these online classrooms, aiming to capture authenticity akin to Geertz's notion of "thick" descriptions (1973).

This research investigated participatory and collaborative practices observed in these online classrooms, extending beyond traditional literacies like reading and writing. The research also analysed the design of these online classrooms to understand how the organisation of content in these learning spaces supports participation practices. In

addition, the research explained how these participation practices contribute to the learning process in these online classrooms.

In this opening chapter, I will first provide some background information about myself as both a researcher and a classroom practitioner, and explain the development of my research interests. I will also elaborate on the context that prompted the opportune evolution of my research from my initial PhD proposal. Thereafter, I will outline my research aims, objectives, and questions, comment on the significance, and provide a structural outline of this thesis.

1.1 Background and Context

In my journey from a novice teacher trainee to an experienced classroom practitioner, the core of my professional growth has always been in reflective practice and personal inquiry. Over the years, my classrooms have consistently served as sites of action research where I engaged in inquiry, observation, and reflection. As an expert curriculum designer, I pride myself on my ability to strengthen concepts through building connections across various subjects and fostering interdisciplinary learning, from exploring geography concepts through art sculptures, to conducting chemistry experiments for environmental studies, to writing and performing protest plays to challenge a social issue.

Beyond subject disciplines, I have also actively participated in several student interest groups at the schools where I have worked, such as theatre production, student council,

and high school newspaper. Through my involvement in these interest groups, I have observed students coming together to support one another in a common endeavour, and in the process, developing practices that are relevant to the activities, and engaging in what I regard as authentic learning. As a teacher-inquirer, I am particularly drawn to sites where such “real learning” occurs, such as the after-school gaming club that I first observed at the start of my PhD journey. Though the title of “researcher” seemed foreign at first, I have come to realise that my practice has always been about observing, questioning, and seeking answers - I am an ethnographer at heart.

In hindsight, my research interests can be traced back to the action research that I completed for a *Master of Education* in 2012. Back then, my action research compared the effectiveness of vocabulary acquisition on different platforms: the physical classroom, the school course management system *Moodle*, and the social media *FaceBook* space. The findings of the project revealed that it was not the platform, but the interactions among young adolescents as facilitated by the teacher that promoted the acquisition of new vocabulary. The action research turned out to be my unknowing attempt to observe and understand overlapping practices in out-of-school and formal school settings, which formed the basis of this research where I took it to the next level and pushed new literacies into the formal schooling environment.

The original idea that I proposed for my PhD research was to explore how adolescent learners co-construct meanings and engage in social activities across virtual and physical realms. I began by observing students' practices in an after-school gaming

club, but the onset of the pandemic and the shift to online schooling halted this research abruptly, bringing both frustration and a unique opportunity. The shift to online schooling disrupted my initial plans and data collection as all after-school activities ceased. However, it also prompted a reevaluation of my research focus. I began contemplating the relevance of the collaborative practices observed in the gaming club in the new schooling context - online classrooms. What then intrigued me more was the opportunity to witness these practices emerging directly in online classrooms, rather than extrapolating them from observations in an after-school setting to an imagined classroom environment. Although the idea of having lessons online in virtual spaces is not new, this phenomenon of “doing school” in this way on this scale over time was never before observed. To be able to observe this nascent occurrence of schooling as a social phenomenon fuelled my research interest further. I saw it as an important opportunity to learn about various aspects of learning that are important to the way we all learn contemporarily.

1.2. A Time Capsule Moment

Although this online schooling phenomenon was relatively short-lived and lasted only around two years, it served as a time capsule, showcasing the remarkable agility in which schools were able to mobilise resources to establish and maintain web-based affinity spaces in the form of online classes. This period offered a glimpse of what formal education institutions could do without the confines of physical classrooms and revealed the adaptability of both teachers and students as learners. For the first time, we witnessed and experienced the complete collapse of the boundaries between physical

and virtual spaces in schools, and were presented with an opportunity to scrutinise the literacy practices that emerged and their significance for formal school learning. The online classrooms that proliferated during this period were akin to Gee's affinity spaces which opened up an entire new realm for study and research, especially when new literacy practices were considered largely absent in schools (Gee, 2013). While there have been numerous researchers who explored the convergences of practices in out-of-school and formal school settings, only a few have dared to reimagine the formal classroom as an affinity space, which will be discussed in Chapter III.

1.3 Research Aims, Objectives and Questions

The purpose of my research is to explore new literacies in a formal schooling environment and understand the dynamics of learning in these learning spaces. The specific objectives include observing participation practices and content organisation in online classrooms that are conceptualised as affinity spaces, and understanding what learning looks like among participants in these learning spaces. These are the research questions that guided my research:

1. ***What participation practices emerge in these online classrooms conceptualised as affinity spaces?***

   In these online classrooms conceptualised as affinity spaces, participants interact with texts and one another, and engage in practices that extend beyond traditional literacies like reading and writing. By investigating the way in which participants - both students and teachers - interact, collaborate, and contribute in

these dynamic spaces, the research examines how these participation practices influence learning.

2. ***What do the literacy artefacts reveal about the design grammar (Gee, 2003) of these online classrooms?***

   Literacy artefacts in these online classrooms are the materials utilised, created or shared by the participants, such as hyperlinked documents, multimodal resources, and collaborative products. By analysing how participants interact with these artefacts, the research seeks to understand how the design and structure of online classrooms shape the way participants interact with texts and one another in these learning environments.

3. ***What does Learning by Observing and Pitching In (LOPI) (Rogoff, 2014) look like on the community, interpersonal, and personal plane in these spaces?***

   All participants in these online classrooms are engaged in developing both their own practices and those of others. By using LOPI to understand development as a socially-mediated process, the research attempts to explain the various forms of learning that happen in these learning spaces that take place on the personal, interpersonal and community planes, while acknowledging the interplay of these processes that happen in these dynamic learning spaces.

1.4 Significance

My research aimed to reposition schooling as relevant to the literacy development of young people. Researchers have a responsibility to examine the broadening and dynamic range of literacy practices that individuals engage in within formal school settings. Failure to do so risks widening the gap between research findings and practical application. This research involved analysing a network of online classrooms operating entirely as affinity spaces, focusing on the participation practices and collaborative work by all individuals occupying those spaces. Needless to say, there is much to uncover about the way individuals learn in these online formal schooling environments which hopefully can improve pedagogical practices and inform future research on classroom learning.

1.5 Structural Outline

Chapter I introduces the research context, including the research purpose, questions and significance. Chapter II will draw on Gee and Rogoff's work to establish the foundational frameworks that inform and guide this research, while also introducing key terminology necessary for understanding the chapters that follow. Chapter III will review the existing literature, followed by an explanation of how the research will contribute to research on new literacies. Chapter IV will discuss the methodological choices, specifically the rationale for qualitative research, connective ethnography, and the selection of suitable methods, outlining the data collection and analysis process. Chapter V marks the beginning of the empirical data discussion, addressing the first research question: *What participation practices emerge in these online classrooms*

conceptualised as affinity spaces? This chapter examines participation practices that were observed in online classrooms, identifying a core set of dominant and auxiliary practices that impact collaboration. Chapter VI tackles the second research question: What do the literacy artefacts reveal about the design grammar of these online classrooms? The chapter analyses the content - created, curated or co-constructed - of literacy artefacts gathered in these online classrooms to understand how they facilitate collaboration and contribute to the classroom's collaborative learning environment. Chapter VII responds to the third research question: What does *Learning by Observing and Pitching In* (LOPI) look like on the community, interpersonal, and personal plane in these spaces? This chapter provides a detailed examination of the activities that took place in these online classrooms to observe how LOPI manifests in the community, interpersonal, and personal dimensions. Chapter VIII concludes the research by presenting critical findings related to the three research questions and discussing their contributions, implications, real-world applications, limitations and recommendations.

1.6 Conclusion

It is fair to assume that most teachers recognise that there is a gap between what we think we teach in the classrooms and what students really learn in the classrooms, given that the concept of literacy is traditionally and narrowly understood as a set of skills related to the decoding and encoding of print-based texts. The world as we know it, however, requires much more than reading and writing skills. Adopting a sociocultural perspective allows us to view literacy beyond reading and writing, recognizing it as socially recognised ways in which people generate, communicate, and negotiate

meanings through their interactions with various texts, and also understanding learning as socially-distributed across people, cultures and technology.

The transformation of school online may have been a significant event that triggered massive institutional changes and transformed traditional schooling practices, but schools have largely returned to the way they operated in the past. The practices of traditional schooling continue to persist even though they may no longer be fully relevant to the way we all learn contemporarily. It is therefore imperative for teachers, educators and researchers to reflect upon that transformative experience and embrace new literacies in the formal school settings. It is about time that formal schooling recognise and undergo this shift in deeper ways.

Through my research, I seek to make new literacies more relevant to classroom learning. By reconceptualising formal classroom settings as sites of affinity spaces, I can explore the emergence of new literacy practices in these learning spaces and how they evolve under contemporary conditions to impact learning. “Rather than wait for society to adopt a radically new approach to literacy and learning…, it may be helpful, at least for the time being, to conform our understanding of affinity space to the current institutional school structures already in place” (Bommarito, 2014, p. 416).

Chapter II: Theoretical Framework

> Affinity spaces are ultimately learning spaces that are “loosely organised social and cultural settings in which the work of teaching tends to be shared by many people, in many locations, who are connected by a shared interest (Gee, 2018, p.8)

The aim of this chapter is to establish the foundational frameworks that informed and guided my research which is about what learning looks like in online classrooms, while also introducing key terminology necessary for understanding the chapters that follow. The online classrooms studied in this research were a spatio-temporal setup of a formal educational institution - an international school compelled to operate online due to the global pandemic. While the idea of having lessons online is not new, the extensive and prolonged adaptation of “doing school” in this way has never been previously observed. Similar to a typical school, students in these online classrooms congregated to attend various classes taught by different teachers, but they did so completely online, all facilitated through online platforms to support student participation both synchronously and asynchronously.

This chapter explains the reasoning behind theorising online classrooms as affinity spaces (Gee, 2004) and using design grammar (Gee, 2003) as an analytical framework to help understand the organisation of the content and its interactional organisation in online classrooms. This chapter also provides the rationale for adapting Rogoff’s three

planes of analysis (1995) to examine the participation practices observed in these online classrooms, and applying *Learning by Observing and Pitching In* (LOPI) (Rogoff, 2014) as a complementary theory to help understand learning in these affinity spaces.

This chapter consists of seven sections. The first section introduces the concept of affinity spaces as the primary framework of this research. The second section discusses the specifications for affinity spaces. The third section provides a justification for framing online classrooms as affinity spaces. The fourth section proposes the application of design grammar as a useful concept for deconstructing the contents of an affinity space to understand how they come together to create meaning. The fifth section elaborates on Rogoff's guided participation theory - LOPI, explaining why LOPI is a complementary framework alongside Gee's affinity spaces. The sixth section details the analytical approach to LOPI using Rogoff's three planes of analysis (1995) to understand observed practices in online classrooms and their impact on learning. The concluding section wraps up the chapter by synthesising key points that established the foundational frameworks of the research to explore online classrooms as affinity spaces that are "loosely organised social and cultural settings in which the work of teaching tends to be shared by many people, in many locations, who are connected by a shared interest" (Gee, 2005).

2.1 Affinity Spaces

I am using Gee's affinity spaces (2005) as the primary framework for my research. Rooted in Vygotsky's work and influenced by *The New Literacy Studies* (NLS), this

research adopts a sociocultural perspective on literacy as a social practice. The NLS emerged from ethnographic and anthropological research conducted in earlier decades, gaining recognition as an interdisciplinary field during the early 1980s through what is known as "the social turn." Anthropological accounts of literacy development (Heath 1983, Street 1984) played a significant role in shaping this shift. The NLS extends the concept of literacy beyond just reading and writing, viewing it as a social practice deeply embedded in specific sociocultural contexts (Gee, 2015). From this perspective, literacy is something people do in interaction with others, rather than a set of skills they have stored in their heads. Learning is socially distributed across people, cultures and technology, and not confined within individual minds and bodies (Gee, Hull & Lankshear, 1996, p.6). I will explore the concept of learning in greater detail later in this chapter. With this perspective, the basic unit of analysis shifts to the active participation of individuals in cultural activities, moving away from focusing solely on the properties of the individual. A social practice account of literacy means that there is no one singular way of reading and writing, nor one set of practices (Barton, 2007, p.37). Rather, literacies are “socially recognized ways in which people generate, communicate, and negotiate meanings, as members of Discourses, through the medium of encoded texts” (Lankshear & Knobel, 2011, p. 33) are more participatory, collaborative, and distributed. This shift holds significance in learning because of its potential to enable “deep learning, fluent mastery of concepts, tools and skills, and creative and productive applications of knowledge and understanding” (Lankshear and Knoble, 2003, p.253). However, NLS scholars tend to be only interested in what they find “most authentic and meaningful” (Lankshear and Knoble, 2004, p.4) and locate their work in non-school contexts. My

study in part aims to make sense of new literacies in a formal schooling environment, in particular, the online classrooms described in my introduction above.

I shall now elaborate on the concept of affinity spaces (Gee, 2004) and, in the next section, suggest applying this concept to explore online classrooms. Affinity spaces were first introduced by Gee as a critique of communities of practice, offering a framework for understanding how spaces - physical, virtual and blended ones - provide opportunities for individuals to come together and engage in common interests and endeavours. Affinity spaces are “places where people affiliate with others based primarily on shared activities, interests, and goals, not shared race, class culture, ethnicity, or gender" (Gee, 2004, p. 67). In affinity spaces, learners 'apprentice' themselves to a group of people who share a certain set of practices, pick up these practices through joint action with more advanced peers, and advance their abilities to engage and work with others in carrying out such practices (p.70). For the “geographically distributed, technologically mediated, and fluidly populated social groups” (Gee & Hayes, 2013, p.106), this concept has provided theoretical insights into understanding collective practices within online learning environments.

As an educational sociolinguist, Gee is interested in how language and learning work at school and in society at large, more specifically, the complementary or competing Discourses and socially situated practices that the educational system operates in (Gee, 2015). Discourses are “ways of being in the world” and they operate to “integrate, divide and sort people and groups in society” (Gee, 2004, p.4). To operate effectively in affinity

spaces, one needs to be literate, meaning to be confident in the various discourses of those spaces, confident enough to operate within and transverse across affinity spaces (Barton, 1994), a precondition for semiosis or meaning-making in these spaces to happen. Depending on individual interest and motivation, some individuals will attain mastery of literacy which according to Gee, refers to “full and effortless control” of literary practices (Gee, 2004, p.23), others might just develop enough to operate confidently, but these practices are mainly acquired through the process of enculturation.

In affinity spaces, it is the interactions among participants that matter, not the membership of the community. Gee is interested in the sociocultural practices found in these affinity spaces; what goes on and what flows through these spaces, not who forms part of these spaces or how members relate to one another in a particular community. Affinity spaces are organised based on a common set of practices and not identity. Together, and over time, the contributions of these participants shape the distinct norms and culture of the affinity space (Gee, 2013).

Gee, like other proponents of the sociocultural perspectives of literacy such as Rogoff, Lave and Wenger, extends Vygotsky’s emphasis on the social nature of learning, in which a more knowledgeable individual guides the learner. They view learning as a form of apprenticeship where individuals apprentice themselves to others in a group who share the same practices and “read texts…talk about texts in certain ways, hold certain attitudes and values about them, and socially interact over them in certain ways” (Gee,

2015, p.48). Vygotsky introduced the concept of the *Zone of Proximal Development* (ZPD) in 1978, which delineates the range of tasks that individuals can perform independently and those that they can accomplish with the assistance of others who possess greater knowledge and skills. Rogoff (1990) contributed to Vygotsky's ZPD theory by developing the concept of guided participation, which emphasises the role of more experienced individuals in scaffolding the learning of novices within a sociocultural context. Lave and Wenger (1991) further expanded upon this idea with their concept of a *community of practice*, wherein individuals come together to engage in joint activities as a community and learn through participation and collaboration.

In a *community of practice*, apprenticeship involves newcomers gradually moving towards full participation in the community's sociocultural practices as they master the required knowledge and skills. Learning, in this context, occurs through a centripetal participation in the learning curriculum of the surrounding community (Lave & Wenger, 1991). This idea of apprenticeship assumes that the only learners are the newcomers who are expected to advance in only one direction towards full participation. However, this perspective does not align with the flexible nature of participation and distributed leadership observed in affinity spaces where individuals alternate between mentoring others and being mentored. All individuals in affinity spaces engage in learning through active participation, contributing to the sociocultural activity within a shared space. Participants are at different stages of their practices, with varying levels of participation and distinct goals, yet they collectively contribute to the sociocultural activity of the shared space (Gee & Gee, 2012, p. 106). Gee (2004) therefore considers affinity

spaces as ideal learning environments. In these spaces, participants of various skill levels – masters and novices alike – chart their own learning trajectories by drawing on and adding to the collective contributions of the group, by both consuming and producing content related to the shared endeavour, and alternating between mentoring others and being mentored. All participants learn by doing, which could mean involvement in different activities such as reading, sharing, writing, discussing, modelling, giving feedback, editing. Gee's concept of affinity spaces offers affordances for a fuller range of participation trajectories and cultural practices which I believe provides a valuable lens for examining the interactions among all participants in online classrooms and understanding the sociocultural practices found in these learning spaces.

Gee argues that affinity spaces are key sites where individuals teach and learn relevant skills today, organised in ways that are distinct from formal schooling environments (2017, p.27). Even though Gee's research on affinity spaces is primarily based on gaming environments as locations of structured learning (2003, 2005, 2007, 2008, 2017, 2018), he also claims that affinity spaces have always existed and provides examples of other affinity spaces like the Catholic groups that he was involved in growing up that were primarily made up of physical spaces and other meaning-making spaces concerning cellular biology, postmodern literary criticism, modernist painting, rap music and wine connoisseurship (2003, p.18) Because of the social affordances enabled by the Internet and digital technologies, there are many more affinity spaces today, and they occupy more non-physical spaces. What is important, Gee emphasises,

is that affinity spaces “always involve the development of certain sorts of skills” (Gee, 2017, p.28).

2.2 Specifications for Affinity Spaces

In his paper on “Semiotic Social Spaces and Affinity Spaces”, Gee (2005) lists eleven features of an affinity space and exemplifies them using the video game, *Age of Mythology* (AOM) and one of its online portals, *AoM Heaven*. However, he stresses that a space does not need to have all the features to be considered an affinity space (p.225). The next few paragraphs will give an overview of the features that are of particular interest to my study (Ibid, p.225-228).

Affinity spaces are organised based on a common set of practices and not identity. Individuals come together in these learning spaces to engage in common practices and their participation is not limited or restricted due to their identities. Regardless of their identity, “newbies and masters and everyone else” (Ibid, p.225) share a common space where they interact, “mingling, ‘lurking” or viewing” (Gee & Gee, 2012, p.11), freely choosing when and how to learn from one another; sometimes a participant teaches or mentors, and sometimes he or she learns or gets mentored; sometimes a participant leads, sometimes he or she follows (Ibid., p.12). Affinity spaces welcome participants of all levels of skill, interest and experience, and can accommodate their varied goals and different levels and forms of participation.

Affinity spaces are both strong generators and consumers of content. The content in these spaces is continuously transformed through the interactions of the participants (Gee & Gee, 2012, p.13). These spaces are organised to allow and encourage participants to “produce and not just consume”, (p.12) content, which can be further transformed by the actions and interactions of other participants. Affinity spaces encourage and enable participants to develop both specialised and general content. Through their engagement and interaction, participants can create specialised content specific to the nature of the affinity space. They can also create broader and more general content on other aspects that are related to the operation of these learning spaces.

In affinity spaces, individual knowledge is insufficient and requires supplementation from the contributions of other participants to support the common endeavour and sustain the spaces. Through their engagement and interaction, participants contribute to distributed knowledge. Participants also utilise dispersed knowledge, mobilised from other people or spaces to support the common endeavour of these spaces. Through their participation practices, participants in affinity spaces “build, transmit, sustain, and transform knowledge” (Gee & Gee, 2012, p.26). There are no strict boundaries around the areas in which individuals can draw knowledge from in affinity spaces, but knowledge is used as a means towards an end, in the service of something beyond itself, of doing something, of solving problems (ibid.). Affinity spaces promote the ethos where participants engage and develop practices to contribute to the collective purpose of these learning spaces.

2.3 Framing Online Classrooms as Affinity Spaces

Researchers like Gee, Hayes and Ito regard affinity spaces as the “new out-of-school system” where participants learn in ways that are “radically different from how learning is organised in school” and how such learning “could never happen in school” (Gee & Hayes, 2011, p.69). Gee (2004) had also previously claimed, in his critique of established formalised models of schooling, that schools are not what he generally considers prototypical affinity spaces; his argument is that there is little fluidity in the classrooms, both among the participation of the individuals and the learning practices that go on. In their 15-point comparisons of affinity spaces and schools, Gee and Gee (2012, p.145) argue that in schools, there is limited access to computers, knowledge-building tools and technologies. Teachers are “bosses who are expected to see their role as telling, rather than resourcing learners’ learning and creativity” who “rarely will learn anything directly from their students” (Ibid., p.151) and students are discouraged from getting help from other learners as it is often called “cheating” (Ibid., p.152) and the Internet is viewed more as a “threat to safety than a means of accessing important decentralized knowledge systems, and many links are banned or heavily policed” (Ibid., p.153). In general, Gee and Gee’s comparisons of affinity spaces and formal schooling environments are based on a highly narrow and outmoded view of schools that does not accurately reflect the learning spaces of many schools today.

However, Gee later clarifies that he was referring to “traditional’ schools or schools as we traditionally conceive of it” (Gee & Gee, 2012, p.136), schools that he described as consisting of fixed grouping of individuals with limited mobility of resources, where the

flow of knowledge and learning is heavily constrained and primarily unidirectional, from teacher to students. Gee (2004, p.88) notes that there have been some progressive classrooms or “learning communities” that are more akin to affinity spaces, such as the ones created by educators Ann Brown and Joseph Campione, as they incorporate several features of an affinity space, especially in the use of distributed, dispersed and extensive knowledge where students worked in teams on multiple mediating devices and drew on expertise outside the classroom. Due to the Internet and digital technologies, these formal learning environments are becoming more of a norm but as established in Chapter II, there have been limited studies on affinity spaces operating in the classrooms (Tonic, 2009), and these are the learning spaces that my research is focusing on. Hayes and Duncan (2012) acknowledge that the features of affinity spaces (Gee, 2005) do describe “classrooms and other formal instructional environments” (p.8). However, they point out that much of the literature on affinity spaces primarily focuses on aspects of formal schooling environments that do not meet the criteria of affinity spaces. However, rather than wait for society to “adopt a different paradigm of schooling…it may be helpful, in the meantime, to conform our understanding of affinity spaces to the current schooling environments that are already in place” (Bommarito, 2014). Through this research on online classrooms, I sought to explore aspects of formal learning spaces that do align with the criteria of affinity spaces, thereby contributing to a broader conversation on the subject.

These formal learning spaces - online classrooms - do not shut in knowledge with gatekeepers of information, but serve as conduits of information for individuals to act on

and interact with. They also allow for a fuller range of participation trajectories and practices, vastly different from the typically linear mode of participation that is characteristic of incremental learning ideologies in traditional classrooms (Magnifico et al., 2018). In these learning spaces, learning revolves around the co-creation of content in “specially designed spaces constructed to resource people tied together...by a shared interest or endeavour” (Gee, 2004, p.4) and fast dissemination of new content in distributed networks.

The value the Internet and social media have on learning in these learning spaces has long been seen as “offering access to other people than to information” (Lankshear and Knoble, 2003, p.216), promoting a pull model of “just-in-time and just-in-place” learning where participants learn “while creating by creating” (Hagel & Brown, 2008 p.109), by becoming authors and editors who pull together cultural artefacts and remix them into new creative products which supports the “formation and functioning of distributed communities that can rapidly improvise and innovate given the enhanced flexibility of resource mobilisation (Ibid., p.107).

Gee reiterates that the features of affinity spaces are “not definite” nor “absolute” (2012, p.6) and acknowledges that affinity spaces are a “fuzzy concept” with “fuzzy boundaries” (Ibid.). In his various publications (2005, 2012, 2013), Gee has extrapolated and justified 11, 14 and 15 features, adapting the list to accommodate the spaces he discusses. Duncan and Hayes (2012) remark that “the notion of an affinity space, while productive, is one that is evolving and shifting as it has been applied to new contexts”

(p.11), a sentiment echoed by Bommarito (2014), who emphasises that "affinity spaces are varied and changing" (p.415). Curwood, Magnifico and Lammers (2012, 2013) have also used a revised list with nine features to examine how novice members are mentored into full participation in affinity spaces. Even though the concept of affinity spaces provides a helpful theoretical lens for understanding collective practices within online learning environments, these researchers, including myself, have all found it necessary to expand Gee's paradigmatic formulation of affinity spaces.

Affinity spaces are ultimately learning spaces that are "loosely organised social and cultural settings in which the work of teaching tends to be shared by many people, in many locations, who are connected by a shared interest" (Gee, 2018, p.8). Affinity spaces are also omnipresent and the way individuals participate and learn in affinity spaces has been the norm throughout human history (Ibid., p.9) and they encapsulate the "social affiliation of the modern, networked world" (Gee, 2004, p.77). School learning, even though it is institutionalised and thus more structured, is not too different from the way individuals are described to participate and learn in affinity spaces. After all, schools are "places" where young people interact and learn in, "communities" that are organised to help people share information and make new and better choices. We can enrich our discussion on school learning and push our research in more fruitful directions if we expand the walls of affinity spaces to include formal learning environments, such as online classrooms.

In my research, I expanded on Bommarito's (2014) ideas on affinity spaces to incorporate formal learning spaces. Schools can be viewed as a network of affinity spaces. Some of these spaces might be actual physical spaces like the library, the theatre and the gymnasium. Other spaces might be virtual spaces such as online classrooms, online school events, and online co-curricular activities. Still others might be hybrid spaces such as hosting an online guest speaker, collaborating with other schools, and being part of a broader online writing community. Within this network of affinity spaces, information and participation is not confined to any one space but distributed and dispersed across the network. In schools, individuals participate in different affinity spaces, some more transitory than others (after-school activities), some with stronger connections than others (subject classes). In these spaces, individuals participate in order to share, research, access, utilise both human and materials resources to help them and others accomplish what they set out to do. Throughout the day, these participants move among these spaces and are engaged in a constellation of practices that the school supports, nurtures and legitimises. The online classrooms studied in this research were a spatio-temporal setup of a formal educational institution. Students and teachers connect across distances and time zones in these online classrooms to participate in various classes, all facilitated through online platforms to support student participation both synchronously and asynchronously. This broader approach to affinity spaces helped me make sense of the organisation of online classrooms as learning spaces and the practices observed in these learning spaces. Chapter V details and discusses the participation practices that emerged in online classrooms to support learning.

2.4 Design Grammar of Affinity Spaces

As a sociolinguist, Gee's concept of design grammar (2003) offers a helpful framework for analysing the content of affinity spaces in two ways: one in terms of how the content is organised, and two in terms of how participants act on and interact with the content. External design grammar describes what is acceptable and typical of an affinity group and internal design grammar describes what is and is not acceptable as content typical of the affinity space. The external design grammar of the virtual world of computer games consists of gaming platforms, handheld controllers, and hard drives (Gee, 2003, p.33) while the internal design grammar is composed of content that builds and sustains this virtual world that gamers engage and interact with others in. Broadly speaking, external design grammar concerns the structural setup of these online classrooms, and internal design grammar examines the content that is shared and acted on and by the participants in these learning spaces.

According to Gee (2004, 2005), to define any space within which meaning-making can happen, it first needs to have some content, which is created by one or more generators. For such a space to function as an affinity space, it will also need a portal or portals, gateways enabling participants to access the content and engage with the content individually or collaboratively. Affinity spaces, therefore, are characterised by content organisation (the way content is designed and organised), interactional organisation (the way people act on and interact with the content), and portal access to the content (Gee, 2004, p.74).

External design grammar serves to delineate these affinity spaces, while internal design grammar reveals how meaning is constructed within these spaces. In addition to framing online classrooms as affinity spaces in my research, I utilised design grammar to understand the structural content of online classrooms, the content that is shared and acted upon by the participants in these learning spaces, and how this content contributes to the overall meaning and functionality of these online classrooms. In my research, the analysis of content in online classrooms using design grammar promoted a better understanding of collaboration among participants in these learning spaces, in line with Smith's (2019) recommendation in the following literature review chapter, which urges researchers to continue examining students' collaborative multimodal compositions. Chapter VI details the key findings that emerged from the analysis of the content of online classrooms using the concept of design grammar.

2.5 A Guided Participation Theory - *Learning by Observing and Pitching In* (LOPI)

Gee's concepts of affinity spaces and design grammar are useful in examining the organisation of online classrooms and the content generated in these learning spaces. However, they fall short in addressing the contributions of participants in online classrooms and how their engagements and interactions contribute to learning. Although Gee acknowledges that participation in affinity spaces is part of an enculturation process that promotes deep learning, he offers little explanation about how the learning process unfolds, assuming instead that it occurs naturally in these spaces. To address this gap, I employ Rogoff's (2014) LOPI theory to provide a more

thorough understanding of the dynamics in online classrooms. By applying the theory of LOPI which rests on the notion that learning is a process that unfolds on three different planes - community, interpersonal and personal (Rogoff, 2015) - in online classrooms, as I will elaborate in the next section, we can grasp the impact of the observed practices in these learning spaces on the process of learning.

Rogoff perceives learning as a sociocultural process and is interested in how people come to understand their world through active participation in shared endeavours with others to extend cultural practices of those communities (Rogoff, 2003, p.236). Rogoff's orienting concept that guides the development of her learning theory is that "Humans develop through their changing participation in the sociocultural activities of their communities, which also change" (Rogoff, 1990, p.20). Learning occurs when participants engage actively in sociocultural activities to act on information and transform in their practices (Rogoff, 1994, 2003). To Rogoff, the process of "transformation" is viewed as "participatory appropriation through guided participation in a system of apprenticeship" (Rogoff, 2020, p.70). Like Gee, Rogoff is interested in the transformation of practices through participation, not the identity of the participants; what they do, not who they are (Rogoff, 2020). The transformative impact of community participation goes both ways, as participants develop through their changing involvement in the sociocultural activities of their communities, which, in turn, undergo changes (Rogoff, 1990, 2003).

As a proponent of the “social turn”, Rogoff’s learning theory is built upon Vygotsky’s (1978) social constructivist theory on the *zone of proximal development* (ZPD). Central to Vygotsky's theory is the idea that children develop new social and cognitive skills through interactions with older individuals, where the development of a child proceeds through her participation in activities slightly beyond her competence with the assistance of adults or more skilled children. Building on Vygotsky’s theory, Rogoff’s extension on guided participation stresses the “interrelatedness of the roles of children and their companions, and their social interactions in guided participation” (Rogoff, 1990, p.16). Like Vygotsky, Rogoff emphasises the active role of the individual in shaping practices and knowledge, which contrasts sharply with one-sided notions of learning that occurs through transmission or acquisition of knowledge where individuals are regarded as passive receptacles of knowledge (Rogoff, 1994).

According to Vygotsky's theory, cognitive development first occurs on the social plane and then are internalised and transformed to form the individual plane:

> Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological). (Vygotsky, 1978, p.57)

This process of internalisation is one in which “individuals are regarded as separate from one another and are considered to learn a lesson from observation or participation and then to internalise it, so that it becomes a part of their own bag of tricks” (Rogoff, 1990, p.194). The question is whether the lesson is brought inside unchanged or is

transformed in the process of internalisation. If there is an assumption that there is an external lesson that is internalised by the individual, it is unclear in Vygotsky's theory how that lesson is "brought across a barrier into the mind of the child" (Ibid., p.195). Although Vygotsky regarded cognitive development as the transformation of elementary (natural) into higher (cultural) function mental processes which is facilitated by social interaction, and argued that development cannot be reduced to learning in instructions, what he considered as cognitive development remained unclear (Wertsch, 1985, p.73).

Rogoff offers a different perspective that sees no need for a separate process of internalisation. She regards internalisation as a process of acquisition or transmission of static pieces of knowledge through appropriation which is a process of active and dynamic participation by individuals in cultural activities (Rogoff, 1995, p.153). She suggests that when individuals engage as participants and active observers, they are seen as "appropriating some aspects of activity" (Ibid., p.195) that blend both the internal and external. Through their engagement, they are already involved in a process beyond the individual level. Rogoff likens the contrast between appropriation from shared activity and internalisation of external activity to the utilisation of air and water by an organism. Air and water are usually perceived as external that are taken in for survival, but they are constantly being exchanged both inside and outside of each cell, and transformed to meet the needs of the body" (Ibid., p.195). Cognitive development is more than the internalisation of information that takes place in the minds of individuals, it is the transformation that occurs when individuals act upon the information through their participation and interactions with others in sociocultural activities. Cognitive

development, as defined by Rogoff, “involves appropriation of the intellectual tools and skills of the surrounding cultural community” (Rogoff, 1990, p.11).

Although Rogoff’s empirical research focuses on infancy and childhood, her concept of cognitive development is assumed to proceed through the lifespan (Rogoff, 2003). Rogoff’s guided participation theory of learning evolves from her work on developmental psychology, specifically her cultural research on the development of young children in indigenous-heritage communities. Development is multidirectional and progress is built on the opportunities to stretch knowledge and skills in the cultural community (Ibid., p.11). From this perspective, “development is built on learning and learning is built on development” (Rogoff, 1995, p.152). This differs from the psychological understanding of cognitive development which sees progress as unidirectional and closely tied to skills in academic activities such as formal operational reasoning and literate practices (Rogoff, 1990, p.12).

Rogoff’s research focuses on participatory practices where adults and children collaborate in sociocultural activities that require problem solving and decision making (Radziszewska & Rogoff, 1991, p.382). It calls attention to the “mutually constituting, complementary contributions of teachers and learners, who always operate in the context of cultural communities' ways of facilitating learning” (Rogoff, 2015, p.42), the type of learning that is often described as “informal”, “observational”, “practical”, occurring “naturally”, and considered “less conceptual or cognitive than formalised school learning” (Paradise and Rogoff, 2009, p.102). This type of learning may appear

to occur organically and intuitively, but it is not a naturally occurring phenomenon. On the contrary, it requires effort, commitment and organisation from both the community and its participating individuals to create an environment that encourages active participation (Rogoff, 2012, Coppens et. al., 2014).

Paradise and Rogoff (2009) first refer to this type of guided participation as “intent participation” and contrast the active and collaborative roles that individuals undertake in this model with the passive roles and unilateral organisation of “assembly-line instruction” (ALI), a classic learning model associated with traditional schooling that predicates on fixed expert-novice relationships and transmission of knowledge (Rogoff et. al., 2003). Intent participation is thus especially useful for describing how learning occurs where authority is decentralised. Later, this model evolves to emphasise on the experience of involvement and belonging to a specific community, and it becomes known as “intent community participation”.

The latest iteration of this guided participation model, *Learning by Observing and Pitching In* (LOPI), emphasises the “intensity and purposefulness of participation, beyond simply being present” (Paradise and Rogoff, 2009, p.103). Like Gee’s affinity spaces, LOPI also breaks free from the parameters of a community and focuses on finding coherence in the constellation of practices that operates within a sociocultural activity. In spite of all the changes and development, the seminal idea of Rogoff’s work on guided participation and its theoretical underpinning on processes such as “close

observation and listening-in on ongoing activities" remains unchanged (Rogoff, 2003, p.176).

LOPI is a coherent, multi-faceted process in which individuals learn by attentively contributing to the endeavours around them. The seven facets of LOPI are represented by Rogoff as a prism (2013) and updated in 2021 (Figure 1) to explain how learning takes place in community-based, participatory contexts, particularly within cultures that emphasise communal activities. The metaphor of a prism is used to illuminate new ideas as the various facets interrelate with one another in a multi-dimensional way. One of the significant updates in the 2021 model is the emphasis that the people are of "all ages" which will be highlighted in my research findings as well.

Figure 2.1: Prism of Learning by Observing and Pitching-in (LOPI)

The prism model depicts the complex dynamics of LOPI at work, which also reflects the ethos of affinity spaces. The different facets are inseparable aspects of a coherent system and must be understood in relation to one another.

Source: Learning by Observing and Pitching In. (December 2021). Overview. University of California, Santa Cruz. Retrieved August 27, 2024, from https://learningbyobservingandpitchingin.sites.ucsc.edu/overview/

For LOPI to happen, the participants are part of a community and actively contribute to the group endeavour (Facet 1 and 2). For example, Coppens et al. (2014) discover that children from indigenous-heritage communities of Guadalajara were quick to engage in "a wide range of complex family household work activities and sibling care" and were

primarily motivated by a sense of collaborative responsibility (p. 118) and they want to be involved like any other bona fide member of their community" (Paradise & de Haan, 2009, p.199).

In LOPI, participants are collaborative and there is flexible organisation to accommodate different goals, engagements and practices (Facet 3). Through active engagement, participants develop their practices, and that of others (Facet 4). Gutiérrez et al. (2015) report that children "play a major role in sustaining the tradition" of día de los muertos celebrations in Puebla, Mexico. Through their active participation in various preparatory and celebratory activities, they contribute significantly to the cultural tradition (p. 230). Gutiérrez et al. (2015) argue that the children not only learn the "value of the tradition," but they also learn "how to be adults in their culture" (p. 238). Thus, with each passing year, the learners become "more and more adept" and can contribute in increasingly complex ways (p. 248).

Participants engage in LOPI through observation and participation in ongoing sociocultural activities, contributing when they are ready, with or without explicit guidance from others in the group (Facet 5). Correa-Chávez and Rogoff (2009), who compared and contrasted toy-making practices between traditional Mayan families and those involved with Western schooling, found that this "attending to ongoing events and beginning to pitch in when ready" seems to be a feature of learning in more indigenous populations (p. 630). As compared to their European counterparts, the Mayan children also needed less assistance when making toys. In LOPI, keen observation and

participation imply more than “simple, casual presence”; it is characterised by “an openness that indicates active cognitive, social, and emotional participation in what is being learned, and an awareness of the relevance of many aspects of ongoing events, even when they are otherwise engaged” (Paradise and Rogoff, 2009, p.111).

There is ongoing communication, coordination and feedback during LOPI to support the contributions of individuals during the ongoing endeavour (Facet 6 and 7). They may have the support of others, “who provide suggestions and responsive - rather than directive - assistance” (Rogoff, 2003, p.301) and “attend to informative ongoing events that are not necessarily designed for their instructions.” (Ibid., p.324). Explanations are “nested with the shared endeavors (Rogoff, 2014, p. 74) and children learn “rules” during collaborative talk and storytelling. (Coppens et al., 2014). The purpose of communication is not only to “aid” the contributions of the individuals, but also to provide an ongoing “appraisal” of individuals’ support. (Rogoff et al., 2016).

It is important to emphasise once again that LOPI is not a naturally occurring process but is supported by a highly organised system of learning, requiring effort, commitment and organisation from both the community and its participating individuals to create an environment that encourages active participation (Rogoff, 2012, Coppens et. al., 2014). In the case of my research, this highly organised system is established though the work of the formal educational institution with its curriculum and pedagogy in place. The prism model depicts the complex dynamics of LOPI at work. Although the different facets of the prism model can be foregrounded for analysis, they are inseparable

aspects of a coherent system and must be understood in relation to one another (Rogoff, 2014).

Beyond the study of this “panhuman cultural practice” (Paradise and Rogoff, 2009, p.104) in indigenous-heritage communities, Rogoff et. al. (2016) have also used LOPI to explain the organisation of informal learning across institutional settings, including innovative schools, after-school programs and “underground” learning that occurs in formal schools. LOPI can happen (Coppen et. al, 2014, p.152) and is probably happening in many of today’s formal schooling environments. As emphasised by Coppen et. al., there is value in examining how LOPI operates in different educational settings such as innovative schools, preschool and graduation schools (Ibid.). LOPI is prevalent and widespread in formal school environments and it is largely unrecognised due to a cultural school-centric bias on what learning should look like. By incorporating Rogoff's LOPI theory alongside Gee's framework, we can develop an understanding of what learning looks like in online classrooms conceptualised as affinity spaces.

LOPI aims to describe learning in communities where “collaborative participation is expected when individuals are ready to help in shared endeavours” (Rogoff et. al., 2003, p.11), which reflects the ethos of affinity spaces and is also similar to a classroom. Any participant who engages with the sociocultural practices of an affinity space is a learner; whether she is a teacher, student or administrator, every individual is a participant and thus a learner in an online classroom. Because they have different goals and are at different stages of their practices, LOPI occurs as individuals observe and

voluntarily respond to the reciprocal relationships that they share with others in these spaces and contribute, consciously or unconsciously, to the learning of others. Participants take on interchangeable roles that seem more transitory, substitutable and reciprocal. Through engagement, participants will develop and transform their practices, and that of others.

The multi-dimensional, rigorous and scalable nature of LOPI also makes it very useful for my research on online classrooms. It is multi-dimensional enough to account for the flexible roles and multiple trajectories of participation in a dynamic and complex environment, and rigorous enough to afford focused analysis on the transformation of different sociocultural practices in these spaces. It is a scalable model that can be applied to the study of the ‘‘dynamically integrated constellations of cultural practice’’ (Rogoff, 2016, p.184) that emerge from a single affinity space or a network of affinity spaces, applicable to my research on online classrooms of a formal education institution where I observed the practices of students.

2.6 Adaptation of Rogoff’s Three Planes of Analysis Framework

In my research, I adapted Rogoff’s three planes of analysis framework to analyse the dynamic process of LOPI in complex affinity spaces, specifically the ways in which participants engage in LOPI on the personal, interpersonal and community plane. Rogoff’s (2015) three planes of analysis framework proves useful for researchers in deconstructing the processes at work and examining the practices on a personal, interpersonal and institutional plane, and how they relate to one another as a

constellation of practice. Rogoff's three planes of analysis have been used by researchers to examine non-linear cultural processes and how they impact practices. Johnston and Waniganayake (2020) utilise this framework to understand teachers' beliefs on technology influenced their practices on an interpersonal plane and impacted the practices on an institutional plane. Morcom and MacCallum (2022) similarly focus on teachers and apply this framework to understand the impact of a student-centered classroom on teaching practices in order to understand the professional development needs of teachers.

Rogoff (1995) created the three planes of analysis framework to examine participatory appropriation, guided participation and apprenticeship on a personal, interpersonal and community plane respectively. Rogoff looks at learning through these three different activities and while they are distinct, are interrelated practices. Participatory appropriation looks at activities on the personal plane. On this plane, the focus is on how participants develop and transform through their involvement in one or another activity. Guided participation looks at activities on the interpersonal plane. On this plane, the focus is on the process and system of involvement among participants as they communicate and coordinate efforts to help themselves and others in developing their practices. The apprenticeship metaphor looks at activities on the community activity plane. On this plane, the focus is on the specific nature of the culturally organised activity and the practices that are developed by participants with the support of others who are more experienced. Inseparable, mutually constituting and non-hierarchical,

these planes can be individually spotlighted for analysis but they must be understood as an integral whole.

For Rogoff, the three planes provide different lenses of focus to look at practices, but are not separate or hierarchical. They are mutually constituting; to understand each requires the involvement of the others (Rogoff, 1995, p.141). The parts making up a whole activity can be foregrounded without losing track of their inherent interdependence in the world. Foregrounding one plane of focus still involves the participation of the backgrounded planes of focus. (Rogoff, 1995, p.140). None exists separately. The interrelationship and complexity in meaning of the three planes is just as, if not, more important, as represented by the prism.

By focusing on activity as the unit of analysis, Rogoff's three planes of analysis framework offers a sociocultural approach of breaking down the dynamic process of learning in a complex learning system, as depicted by the LOPI prism (Figure 3.1). As explained in the earlier sections, apprenticeship, guided participation and participatory appropriation all describe different parts of the learning process that Rogoff believes in, which overtime have been distilled to become a more powerful concept of learning, LOPI. LOPI decentralises the idea of leadership in apprenticeship, emphasises the notion of collaboration and feedback in guided participation, and highlights the importance of contribution and transformation of the participants. For my research, I synthesised Rogoff's ideas on LOPI and the three planes of analysis framework. Rather than viewing participatory appropriation, guided participation and apprenticeship as

different processes on the separate planes, I adapted the three planes of analysis framework to analyse how participants engage in LOPI on the personal, interpersonal and community plane.

In LOPI, “learning is emergent, contingent, and indeterminate (Rogoff et al., 2016, p.381). LOPI can take place at any point in an affinity space and look at “almost the full range of activities in their communities, when learners demonstrate keen observation, initiative and responsive assistance” (Rogoff, 2003, p.317). By focusing on the different planes, we can look closely at the participation practices that surround individual-, group-, and institution-based activities that take place in affinity spaces. This approach can help us understand the similarities and differences observed on the different planes, and also the relations among the different practices viewed on the different planes of analysis. Analysing the LOPI process through the lens of the three planes of analysis framework, in conjunction with affinity spaces, offers a complementary framework for analyzing the sociocultural practices and contributions of participants in online classrooms and their impact on learning. Chapter VII elaborates on the insights derived from this analysis on what learning looks like in online classrooms.

2.7 Conclusion

In summary, my theoretical framework employed a combined approach, drawing on the theories of both Gee and Rogoff, to study what learning looks like in online classrooms. The chapter begins with an introduction of Gee’s affinity spaces theory, rooted in the social practice of literacy, as the primary theoretical framework of this research. It then

discusses the imperative of extending the research on affinity spaces beyond the conventional discourse that is limited to non-school contexts to include formal schooling environments, specifically the online classrooms observed in this research. Subsequently, the application of Gee's design grammar is explored as a way to analyse the content of affinity spaces in two ways: firstly, examining how the content is organised, and secondly, scrutinising how participants engage with and interact with the content.

Recognising the limitations of Gee's spatial theories in addressing participant practices and their impact on learning in online classrooms, the chapter then introduces Rogoff's guided participation theory, LOPI, to complement Gee's affinity spaces. Lastly, I have explained how Rogoff's three planes of analysis framework can be applied to effectively deconstruct observed practices and gain an understanding of LOPI as it unfolds across the personal, interpersonal, and community planes in classrooms.

Chapter III: Literature Review

Literacy is traditionally and narrowly construed as a set of skills related to the decoding and encoding of print-based texts. Literacy as a concept is derived from the longstanding tradition of anthropology studies that observe everyday life and what people read and write in particular societies (Barton, 1994). The world as we know it, however, requires much more than reading and writing skills. From a sociocultural perspective, there is not just literacy but many literacies because there are many cultural ways in which people read and write (Lankshear & Knoble, 2015). The research I review in this chapter explores literacy from a sociocultural approach known as the *New Literacy Studies* (NLS) that came about in the early 1980s with "the social turn" (Gee, 1998) and views literacy beyond reading and writing, emphasising it as a social practice embedded in sociocultural contexts (Gee, 2015). The idea of "new literacies" focuses on the evolution of these communicative practices under contemporary conditions, which makes it helpful for understanding new ways of being in online, networked environments.

Because of its association with contemporary contexts, new literacies can sometimes be associated with and misunderstood as simply the application of information communication technologies (ICTs) or subsumed under elearning, which focuses on how computers and networks are utilized to support learning (Hubbard, 2013). However, as Lankshear and Knobel (2007) point out, technology can be used in ways that differ very little from traditional, print-based contexts of such practices. What makes literacies "new" and different from conventional literacies is how "they mobilise very different kinds

of values and priorities and sensibilities than the literacies we are familiar with" (p.7). Knobel and Lankshear (2014) explain that new literacies consist of both "technical stuff" - the hardware, software, and networks essential to ICT integration - and "ethos stuff", which refers to the new sensibilities and practices that occur within and through technology that impact the nature of learning and participation. These new literacies are "more participatory, collaborative, and distributed, and less published, author-centric, and individualistic than conventional literacies" (p.98).

Like Knobel and Lankshear, my interest here is in "paradigm cases" that explore practices employed in participatory culture, affinity spaces, and multimodal production; practices such as collaborating, curating, creating that happen when individuals blog, create fan fiction, play video games, to name a few. In all these cases, youths create and share transformative works, where they utilise different "kinds of writing and designing practices and take an original artifact and turn it into something with a new function or expression" (Curwood, Magnifico and Lammers, 2013, p.677).

Given that my research focuses on the practices of participants in these online environments rather than the platforms that enable online learning, this chapter will focus on new literacies, which align more closely with the objectives of my study. Therefore, I will not include e-learning literature, as it deals more with the formal structures of online education rather than the participatory, collaborative, and creative practices that are central to new literacies.

In this chapter, the research I review explores how individuals engage with new literacies in three categories: studies situated in out-of-school settings, bridge studies that show the blurring of boundaries between out-of-school and formal school settings, and studies situated in formal school settings. Conducted within the discursive spaces of online out-of-school practices, the researchers of these studies all seek to connect new literacies with classroom spaces in an effort to improve formal education. My study, which focuses on online classrooms in formal school settings, builds on and contributes to all three lines of research.

This chapter is divided into four sections. The first section discusses studies of new literacies in out-of-school settings, pointing out the wide array of literacy learning opportunities and social affordances that promote authentic engagement through different forms of participation and multimodal collaboration with others. The second section discusses bridge studies of new literacies that show the blurring of boundaries between out-of-school and formal school settings, highlighting the limited studies in this area and the potential of framing formal school settings as affinity spaces to learn about these learning spaces as valuable learning environments. The third section discusses studies of new literacies in formal school settings, especially that of Marsh's (2018, 2021), one of few scholars who has pushed the boundaries by reimagining the formal classroom as an affinity space. The final section summarizes key ideas from this chapter and reiterates how my study builds upon and contributes to new literacy research.

3.1 Out-of-school Literacies

There seems to be a common perception that there is a huge discrepancy between what individuals do at school and out of school, despite the common goal of all school institutions to prepare young individuals for life. Even with the greater access to ICTs in classrooms, the perception of school is still dominated by conventional literacies, and the engagement with new literacies seems to be largely confined to lives outside of school where individuals engage in deeper, more meaningful learning (Gee, 2003). ICTs have undoubtedly created new opportunities for collaborative participation and multimodal production that occur outside formal school settings but hold implications for academic literacies. This section looks at studies where researchers examine the emergence of new literacies in out-of-school settings that involve ICTs, practices that are commonly associated with social learning and informal education.

Curwood's (2013) ethnographic study of adolescents' social practices in online spaces related to *The Hunger Games* trilogy provides an example of studying new literacies as social practices in affinity spaces. Participants in the study engaged with *The Hunger Games* book series by creating and sharing multimodal content such as videos, art, and stories, showing different motivations through their engagements in these affinity spaces. It also provides an example of a highly active and engaged participant, Jack, who went beyond simply participating in portals to design an alternative reality game and created auxiliary content such as podcasts, video tutorials, and blog entries to support new players. It is not just the variety of engagements but the different nature of the experience of multimodal participation that captivates the participants. In Lammer's

(2011) ethnographic study of the online fan-based affinity spaces, *The Sims Writers' Hangout*, Eve, a participant with an expressed interest in architecture and interior design, proclaims that playing *The Sims* "was a thousand times better than LEGOs" (p.682). Like Jack, Eve created many Sims-related transformative works where she could express her creativity and develop her skills and confidence as a writer, despite being dyslexic. Likewise, Black's (2011) ethnographic study of English Language Learners (ELL) on *Fanfiction.net* reveals that participation on the site extends beyond posting texts for entertainment to include activities such as peer reviewing, collaborative writing, discussing writing composition, and exploring certain genres of writing. For ELLs, Black notes that the affordances of online environments to provide multiple modes of representation allow for meaningful and effective communications for ELLs where much of the print-based text is in English (p.692).

Thomas's (2006) study of the online fan fiction community "Middle Earth Insanity" not only provides further examples of multi-faceted participation but also shows participants like Tiana and Jandalf who ran the community working in collaboration with others to write and transform text. They originally met through the online fan fiction community fanfiction.net. where people upload their own fanfiction writing to be read and commented upon. Tiana and Janalf first met when Janalf wrote a review of Tiana's story, which sparked a shared enthusiasm for collaborative writing, ultimately leading to the creation of their web-based forum, "Middle Earth Insanity". In this community, participants created fan art, maintained character journals, produced different text types such as song lyric fiction and poetry, hosted discussions on real-world issues like

environment and politics, engaged in dramatic role-play, and even troubleshoot problems together. Their collaborative, transformed texts reflect a level of writing, discussion, and negotiation involved that is “remarkably sophisticated" (p.229) Lammers’ (2016) ethnographic study of an online affinity space, *The Sims Writers’ Hangout* (SWH) looks at adolescents' participation in discussion forums related to the online game The Sims. Angela, an active participant, leverages her online participation and involves the SWH audience as both direct and indirect collaborators in her writing. The multi-faceted and collaborative participation seen in these studies by Curwood (2013), Black (2011), Thomas (2006), and Lammers (2016) attests to the innate affordance of these online spaces that are organised around a common set of practices to allow for differentiation according to individuals’ goals and motivations. Conducted in out-of-school settings, these studies also speak to how “students crave experiences in school that allow them to closely analyse and transform literature” (Curwood, 2013, p.423). These researchers question the importance of making literacy instruction more relevant to students and their everyday lives. Curwood encourages educators and researchers to learn more about participants who use online space as a way to become readers, writers, and designers.

In their research based on linguistic analysis, interview, and ethnography, Magnifico, Curwood and Lammers (2015) look more closely at the collaborative practices concerning feedback, editing, and revision among fanfiction readers and commenters. They observed that the participants welcomed reviews but the feedback they received tended to be general and superficial. Without explicit instruction, young readers and

reviewers do not know how to give quality and constructive feedback. The researchers conclude that access to internet communication and an increase in online writing and sharing do not naturally promote learning in developing writing practices. Magnifico, Curwood and Lammers suggest further research into feedback practices in these spaces, and in particular, teachers' abilities to provide feedback to guide critical reflection and sustained dialogue among participants.

In thinking about the multi-faceted and multi-directional participation that has been observed in these spaces, Fields & Kafai (2009) and Pigozzi (2017) use connective ethnography as their approach to understanding learning in different spaces, which focuses on interaction, the "bounding that occurs fluidly in cyberspace" (Pigozzi, 2017, p.53), rather than by groups found in one location. I utilised the same approach - connective ethnography - in my research methodology, which I will discuss at length in Chapter IV. Pigozzi's study looks at out-of-school writing practices for adolescents on blogs that she defines as affinity spaces. Like the studies mentioned earlier, this study shows the multi-directional flows of participation that occur in these spaces. Zora "navigated from beyond the bounded affinity space, into the blog from other sites and affinity spaces to read and to post her writings. Mina often worked in reverse, perusing the blog, and then navigating away, or offline altogether to the physical boundaries of affinity space." (p.60) These spaces enable online interaction and the production of artefacts, even when participants are separated by time, place, and space. Fields and Kafai's (2009) study looks at online participation and the sharing of knowledge in an informal online club *Whyville*. Again, participants were observed to engage in different

practices such as observation, direct questioning, and monitoring. Even without explicit instructions or a collaborative design, the participants supported the learning of others through individual trial and error. For the study, Fields and Fafai (2009) had to collect an abundance of artefacts in the form of captured dialogue in order to generate a thick and rich description for their ethnography. This is particularly crucial as not all online interactions are observable due to the multi-directional nature of the interaction pattern. Fields and Fafai stress the importance of collecting artifacts when using this methodology. Following Fields and Fafai's advice, the final phase of my data collection focused on the gathering of literacy artefacts to use alongside observations, which will be detailed in Chapter IV.

As the above studies show, out-of-school participation offers youth a wide range of literacy learning opportunities and social affordances that promote authentic engagement through different forms of participation and multimodal collaboration with others. These affordances hold value in formal school learning, which will be discussed in the following section.

3.2 Bridging Out-of-School and In-School Literacy Practices

Back in 2012, I undertook an action research project to compare the acquisition of new vocabulary on different platforms: the physical classroom, the school course management system *Moodle*, and the social media *FaceBook* space. The findings of the project revealed that it was not the platform, but the interaction among young adolescents as facilitated by the teacher that promoted the acquisition of new

vocabulary (Leong-Ellerker, 2012). Back then, almost a decade into the rise of social media, literacy practices were quickly evolving to adapt to online, networked environments. Out-of-school literacy practices were “encroaching” into formal classroom spaces, with students and teachers both interested in these new practices, students eager to challenge the hegemony of traditional classroom spaces, and teachers curious to explore the potential of out-of-school affordances and harnessing out-of-school practices in school contexts.

This section reviews studies where out-of-school practices are welcomed, utilised, and leveraged in formal school settings. They show the permeability of boundaries between spaces as individuals switch between practices and content, and cross spatial boundaries in the way they engage with practices. These studies all illuminate the advantages of integrating new literacy practices into school spaces and call for a reenvisioning of the school curriculum and instructional practices in the classroom.

More than twenty years ago, Alvermann and Hagood (2000) started exploring out-of-school experiences in formal school settings by incorporating adolescent fan culture into the school curriculum. They believed that by acknowledging and inviting adolescents to bring their personal interests, music preferences in this case, into the classroom, students will be more active in the meaning-making process, which will help them develop critical literacy practices. In their study, Alvermann and Hagood observed new learning opportunities in the classroom context and increased interest and engagement in the school literacy assignments completed by their participants, Sarah

and Max. For her high school assignment, Sarah had to write interpretations to give poems or songs on a common theme. She responded to her favourite songs by *Barenaked Ladies*, a Canadian musical group. Sarah received a 95% on the assignment, which she subsequently posted on a *Barenaked Ladies* website. As part of a literature project, Max had to define his identity through works of art or music. As a musician, this project spoke to him and allowed him to explore music by *Pink Floyd*, the band he likes, and connect with others who share similar musical interests, in particular his teachers.

Guzzetti and Gamboa (2005) studied the literacy development and practices of two adolescent writers in online journaling that they had encouraged in the physical classroom. Both high school students, Janice and Corgan were prolific writers both in and out of the classroom, and they were chosen for the study because of their abilities and proclivity towards online journaling. Back then, Janice and Corgan were considered "special cases", students who created their writings by exploring alternative media and discovering personal outlets for expressing their own thoughts and emotions. Janice was observed to have made numerous entries in her journal, and she updated her journal both during and outside of school. She was also an avid reader of others' online journals. Janice appreciated being part of the affinity group *Live Journal* where she got to develop and refine her literacy practices through her interaction with other writers. She switched roles from "writer and receiver of constructive criticism to editor and giver of ideas and reactions" (p.188). Compared to Janice, Corgan was less active online but connected her *Live Journal* to in-school assignments. She turned in her stories for extra

credit in her academically challenging *Advanced Placement Class*, scanned her notes for a social studies class into her online journal, and included her homework on her journal pages.

Similarly, Bhatt's (2012) ethnographic study also observes the use of personal literacy practices in the classroom. Specifically, Bhatt looks at the practices utilised by learners when completing a writing assignment on a desk computer in a classroom setting. Sara, the research participant, described many of her personal practices as directly connected to her class writing, which included using her personal Gmail account instead of her college email and her personal social media account like FaceBook to communicate with her classmates on course-related matters. Like Janice and Corgan in the study by Guzzeti and Gamboa (2005), Sara quickly mobilised personal practices into the classroom. Their examples illustrate the permeability of out-of-school and in-school boundaries and the ease with which participants adopt informal literacies for formal purposes, blurring the lines between in and out-of-school literacies.

Toncic's (2020) study looks closely at the literacy practices that emerged when an online chat-based affinity space (Gee, 2004) was introduced into a Grade 10 English literature classroom. In the study, Toncic provided reading comprehension questions with similar syntax and compared "immobile responses" (p.492), which are independently classroom-written responses, and "participatory response-based discourse" (Ibid.), which are collaborative responses from the live, backchannel chat. She observes that the use of the register in the mobile responses remains largely

formal, staying on a single topic, and using an intellectual voice. What is notable, however, is the “single explanation that was similar to those written by classmates - even though they did not collaborate” (Ibid.). The participatory response-based discourse elicited more interaction. With time, students started expanding their initial responses with new information or posing questions instead, showing more co-constructed responses to the reading comprehension questions. Over time, however, the quality of discussion degraded with fewer new ideas and more liberal use of language, including the use of emojis. Toncic’s study suggests that affinity spaces can be utilised in traditional classrooms to promote collaboration and enrich academic discussion but these spaces must be facilitated by educators, or they risk retrograding into “just chat rooms” (p.495). According to Toncic, there have been limited studies on affinity spaces operating in the traditional classroom. In cases where affinity spaces were utilised in classroom learning to promote collaborative exchanges among students of different skill levels to support creative writing, the classrooms still retained hierarchical structures that were controlled by teachers.

Smith’s (2019) study closely examines the practice of collaboration when multimodal composing is leveraged in a formal classroom environment to promote learning. Smith examines the collaborative online practices of three pairs of students in a Grade 12 *Advanced Literature and Composition* class. Students worked in pairs to develop three multimodal assignments which included an informational webpage, a hypertext literary analysis, and an audio letter. The study shows unique patterns of collaboration and flexible leadership among those three pairs of students. Between Adrianna and Keira,

their collaborative roles were based on their level of comfort and experience working with technology, with Adrianna taking the lead and having more control of the overall physical and artistic development of the project. In the case of Evelyn and Catie, the division of labour was balanced and they worked closely together, supporting and giving each other feedback throughout each stage of the process. The third pair, DeShane and Marcus, displayed an alternating lead collaboration where they took turns leading the project and divided their tasks and sections. The nature of multimodal composing in an online environment allows the students in this study to undertake flexible roles and distribute tasks based on their individual level of comfort, content knowledge, personal preferences, and technical skills, thereby differentiating the learning experiences for the different individuals. Smith recommends that researchers continue to examine specifically this practice of collaborative multimodal composing to understand how students can tap into individualized strengths and perspectives and learn through collaboration with others. Chapter VI will analyse the collaborative content created and utilised by participants in online classrooms.

Curwood and Cowell (2011) studied an *iPoetry* project where students constructed digital poetry in a formal classroom. Using digital tools to incorporate sound effects, visual images, and dynamic transitions to enhance mood and accentuate imagery, students infused new meaning into previously constructed poetry to experience poetry in multiple modalities. Their first year of research was disappointing as the focus was skill-based, and technology was used as a tool, “typical of many educators who seek to integrate technology into existing pedagogy” (p.113). In their second year of designing

and revising the curriculum, they were more intentional in the relationship between literacy and technology and directed more attention to new literary practices. It resulted in more sophisticated learning products and more pronounced engagement among the students. They edited and transformed images to intensify the impact of the words, and remixed audio tracks to create new compositions to enhance the mood of the poem. Their experimentation with different modes of communication and expression illustrates how they recognized and understood the dynamic patterns of interconnection within and between modalities. Curwood and Cowell observe that “in nearly every instance, their students interactively wrote, read, and reinterpreted their work as new modes of representation shifted ideas and meanings” (p.115). They comment that the success of the project is a direct result of the ongoing, evolving collaboration and the willingness to learn and innovate among the teacher, library media specialist, and students themselves.

Like the studies above, Lammers and Van Alstyne (2018) are also interested in bridging in- and out-of-school literacy practices, but their focus shifts from looking at the instruction and use of online writing practices to the impact of networked public, characterised by open, online access to a wider audience - on classroom literacy practices. For their study, Lammers and Van Alstyne designed and taught a course to high school students, *Fanfiction and Creative Writing: Sharing Your Work in Online Spaces*, to investigate networked writing in a physical classroom. They intentionally repositioned themselves as facilitators by relinquishing their role to respond to student writing as teachers so that students have to solicit an audience from the networked

public on many popular websites, such as *Fanfiction.net, Wattpad*, and *Tumblr*. Without the teacher as the immediate audience, participants received little or no online feedback on their posted writing. While many students expressed disappointment about not receiving feedback, one of the participants, Skye, commented that it takes perseverance to cultivate an audience to get feedback. Skye also recognized that her writing began to "pander to the fandom" as she learned how to "write for the kind of audience she wanted" (p.660).

To support the students, Lammers and Van Alstyne guided their understanding of audience expectations differently. By analysing the quality of online writing shared, and the modes and content of feedback available, students such as Elizabeth and Bob gained valuable insights about the networked public which helped shape their writing. They found that readers on *Fanfiction.net* gave "all kinds of feedback. Some people give ideas, some people comment on grammar, and some people just give their opinion" (p.660). Students also recognized the benefits of reading comments and finding mentor texts for their writing. Before posting his Pokémon-based stories on *Fanfiction.net,* Bob read others' work and noted, "I love reading other stories similar to my own and getting new ideas for my own stories" (p.660). This study disrupts assumptions about audience interaction available in online writing communities and highlights once again the importance of pedagogy in teaching how to give feedback and help students understand what constitutes feedback. The practice of giving feedback emerges as one of the dominant practices observed in online classrooms and will be discussed in Chapter V. Lammers and Van Alstyne also point out the methodological gap in research on multiple

spaces of participation and the need to understand more about how practices traverse contextual boundaries in classrooms.

In Magnifico's open research *#WalkMyWorld* project (Curwood, Lammers, and Magnifico, 2017) where undergraduate students responded to different writing prompts on *Twitter* with a real audience, she observed that students were more tentative at first and used only conventional ways to communicate their ideas, but they later pushed themselves and tried new digital composition tools such as *Google Drawings*, *IMovie* and experimented with new genres like music video and digital poetry. When students were encouraged to "think beyond writing for their teacher" (p.138), they tended to be more intentional in the way they engaged their audiences, incorporating diverse media and social networks to generate multimodal products, beyond producing written narratives to creating short films and film trailers. They gained confidence in their media-making and multimodal communication with a wide audience.

Students are not the only ones utilising the spaces, so are teachers. Their practices have evolved to adapt to the digital environment as well as to respond to the way students learn. Curwood, Lammers, and Magnifico (2017) focus their study on the way teachers utilises practices associated with out-of-school to in-class activities. They question how this has affected their professional development and informed their pedagogical practices. Contrary to the general perception by researchers that "teachers are not ready" (p.138), the teachers that Curwood, Lammers, and Magnifico worked with are representative of teachers who have moved beyond traditional instructional

practice, drawing on evolving technology and diverse literacy practices to be innovative and reflective.

An example of such a teacher is Thom. Lammer (Curwood, Lammers & Magnifico, 2017) examined the way Thom used blogs in a unit of study on *Writing for Publication* in his Grade 9 English classroom. Thom used his blog as his main instructional tool, with his students as the only intended audience. Thom utilised the affordances of the multimodal digital environment to enhance his instruction. He used images as provocations for writing, an interactive tool like *Padlet* to brainstorm ideas with students, and hyperlinks to mentor texts and other short stories. He also encouraged his students to think beyond writing for their teacher by presenting real-world writing opportunities for his students in the form of writing contests that his students could participate in. He wrote directly to the students, and "spoke directly in his own voice" in his blog entries to them. Thom blogged to communicate with his students and organise his daily lessons. His students were also expected to blog to complete writing assignments. Both the teacher and students in this study became authentic creators of digital content to connect with their audiences.

Much like the studies in the previous section, the studies in this section offer youth a wide range of literacy learning opportunities and social affordances that promote authentic engagement through different forms of participation and multimodal collaboration with others, but they do so by pushing new literacies in formal school settings. These cases all emphasise the permeability of out-of-school and in-school

boundaries, showcasing how participants, both students and teachers alike, leverage personal interests to actively engage and mobilise individual practices. This active involvement is integral to the ongoing development of one's own practices and that of others.

This section highlights the research potential of framing formal school settings as affinity spaces. There is much to uncover and learn about these spaces as valuable learning environments for educators to effectively utilise them for educational purposes. Toncic's (2020) emphasis on the pivotal role educators play in facilitating these learning spaces for effective pedagogical practices, along with the limited existing studies, accentuates the need for increased attention. Viewing formal school settings through a different lens becomes crucial for fully realising the potential of these dynamic learning spaces.

3.3 Formal School Settings as Affinity Spaces

While there have been numerous researchers who try to observe and understand overlapping practices in out-of-school and formal school settings, Marsh (2018, 2021) is one of the few who has pushed the boundaries by reimagining the formal classroom as an affinity space. Defined as “any space that has more…features than another is more of an affinity space than the other or is closer to being a paradigmatic affinity space” (Gee, 2004, p.85), a formal school setting that operates with new literacy practices can be reframed as an affinity spaces. A “high school news room” (Gee and Hayes, 2012, p.6), for example, could be an affinity space. Affinity spaces are also “in constant flux” (Lammers et al., 2012). Research on online affinity spaces has consistently created

implications for teachers to implement similar practices in their classrooms (Marsh, 2021) yet affinity spaces in classrooms have been described as “rare occasions” (Gee & Hayes, 2011, p.30), and most prior affinity space research has been conducted in virtual spaces and outside of the formal school settings (Black, 2007, 2011; Curwood, 2013; Fields & Kafai, 2009; Knobel and Lankshear, 2018; Lammer, 2011, 2016; Pigozzi, 2017; Thomas, 2006).

Rather than waiting for society to adopt a radically new approach to literacy and learning, Marsh concurs with Bommarito (2014) that it is more helpful to stretch our understanding of affinity spaces to accommodate the current institutional school structures that are already in place (p.416). When researchers study activities within affinity spaces, they can focus on how these spaces afford literacy activities to support the development of literacy practices. Researchers need to study how affinity spaces can be implemented in areas that matter, such as in the classrooms where there are few cases (Gee & Hayes, 2011).

In her study, Marsh (2018) looks closely at participation in formal classroom environments that she characterised as affinity spaces. She relied on an affinity space lens to “reposition social practices as central, rather than ancillary, to the purposes of peer feedback” (p.149). Specifically, Marsh looked at participation practices of students working on multimodal projects in a high school writing class, *Creative Writing* where she observed students participating as active audience members, pursuing different routes to status and expressing self-identity in what they do. Additionally, knowledge is

distributed across the space with an emphasis on peer knowledge. It was not only the students who were learning; the teacher, Mr. E, had something to learn from his students about designing as well. In these spaces, both students and teacher share work, encourage one another through audience participation, and show a deep interest in one another's work. The role flexibility of the teacher and role reciprocation among students observed in affinity spaces challenge hierarchical relations in a traditional classroom, facilitate multidirectional participation, and encourage multimodal collaboration. Marsh reframes the classroom as "a classroom affinity space" (p.164) that acknowledges everyone in the space, where "students and teachers alike can move in and out of roles such as expert, contributor, writer, encourager, and editor, thereby gaining opportunities to contribute to and draw from the classroom's knowledge pool" (p.166). By imagining classrooms as affinity spaces like what Marsh did, regular classroom interactions can be observed in new ways that will lead to a more meaningful discussion on literacy practices.

Marsh's study is a response to the recent worldwide shift to move school-based learning online. In thinking about the general direction of this shift, McKenna's (2017) study on distance higher education learning spaces indicates that these learning spaces are in fact a series of interacting affinity spaces. Her research focused on the participation of the individuals, how they interacted, connected, collaborated and supported one another in the learning space. Many participants expressed a similar sentiment that these spaces were created to facilitate collaboration, socialisation and co-creation among motivated like-minded people, places where individuals with a shared interest

gather to facilitate learning, gain collective intelligence, and produce artifacts related to a joint enterprise (Gee, 2005).

3.4 Conclusion

As illustrated by the studies in this chapter, there is a consensus among researchers that affinity spaces do offer a spatial theory of learning spaces that support the development of new literacies, specifically in multidirectional participation and multimodal collaboration. Researchers have a responsibility to examine the broadening and dynamic range of literacy practices that individuals practice in formal school settings. If we do not look at what is currently happening, there will be a greater disconnect between research and practice. It requires a commitment to get “inside” a practice in order to understand what it means for something to be collaboratively produced, to be remixed, to receive feedback and mentoring from others, to participate in resourcing and sharing an interest or goal, to participate in a space where everyone does not know exactly the same thing in the same way (Knoble & Lankshear, 2014, p.100).

The body of research I have reviewed in this chapter shares the common purpose of advocating for new literacies in formal school settings. These studies have provided a foundation for researchers like myself, who take the principles of affinity spaces and study them in a formal school setting, and in particular, online classrooms. Like Marsh, I reframed classrooms as affinity spaces and applied the spatial theory to reposition literacy practices as central to multidirectional participation and multimodal collaboration

in the classroom. Unlike Marsh, I studied online classrooms, and a network of online classrooms, to examine the emergence and intersection of literacy practices in different school subjects. My study is interested in the literacy practices of learners, both students and teachers. Going beyond teacher flexibility in Marsh's work, teachers are regarded as participants in my study, just like their students, with no hierarchical difference in the space they embody. My study contributes to new literacy research by looking at a network of online classrooms operating entirely as affinity spaces and examining the practices relating to multidirectional participation and multimodal collaboration by all individuals occupying those spaces.

Chapter IV: Methodologies

My research was exploratory and interpretive (Hammersley, 2022, p.59) in nature and adopted an ethnographic methodology as a way to understand the literacy practices of students in online classroom settings. This methodology aligned with a constructivist approach, allowing me, as the researcher, to immerse myself in these online classrooms to observe and investigate the dynamics of learning. It proved well-suited for addressing my research questions related to participation and literacy practices in online classrooms. In this chapter, I provide a summary of my research question, followed by sections that describe and warrant the design chosen for this investigation. The chapter concludes with sections that detail the ethical considerations and limitations of the study.

4.1 Research Questions

As stated in Chapter I, the purpose of my research is to understand the dynamics of learning in online classrooms. In order to understand what learning looks like in online classrooms which I conceptualized as affinity spaces in Chapter II, I formulated a question that honed in on participants' interactions. It was the insider, emic view that I sought. I first asked: *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* As I began to iteratively collect and analyse data, I thought more about the collaboration among the participants and the outcomes of their co-construction efforts, which led me to question: *What do the literacy artefacts reveal about the design grammar of these online classrooms?* Finally, to understand how the practices I observed reflected learning, I connected my observation to the learning

theory chosen for my study; I probed further: *What does Learning by Observing and Pitching In (LOPI) look like on the community, interpersonal, and personal plane in these spaces?*

4.2 Rationale for Qualitative Research

Studying learning has always involved a notion of "where" and "when" learning is happening (Leander, 2010, p.381). In this research, the online classrooms were part of an international school compelled to operate online due to the global pandemic, creating a spatio-temporal setup of a formal educational institution. In these online classrooms, students congregated to attend various classes taught by different teachers, but they did so completely online, all facilitated through online platforms to support student participation both synchronously and asynchronously. I was particularly curious about the literacy practices observed in these learning spaces and this full transition of a formal school online provided a unique opportunity to gather and analyse relevant data. While e-learning is not new, the online classrooms studied in my research presented a novel research context that offers much untapped, valuable source of data for investigating literacy practices among participants in these learning spaces.

In my research, I assumed that humans are social beings and knowledge is socially constructed. A qualitative methodology allowed me to “construct the social world through my investigation and interpretation as a way to understand a phenomenon, rather than representing it”, a widely accepted constructivist and interpretive approach (Hammersley and Atkinson, 1996, p.11). In addition, the exploratory nature of my

research with its sociocultural underpinnings necessitated an emergent and iterative qualitative approach to address my research questions. I was curious about the way students learn in these transformed classroom environments and wanted to understand how they interacted with texts and others in these online classrooms. As I sought to describe the literacy practices of participants in online classrooms to understand how learning happens in these natural settings, I was also open to emerging ideas which meant that I could not fully anticipate what would be collected and how the data should be analysed. The more I observed and described, the more specific, particular and "thick" (Geetz, 1973, p.6) my description became. This would later form the basis for interpretation and theory construction, exemplifying the advantage of qualitative research. An emergent design in qualitative research supported the exploratory process in this research where "what is to be studied and how best to study it can only be discovered in the course of the investigation – that it cannot be known at the start." (Hammersley, 2022, p.55).

However, this does not mean that my initial exploratory ideas and research plans were vague and that my research decisions were made in an arbitrary way. Instead, the "sensitive, flexible and adaptive" (Flick, 2022, p.12) nature of an emergent design of qualitative research allowed me to pay reflexive attention to my research questions and reformulate them throughout the research process in order to make analytic sense of the data. Because an emergent design in qualitative research is not a straightforward process of collecting and analyzing evidence to help answer the research questions, it allowed room for "emergence, exploration, imagination, and creativity" (Alvesson,

Sandberg & Einola, 2022. p.25) which can provoke more active engagement and open up new insights throughout the data analysis and interpretation process.

Still, there are basic requirements of any good research design which are necessary for the success of the investigation. A good design has a clear focus and is built around a clear research question. A good design defines who or what shall be studied. A good design is grounded in theory and research (Flick, 2022, p.11-12). Although my initial observational data was unstructured, my first research question *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* made clear the focus and subject of my study; I was interested in the way participants interact in these online classrooms. My observation was also guided by my understanding and appreciation of Gee's affinity space theory (2004) and Rogoff's guided participation theory on LOPI (2014). Processing unstructured data was a recurrent, iterative, and demanding process. The foundational frameworks that I established in Chapter II ensured that the exploratory process was kept manageable in terms of time and resources while keeping the interpretation relevant and the analysis robust.

4.3 Connective Ethnography

> Ethnography usually involves the researcher participating, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, asking questions – in fact, collecting whatever data are

> available to throw light on the issues that are the focus of the research. (Hammersley & Atkinson, 1995, p.3)

The objective of any ethnography is to describe the lives and experiences of people and there can be “too many ways of doing ethnography” (Flick, 2014, p.5), for example, multi-sited or online ethnography. As a flexible methodology, ethnographers “devise and use whatever tools are needed for the job” (Boellstorff et al. 2012). What is thus required is for the ethnographic researcher to be “accurate, sensitive and reflective” towards the subject and the context of the research (Beneito-Montagut, 2011, p.718) in gathering a thick description of the phenomenon.

Since ethnography involves observing people in their natural settings, the methods have to adjust accordingly to capture these lived experiences as closely as possible, it has to evolve and adapt alongside changes in contemporary societies. Physical immersion or proximity to a field may no longer be possible or deemed desirable (Tummons, 2020, p.181). Doing ethnography will increasingly imply observing people virtually with more and more people spending time in virtual spaces and engaging in virtual practices (Buscatto, 2022, p.481) which naturally will require us as ethnographers to adjust our methods to make sense of the online, taking advantage of the affordances of technology to explore different and more places and spaces (Tummons, 2020, p.182). Researching online communities is not new, and terms such as “virtual ethnography” (Hine, 2000), “online ethnography” (Markham, 2005), and “netnography” (Kozinets, 2010) have been used to describe ethnography research on online communities for

over two decades, highlighting the evolving challenges and considerations in conducting ethnographic research on online communities.

Hine (2000) had originally suggested that the online world is distinctly different from the offline, and the methodological concerns were about defining these virtual boundaries, where they start, and in which direction to proceed with the ethnography. To Hine, the key challenge lies in establishing fixed parameters for ethnography study as the virtual boundaries are dynamic and fluid. Like Hine, Markham (2005) was also concerned about drawing boundaries around the research context and urged researchers to reconsider the reliability and validity of their methods in collecting and analysing intertextual data as the process can be convoluted and elusive in this *new* Internet context (p.801). Markham emphasises the need for adaptability and reflexivity in the face of the rapidly changing online landscape. In contrast, Kozinets (2011) takes a different stance by prioritizing the meaning-making process that takes place within online spaces over the precision of boundaries. His method involves seamlessly moving between online and offline realms to follow stories and narratives, aiming to develop a holistic understanding of how individuals make meaning in these spaces. Kozinets' method recognises the interconnectedness of the online and offline, emphasising the importance of studying them in tandem. These perspectives collectively highlight the complexity of conducting ethnographic research in contemporary societies, as lives become more intertwined with the virtual world. Ethnographers must grapple with the challenges of defining and navigating the boundaries of their research site while

remaining attuned to the dynamic and evolving interactions among participants facilitated by technological and social affordances.

Ultimately, ethnography is based on a reflexive position that allows the observation of how people construct, re-construct, and make meanings (Hammersley and Atkinson, 1995, p.25). In all the above cases, it is about observing the meaning-making process by people positioned in different ways to the online aided by the Internet, which is now ubiquitous in our lives. Ethnography analyses human practices in the context of culture and now the Internet is part of our culture (Geertz, 1973, p.89). Our contemporary social world has become a mishmash of both the physical, in-person environment and the online, virtual environment. Even Hine (2015) has since changed her position and now regards the online and the offline as a connected and integral part of our contemporary world. Alongside Leander & Mckim (2003), Murthy (2008), Fields and Kafai (2009), Garcia et al. (2009), Beneito-Montagut (2011), and Prince (2019), these researchers share the current position that the online and offline are not separate 'worlds', but is "one social world" (Baker, 2013, p.132) that shares similar and overlapping practices, and are part of our everyday, lived reality. I share the same ontological position as these researchers. Like them, I agree that the online world is now so integrated into our everyday lives that it makes little sense to maintain a clear-cut distinction between the online and the offline. My standpoint is that the real and virtual dualism put forth by early Internet-based research is perfunctory and spurious, inadequate for uncovering the complexity of human behaviour in our contemporary world.

As human experiences become more inter-contextual, it is important for ethnographers to move out and away from “the single sites and local situations of conventional ethnographic research designs” (Marcus, 1995, p. 96) and consider not just space-time practices, but also the relations among these practices (Leander and McKim, 2003, p.8). This methodological trend of online and offline worlds becoming increasingly intertwined in recent years has led to the development of connective ethnography, a term borrowed from Hine’s concept of virtual ethnography (Leander, 2008, p.37). Connective ethnography is a research orientation that considers “connections and relations as normative social practices and Internet social spaces as complexly connected to other social spaces” (ibid.). The ethnographer might begin in one place or space, then based on meaningful interactions within that setting, follow the connections to another context, which may be either online or offline. The fluid boundaries of an online context can make connective ethnography problematic; where do the connections begin and where do they end? As the goal of connective ethnography is to understand how individuals interact and communicate within and across networks of spaces, and how they shape and are shaped by the broader cultural context in which they exist, the researcher must first determine what constitutes these meaningful connections and decide where the settings and what the confines are, which in some cases can be more straightforward than others. As in the case of my research, the parameters are set up simply by school boundaries; the online classrooms as part of the spatio-temporal setup of a formal learning institution.

On a practical level, Leander notes that terms such as virtual ethnography, social spatial ethnography, traveling ethnography, and connective ethnography are largely interchangeable as they all share the same objective and are about following and observing people over time in the context of culture. However, what is specific to connective ethnography is that the research "site" is more dynamic and subjected to disruptions, with greater emphasis placed on the relationships among sociocultural practices and agents (ibid.). Connective ethnography challenges researchers to "reimagine and study the event, the text, the classroom, the school…as a nexus…rather than a container" (Leander et al., 2010, p. 60).

The online classrooms that I studied in my research are not isolated and discrete research sites, but a spatio-temporal setup of a formal learning institution. Powered by their connectedness, the cultural influences of each online classroom extend into others and intertwine with the everyday experiences of the participants. These online classrooms suddenly proliferated into existence in recent years, propelled by the global pandemic. Although the idea of having lessons online in virtual spaces is not new, this phenomenon of "doing school" in this way on this scale over time was never before observed. To be able to observe this nascent occurrence of schooling as a "social phenomena which exist primarily online" (Garcia et al. 2009, p.54) fuelled my research interest further. I saw it as an important opportunity to learn about various aspects of learning that are important to the way we all learn contemporarily.

Connective ethnography offers a “useful strategy” when studying an “institutionally complex, geographically distributed set of activities” participated by individuals who share “some sense of unity” that is derived from a common goal or identity, and are “sporadically connected by common online sites” (Hine, 2015, p.155). These online classrooms may be transitory and they may dissolve from existence as quickly as they first sprouted into existence. Nevertheless, it is still a cultural phenomenon and connective ethnography offers a framework for “systematic inquiry into literacy phenomena that are continuously changing or about which little is known” (Pigozzi, 2017, p.62).

For these reasons, I chose to characterize my work as connective ethnography because it maintains focus on the interaction of participants in a nexus of spaces rather than the location of the activity, with emphasis on the overlapping practices in these spaces that are shared by the participants. It is the term that best describes my “reimagination” of classroom learning in school, one that is characterised by connectivity and mobility, “bounded by the connectivity of participants in the affinity space” (Pigozzi, 2017, p.62).

4.4 Establishing Trustworthiness

To ensure the trustworthiness of research findings, quantitative research espouses criteria of reliability, validity, objectivity, and generalisability, while qualitative research holds itself to standards of transferability, confirmability, credibility, and dependability (Lincoln & Guba, 1985). On an epistemological level, it is now established that literacy research requires different criteria, depending on whether it is quantitative or qualitative.

Today, there is no longer the question of the “lack of scientific quality in qualitative research” (Flick, 2018, p.2). The dialogue on quality of qualitative research has shifted to more practical levels of planning, doing and presenting qualitative research (Ibid., p.3) which will be discussed below.

Credibility

These three techniques were applied to ensure credible findings and interpretations in my research: prolonged engagement, persistent observation (Lincoln & Guba, 1985) and researcher reflexivity (Flick, 2018). As detailed in the table of data collection (Figure 4.1), the data collection process, which overlaps with the process of analysis (Figure 4.9) took place over a period of almost two years, from the beginning of 2020 to end of 2021. The technique of persistent observation went hand in hand with prolonged engagement. This is achieved through observations conducted throughout the data collection and analysis process. It started with general observations of interactions, followed by rewatching recorded videos of the lessons, and then further reviewing and closely scrutinising videos in the dataset. The purpose of the prolonged engagement is to invest sufficient time in learning about the culture of the online classrooms while the purpose of persistent observation is to identify what is more important and relevant to the research questions being pursued, focusing on them in detail. “Prolonged engagement provides scope, persistent observation provides depth” (Lincoln & Guba, 1985, p. 304). Additionally I aimed to maintain researcher reflexivity throughout the entire process of writing, including ongoing note-taking, memo-writing and the composition of ethnographic vignettes. This involved continuous self-examination of

assumptions, choices and motivations. These techniques helped to ensure the credibility of my research.

Transferability

My research achieves transferability by relying on the interpretivist epistemology, acknowledging that the researcher is the primary tool of ethnography. It is my responsibility as an ethnographer to provide detailed, thick description (Geertz, 1973) which are essential for enabling someone interested in making a transfer to reach similar conclusions in my research (Lincoln & Guba, 1985, p. 316). In producing thick descriptions, I took advantage of the videographic nature of my raw data, which provided a "permanent and complete record 'in real-time' that can be used for the analysis and interpretation of data" (Natasi, 2013, p. 301). This allowed me to view and "observe" my participants as many times as needed to generate rich data characterised by its thick description. I also embedded my ethnographic vignettes with literacy artefacts to help “illustrate an observation or show the appearance of the virtual world I am studying” (Boellstorff et al, 2012, p.115). These techniques were instrumental in ensuring the transferability of my research.

Dependability

To begin, there can be no dependability without credibility (Lincoln & Guba, 1985, p. 316). The reliability, and thus dependability, of the entire research process can be developed by its reflexive documentation (Flick, 2018, p.28). Maxwell (1992) emphasises in his typology of validity that descriptive validity (p.285), which is the

factual accuracy of the researcher's account of observed phenomena, is the most crucial form of validity. This directly influences interpretative validity (Ibid.), which pertains to how the meaning derived from observations is developed and presented. To ensure dependability, I focused on systematic recording and iterative data analysis, along with regularly repeating observations over time. Informed by researcher flexibility, persistent observation, and thick description, I ensured the dependability of my research.

Confirmability

The major technique for establishing confirmability is the confirmability audit (Lincoln & Guba, 1985, p. 318). To ensure that my research findings made sense to an expert in a similar field, I had the assistance of my supervisor, who critically evaluated my inferences and interpretations throughout my research process, checking to see that they were focused only on my research questions and as close to the data as possible. The *Progression Review* team also lent their critical perspectives, particularly when it came to detecting assumptions I may have made in my analysis.

4.5 Research Sites

> Rather than deciding in advance to conduct an ethnography of an online site or community, the ethnographer should first choose their topic of interest, and then define the field in terms of whether and how that topic involves different modes of communication or technological locations. (Garcia et al. 2009, p.56)

Remote teaching started in the first quarter of 2020. As mentioned in Chapter I, I was observing students' practices in an after-school gaming club for my research the year before. That came to a halt when online school happened and all after-school activities ceased. An interesting turn of events, I began wondering about the collaborative practices that I had observed among my participants in the after-school gaming club and the new relevance they would have on classroom practices in this new learning context. I found it more exciting that I was now able to witness these practices emerging in the classroom context, rather than observing practices in an after-school gaming club and then extrapolating them in an imagined classroom environment.

My research sites consisted of online classrooms instantiated by *Zoom* meetings. These online classrooms were the spatio-temporal setup of an international school in Angola. As a non-profit educational organisation, the school serves a highly diverse and transient student population, with families frequently relocating due to parents' employment. During that academic year, the school enrolled 686 students of 55 nationalities in K-12. The school could be said to embody a "progressive" educational ethos, where technology plays an integral role in teaching and learning. High school students are accustomed to a one-to-one device environment, and teachers are expected to integrate technology to actively engage students in learning. In this school, both students and teachers are generally open to or experienced with using technology and fostering student-centered learning activities.

Between January 2020 and June 2021, for almost two academic years, classes were conducted online, both synchronously and asynchronously, with students and teachers sprawled across the globe, from Auckland, New Zealand to Anchorage, Alaska, spanning a total of 24 timezones. Students attended classes by participating in four different *Zoom* meetings throughout the day from Monday through Friday, and could also engage in activities in *Google Classrooms* whenever they wanted. During the whole duration, I was based in Luanda, Angola, where I taught and also conducted my research.

As a teacher who had taught at the school for nine years and embarked on the research in my sixth year at the school, I was familiar with the school and knew the faculty and student population well, which eased my entry into the site. While my professional and personal connections to the school afforded me rapport and access, they also held potential biases. As a community member who was comfortable and familiar with the culture of the school, I would have held tacit assumptions about the school, its teachers and students, and the comfort level of technology use among both teachers and students. To check these potential biases, my research design included gathering data on the same group of students engaged in literacy practices in seven different subject classes. As a matter of course, I did not teach this group of students during that academic year in order to maintain my standpoint as a researcher. By doing the above, it minimised the impact caused by the sociodynamics of the participants i.e. teacher-student and research-student relationships, and offset the differential effect of teachers with different pedagogy experiences and comfort levels with this mode of

learning. By scaling up my observation, I was able to focus on the patterns that emerged and study what was consistently observed in these learning environments.

4.6 Research Participants

Because of the access I gained through my community membership as a teacher and the relationships that I developed with the other teachers who consented to my study, my sampling strategy consists of both purposive and theoretical sampling. As the researcher, I chose a sample group that I found most representative and relevant to the context of my research based on my own insider experience. The process of gathering data is subsequently guided by the themes that emerge from theoretical sampling.

As I taught several year groups, I could only choose among the year groups that I did not teach which were Year 8, Year 11, and Year 13. For consistency in data collection and analysis, all participants should inhabit that space (Pigozzi, p.62). I chose Year 11 for three reasons. Unlike the Year 13s, they were not preparing for the *International Baccalaureate* diploma examination at the end of the year. Based on my one semester of remote teaching experience, the Year 11s were probably more independent than the younger group of students when it came to learning online. Year 11 also comprised a smaller group of students, consisting of only 19 students which would make data collection more manageable.

I successfully obtained consent (Appendices A-D) from all students and their parents, all subject teachers, and the school director. I thus had access to the recorded videos of

the *Zoom* meetings, a total of 146 recorded videos between the period of September to December 2020 that took place in the Year 11 online classrooms. These videos were not recorded for the purpose of research. They were a mandatory practice during those two years of remote teaching where teachers had to record all their *Zoom* meetings and upload them in a shared *Google Folder*, whether they were formal lessons or "out-of-class" interactions with their students. Videos of the recorded lessons were then posted on *Google Classrooms*, our learning management system, to ensure that students had access to these lessons wherever they were, whenever they wanted so that learning could happen asynchronously as well.

4.7 Ethnographic Data Collection Methods

Data Collection				
Stage	**Stage 1**	**Stage 2**	**Stage 3**	**Stage 4**
Time Period	March-May 2020	September-December 2020	First half of 2021	Overlapped with *Stage 3* and continued into the second half of 2021
Purpose	To be familiar with and gain experience in the field site	To identify patterns and glean important information	To compose and analyse data set	To gather literacy artefacts
Action	Observed general interactions among participants in online classrooms. Wrote initial	Gathered all video recordings of lessons, a total of 146 videos. Continued general observations of	Watched all 146 videos and removed videos that were incomplete or too short (less than 40 minutes).	Rewatched dataset of videos. Captured screenshots of participants' literacy practices, a total

	notes. No actual data was collected.	participants' interactions in online classrooms. Watched videos of lessons from different subjects at random. Wrote memos.	Selected 6 videos from different subject areas to compose a dataset comprising 42 videos. Watched and wrote detailed descriptions of all 42 videos in the dataset.	of 106 images were collected.

Figure 4.1: Process of Data Collection

An iterative and reflexive four-stage process that took place from the first half of 2020 to the second half of 2021.

> Being able to develop sound sociological results implies at least two carefully connected operations that are to be part of the design of your study: a careful, tangible and specific note-taking; a guided meaningful data-coding. (Buscatto, 2022, p.478)

The data collection took place in four stages in an iterative and reflexive process (Figure 4.1). The first stage took place between March to May 2020, when remote teaching had just started. Back then, this phenomenon of "doing school" was new, things were constantly changing and little was known. During this stage, I observed general interactions from my own experience of teaching online to "learn the norms of the online research setting" (Garcia et al., 2008, p.60) of my chosen research site. It is important to

note that as a teacher, this was what I did, on a daily basis and for extended periods of time outside my research. In other words, I am an insider researcher with deep engagement with the research field, which also implies that I had to exercise “constant caution and self-reflection as part of the ethnographic research process” (Jones, 2005).

Even though no actual data was collected during this period of time, it was a critical stage as this was the point I could “gain more experience in the field site…and begin to discern matters that seem to be important and to concentrate on them, while paying proportionately less attention to things that are of lesser significance” (Angrosino, 2007, p.47). It was at this point that the ethnographer could “also come to recognize patterns typical of the people being studied as opposed to unique and random occurrences” (ibid.).

The second stage took place between September and December 2020. This was the second semester of remote teaching. By then, both teachers and students had gained some experience teaching and learning online and were accustomed to the use of *Google Classroom* as a learning management system and *Zoom* meetings. Suffice it to say that enough time had transpired to allow enculturation to take place and for practices to shift, adapt and stabilise in the new learning environment. As mentioned earlier, all the Year 11 recorded videos that took place between September and December 2000 were collected as data for my research. A total of 146 recorded videos were collected. During this stage, I continued my general observations and randomly

watched recorded lessons from different subject classes. Again, trying to identify patterns and glean important information from my observation.

The third stage took place during the first half of 2021. During this stage, I watched all the recorded videos. Some of the videos were small-group or one-to-one meetings between teachers and students, and not taught lessons. Some lessons were recorded with cameras off. Some recorded lessons were cut off or did not show the entire lesson. From the videos that I was left with, I decided to choose six recorded lessons from each subject area which would give a data set of 42 videos. The chosen videos must be longer than 40 minutes, show the lesson in its entirety, and spread across the September to December data collection period (Figure 4.2). These recorded lessons, each longer than 40 minutes, were reviewed and described with as much detail as possible. The way I employed observation as a method will be discussed in the following section.

No	Subject	Date	Duration	No	Subject	Date	Duration
1	English as an Additional Language (EAL)	Sep 6	00:41:03	22	Humanities	Nov 2	00:55:19
2	English as an Additional Language (EAL)	Oct 24	00:49:47	23	Humanities	Nov 9	00:54:09
3	English as an Additional Language (EAL)	Nov 10	00:48:07	24	Humanities	Dec 4	00:49:04
4	English as an Additional Language (EAL)	Nov 24	00:45:07	25	Math	Sep 2	00:43:30
5	English as an Additional Language (EAL)	Nov 26	01:00:26	26	Math	Sep 6	01:16:05
6	English as an Additional Language (EAL)	Dec 9	00:44:20	27	Math	Oct 11	00:59:33
7	English Language and Literature (ELL)	Oct 23	00:44:43	28	Math	Oct 15	01:01:31
8	English Language and Literature (ELL)	Nov 6	00:49:09	29	Math	Nov 19	00:57:21
9	English Language and Literature (ELL)	Nov 20	00:48:38	30	Math	Dec 8	00:56:59
10	English Language and Literature (ELL)	Nov 26	00:57:04	31	Physical Health Education (PHE)	Sep 29	00:52:48
11	English Language and Literature (ELL)	Dec 13	00:52:42	32	Physical Health Education (PHE)	Oct 8	00:53:20
12	English Language and Literature (ELL)	Dec 14	00:40:38	33	Physical Health Education (PHE)	Oct 15	00:52:57
13	Drama	Sep 28	00:46:03	34	Physical Health Education (PHE)	Nov 19	00:58:05
14	Drama	Oct 6	00:51:04	35	Physical Health Education (PHE)	Nov 26	00:52:41
15	Drama	Oct 20	00:49:18	36	Physical Health Education (PHE)	Dec 8	00:47:44
16	Drama	Nov 4	00:54:00	37	Science	Oct 8	00:31:55
17	Drama	Nov 24	00:44:52	38	Science	Oct 23	00:49:42
18	Drama	Dec 11	00:55:38	39	Science	Nov 9	00:54:29
19	Humanities	Sep 25	01:00:18	40	Science	Nov 27	00:44:49
20	Humanities	Sep 29	00:52:37	41	Science	Dec 10	00:53:08
21	Humanities	Oct 19	00:59:25	42	Science	Dec 17	00:41:50

Figure 4.2: Data Set Comprising 42 Recorded Videos of Online Lessons

Six recorded lessons from each subject area; each longer than 40 minutes, showing the lesson in its entirety, and distributed throughout the September to December data collection period.

The fourth and final stage overlapped with the third stage and extended into the second half of 2021 which focused on the gathering of literacy artefacts. Like traditional ethnography, connective ethnography strives to present an accurate observation of participants' experiences and uses inductive and recursive analysis, but data consists of artefacts generated online (Hine, 2000). During this final stage of data collection, I watched the 42 recorded lessons again, but this time, for the purpose of gathering literacy artefacts that were useful for the research. By this stage, I was very familiar with the videos and could look for instances that reflected the literary practices that I had observed in these online classrooms thus far. This was done by pausing the videos and taking screenshots that capture participants' literacy practices. A total of 106 images were collected during this stage and some were embedded into the field notes to "thicken" the description. The collection of these literacy artefacts will be discussed later in this chapter.

By the time I had collected all my data, this mode of schooling had almost become a thing of the past, rendering this literacy phenomenon a fleeting, temporary occurrence, notwithstanding its significance and impact. Considering how my data collection had switched from observing the literacy practices of a small group of students in an

after-school gaming club to observing the literacy practices of an entire cohort of students “doing school”, it showed how time-sensitive and contextually dependent the process of data collection can be. In hindsight, I was thankful that I was able to respond reflexively in time to gather sufficient data for my research.

Considering my ontological standpoint that the online and offline are now “one social world” (Baker, 2013, p.132) in our contemporary world, relying on traditional, geographical boundaries or delineating a linear research path is both limiting and meritless. “The ethnographer must read the texts and interactions of interest, much like trail signs, and make defensible decisions about which paths to follow, which paths to disregard, and thereby which boundaries to draw” (Markham, 2005, p.801). In addition, I would like to stress that this process can be highly time-sensitive. Researchers must be reflexive and flexible to change. They may need to react swiftly to changes, which might call for intuition at times, a clear advantage that an insider researcher who is already familiar with and immersed in the culture of the research site has. In the following two sections, I will discuss in greater detail the use of observation and literacy artefacts as ethnography methods in my study.

4.8 Observation

In ethnography, participant observation is considered the cornerstone method (Boellstorff et al., 2012,p.66). However, as challenged by Tummons (2020), in a network society where observational data could be derived entirely from virtual spaces, this

method might not be possible or even desirable (p.181). Ethnographic methods have "profoundly changed within a network society" (ibid, p.184). As mentioned earlier in the chapter, ethnographic methods need to adjust accordingly in order to capture lived experiences of people in their natural settings as closely as possible. Ethnographers should take advantage of extended fieldwork to study cultures through participation that are authentic in that culture's own terms (Boellstorff et al., 2012, p.69). Obviously, there are different ways to do so as ethnographers do observe, and to a certain degree and in various forms, do participate. As a rule of thumb, ethnographic research should "take the lead from our informants, following them to whatever they engage in relevant activity" (Boellstorff et al., 2012, p.119).

The nature of my data set, in its video format, allowed me to carry out "unobtrusive" observation (Agrosino, 2007, p.47). As an "observer-as-participant" (p.61), I had an insider perspective on what was happening in these online classrooms and did not engage as a participant in the study. Traditionally, conducting "unobtrusive observation" meant that those under study do not know that they are being observed which raises ethical issues (ibid., p.71). This is, however, not the case in my research where my participants had given informed consent. As I was not physically present in those online classrooms with the participants, "observer effects" (ibid., p.67) were kept to a minimum; there was less tendency for my participants to modify their behaviour because they knew they were being observed.

Observation is “the act of noting a phenomenon, often with instruments, and recording it for scientific purposes” (Angrosino, 2007, p.71). The process of observation begins by “taking everything in and recording as much detail as possible, with as little interpretation as possible” (ibid., p.46). The reliability of observational research depends on the systematic recording and analysis of data and the repetition of observations regularly over the course of time. When “combined with other techniques” (ibid., p.71), observer bias may also be mitigated.

As detailed in the previous section, the process of observation began during the first phase of data collection when I first started making observations of my own experience of teaching online to learn about the research field. While in the field, I recorded initial notes (Figure 4.3). At that point in time, I was paying attention to the setup of my *Google Classrooms*, the design of my teaching resources, and the ways in which my students participated in this *new* learning environment.

A sensory experience that seems highly visual, with no peripheral distraction. Enhanced auditory engagement and typing as a tactile response.

Even though the teacher and students are physically apart, there seems to be no felt distance. There is a sense of immediacy in how things are done and a sense of intimacy/closeness among the participants.

Everyone appears relaxed and natural; no one seems hyperfocused.

Students seem to join and leave the classrooms as and when they wish.

Use of video texts and hyperlinked resources

Figure 4.3: Initial Notes from Phase 1 of the Data Collection Process

Initial notes written based on general observations of my own experience teaching in online classrooms; to be familiar with and gain experience in the field site.

Throughout the second phase of my data collection period, there was an ongoing video recording of *Zoom* meetings. In the evenings, I would gather and watch the videos of lessons recorded during the day. During this time, I continued with general observations of participants' interactions in my online classrooms. The focus of my observation is on identifying patterns and important or interesting ideas in these online classrooms. I wrote memos based on my observations (Figure 4.4, Figure 4.5, and Appendix E).

Like a physical classroom....	**Unlike a physical classroom...**
- Teacher talk dominate	- Promotes autonomy, self-directed learning. (Attendance, tardiness, different ways to participate, differentiated tasks)
- Teacher demonstrate	- More relaxed and "natural"
- Turn-taking	- Quieter, main speaker
- More confident students contribute first	- More background noise
	- The presence feels more immediate, accentuated, pronounced (visuals, audio commentary, f-t-f screen contact)
	- Engagement is more varied, still tactile
	- Ease and convenience of accessing mutlimodal environemnt
	- Single system of operation
	- More efficient
	- Harder to check in on individual student

Figure 4.4: Memo from Phase 2 of Data Collection

Finding interesting ideas by comparing and contrasting learning in physical and online classrooms.

Date	No	Duration	Induction	Development A	Development B	Closure
25 Sep	10	01:00:18	Check-in	**From 10:00** Feedback + Instruction	**From 33:00** Breakout room	5
29 Sep	9	00:52:37	Check-in	Feedback + Instruction	**From 25:00** Breakout Room - Group discussions & teacher check-in	1
19 Oct	17	00:59:25	Check-in	Instruction	**From 19:00** BOR - specific feedback & guidance	2
2 Nov	17	00:55:19	Check-in	**From 10:00** Feedback + Instruction	**From 23:00** Breakout Room - Group discussions & teacher check-in	5

Figure 4.5: Memo from Phase 2 of the Data Collection Process

Observational notes on the duration and breakdown of the recorded lessons

Because of the videographic nature of my raw data, there was a “permanent and complete record ‘in real-time’ that can be used for analysis and interpretation of data” (Natasi, 2013, p.301). During the third phase of my data collection, I was able to view and “observe” my participants as many times as I wanted to generate rich data characterized by its thick description. My data set which consisted of 42 videos had now all been downloaded and was in a folder on my laptop. I used a split-screen mode on my laptop computer to view the videos so that I can type up narrative descriptions of my observations, creating ethnographic vignettes for each of the recorded lessons (Appendix F). Not bounded by any physical constraints of the research site, the use of video recording and word processing technology allowed me to engage in participant observation at my convenience.

4.9 Literacy Artefacts

Ethnographers discover artefacts as they live in and become familiar with the sites and participants they have chosen to investigate. Artefacts are material objects that are created or used by people and can be studied in order to learn about a particular culture, but these objects become artefacts “because researchers define them as such in the course of their observations” (Schensul & LeCompte, 2013, p.13) to help them describe more fully the phenomenon under study. The artefacts collected do not need to be the original, physical object, but could be “photographs, drawings or other visual representations of the artefacts” (LeCompte & Schensul, 2010, p.145).

The final phase of my data collection focused on the gathering of literacy artefacts. This was done by pausing the videos and taking screenshots that show the artefacts that were created or used by participants in the online classrooms. Screenshots are never simply representations of objective social facts but they can be incredibly rich data points as a source of in-depth analysis when used in the context of other material; they can be particularly useful in helping illustrate an observation or show the appearance of the virtual world we are studying (Boellstorff et al, 2012, p.115).

As connective ethnography relies less on interviews and more on artefacts, a limited number of artefacts or an over-reliance on document analysis might bring trustworthiness into question (Pigozzi, 2017, p.62). However, when used alongside observation, both methods of ethnography could enhance the open-coding process and increase the credibility of data-based meanings. A total of 106 secondary texts and

visual data were collected during this phase. Examples of secondary texts or visual data collected depict collaborative group documents utilised by participants, teaching resources in the form of interactive websites and multimodal slideshows (Figure 4.6). Some of the secondary text and visual data were embedded into the vignettes for a fuller, “thicker” description (Figure 4.7).

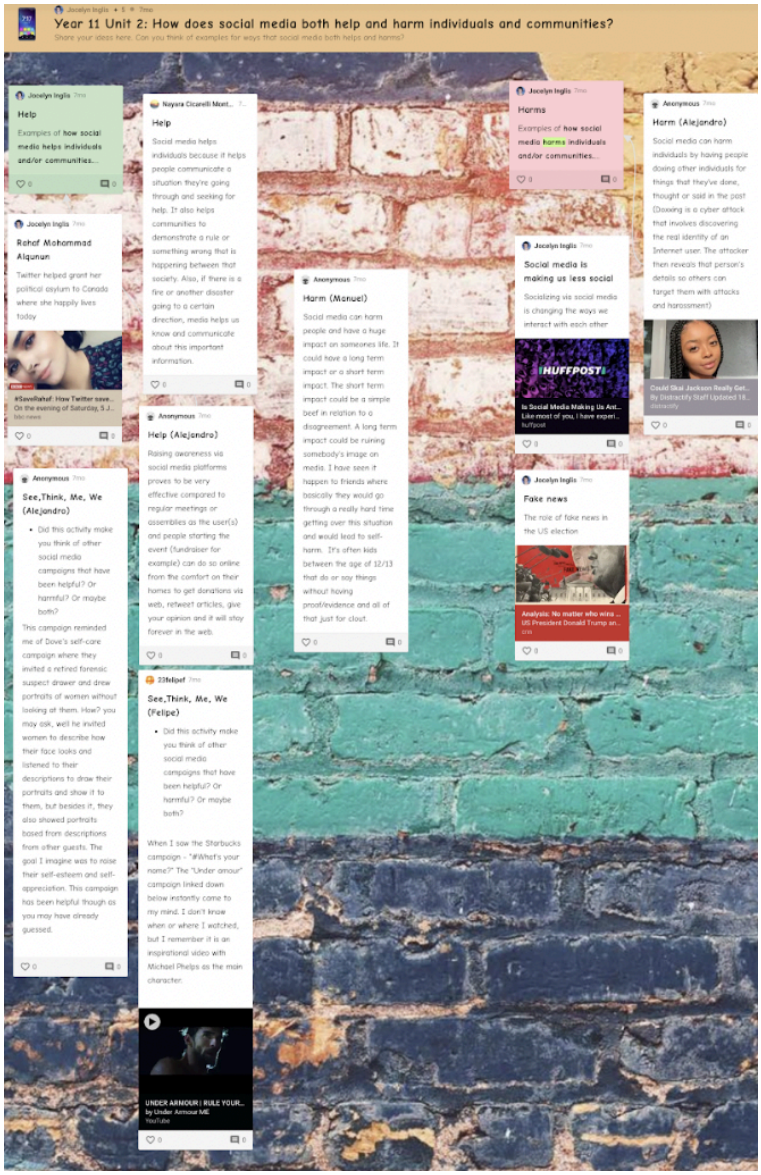


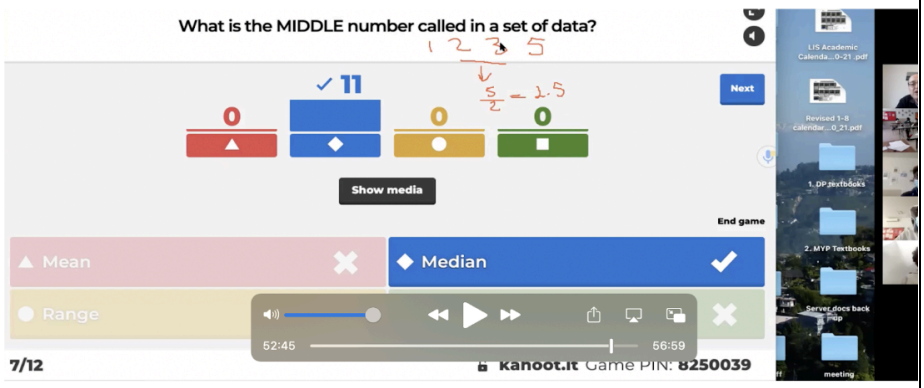
Figure 4.6: Literacy artefact showing participants’ use of Padlet, a collaborative web platform, in an English as an Additional Language class. (Video 6: December 9)

"Ahh, you will do the mean of the two numbers in the number. So you will add 2 and 3, and divide that by 2." [the teacher writes and displays the workings for all to see]

"And that will give you?

"2.5" [the teacher writes and displays the answer for all to see]

"Yup, good, so it's the middle two numbers." The teacher repeats the steps again, the cursor hovering around the numbers and directing the students as he speaks.



Each time the teacher presents the scoreboard, there is clear excitement in his voice.

"Still in the lead!"
"There is no stopping him.. Manuel is on fire!"

Figure 4.7: Embedding a literacy artefact showing participants' use of Kahoot, a game-based learning platform, in the vignette of a mathematics *class.*

(Video 30: December 8)

4.10 Researcher Role

The ethnographer is the primary instrument of qualitative research, described as "the research instrument par excellence" (Hammersley and Atkinson, 1996, p.18). The quality of such research is entirely contingent on how the ethnographer conducts the investigation. Throughout my research, I strived to maintain a reflexive stance, critically examining how my position as an insider researcher influenced my interpretations. I acknowledged that the reality we perceive is inherently conditional, and my

interpretation of the data was inevitably shaped by my own experiences working at the school. I remained cognisant that my ways of thinking and doing were not inherently more natural or preferable, but were reflective of my personal background and experiences.

As discussed in the preceding sections, I approached my positionality as an insider researcher with awareness of both its advantages and its challenges. Ethnographers using observational techniques in their research may adopt roles “ranging from that of the complete observer to the complete participant” (Angrosino, 2007, p.71). Hammersley and Atkinson (1995) advocate for researchers to consider their own role within the research focus and to leverage their participation in meaningful ways (p.19). My position as an insider afforded me access through the relationships, rapport, and trust that I shared with my participants and key stakeholders (Bengry, 2018, p.106). However, I was also vigilant about the potential for biases arising from my familiarity with the setting. To mitigate these biases, I took deliberate steps, such as ensuring I did not teach the specific group of students involved in the study during the academic year of data collection. This helped to minimise the influence of teacher-student dynamics on the research. Additionally, I expanded the scope of the study to include a variety of subjects and teachers so as to offset the differential effects of teachers with different pedagogical experiences and comfort levels with online learning.

Because I taught at the school for many years, I was familiar with all my participants and had either worked with or taught them. I disclosed my research purpose to all my

participants, aiming for transparency. My role as an “observer-as-participant” meant that my participants knew and recognised me, but regarded me solely as a researcher (Angrosino, 2007, p.61). The nature of my video recorded data meant that my role as an observer was also “neither seen nor noticed” (ibid.) which reduces the impact of observer effects. As none of the video lessons were taught or facilitated by me, I adopted a “peripheral membership” (Angrosino, 2007, p.63), observing participants closely as an insider without actively engaging in their activities being observed. This position enabled me to examine and interpret the practices that both informed and expressed new literacies in these online classrooms while maintaining a critical distance.

Although I worked in the school for nine years and knew the community well, I did not assume that I had a complete understanding of what was happening in those online classrooms, especially when the transition to online learning introduced new dynamics. Like my participants, I was also experiencing this new way of “doing school” and went through a similar phase of enculturation. My insider position allowed me to participate in and reflect on this shared experience. During the initial stage of data collection, I prioritised familiarising myself with the field site, observing and reflecting on practices as they stabilised before beginning data collection, a process detailed in my data collection timeline (Figure 4.1).

This iterative and reflexive approach was also reflected in my analytic framework (Figure 4.8), which followed the process of *Reflexive Theme Analysis* (RTA) as outlined

by Braun and Clarke (2019). By embedding reflexivity into every stage of the research process, I remained attuned to how my positionality as an insider influenced the study's design, data collection, and interpretations. This reflexivity was critical in establishing the trustworthiness and robustness of my insights in this study.

4.11 Analytic Framework

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
A recurive and iterative process of analysis					
Examined the dataset and conducted a descriptive analysis Created preliminary notes highlighting initial trends and potential ideas of interest	Perused the dataset Initiated the coding process, using both initial and refined codes derived from interesting aspects of the data. Refined the first and second research questions.	Reviewed coded data to identify emerging themes Codes were refined to become concept-driven latent codes, and connections among these latent codes were established.	Reviewed the key themes from the dataset to ensure a coherent narrative Refined the third research question	Wrote detailed analysis, grounded in theoretical underpinning and substantiated by observational data and relevant literacy artefact	Produced a report presenting a cogent narrative of the data and the identified themes in a logical and meaningful manner.

Figure 4.8: The process of Reflexive Theme Analysis (RTA)

using Braun and Clarke's six-phase process (2019)

From design to collection to analysis, the process was guided by “the researcher’s reflective and thoughtful engagement with their data and their reflexive and thoughtful engagement with the analytic process” (Braun and Clarke 2019, p.594) which is quintessentially what *Reflexive Theme Analysis* (RTA) is. In RTA, the process of coding and theme development is flexible and organic, and will evolve throughout the analytical process (Braun et al. 2019). An “active co-productions on the part of the researcher, the data/participants and context” (ibid.), the process is not informed by any predefined themes to derive codes from; instead, themes are produced by organising codes around emerging ideas as interpreted by the researcher from the data using a inductive and data-driven approach. I adopted this predominantly inductive and data-driven approach, where data was coded to emphasise data-based, descriptive meanings but also employed a certain degree of deductive analysis. This was to ensure that the coding contributed to producing themes that were relevant to my research questions and meaningful to the understanding of LOPI in online classrooms that were defined affinity spaces. I found Braun and Clarke’s six-phase process (2019) helpful in the implementation of RTA (Figure 4.8).

Phase One started early in the data collection process and entails “reading and re-reading of the entire dataset in order to become intimately familiar with the data” (Byrne, 2021, p.1398). During this phase, I perused the dataset and engaged in “descriptive analysis of the data” (ibid.). At this point in time, I wrote preliminary notes of initial trends and potentially interesting moments, such as the difference in engagement levels among students in different subject classes. The preliminary notes below focused

on the amount of teacher and student talk time (Figure 4.9). However, the analyses In the later phases revealed that it was the type of engagement, both spoken and typed responses, and not the length of teacher or student talk time that mattered more.

"In all her lessons, the teacher warmly greets all the students, taking time to acknowledge and connect with each student. The teacher regularly reminds students to have the following tabs opened: Google Classroom, digital notebook, and learning engagement document. Even though teacher talk still dominates the lessons, the teacher structures a good amount of time for group discussion also intentionally engages with every student in her class. The most outspoken student contributed up to seven minutes of class talk time."

"There is a substantial amount of teacher talk, and minimal student talk. During one class, there was only one student who spoke. When the teacher invites students to respond, she acknowledges their short responses and does not ask for elaboration. There is also little wait time. Lessons are generally long. The teacher is comfortable just using audio and verbal interaction throughout her lesson, and she also allows students to turn off their cameras if they wish to. At times, she also turns off her camera."

Figure 4.9: Examples of preliminary notes taken during Phase One

After gaining a general understanding of the entire dataset, Phase Two began when coding started. This time, I thought more about the data in relation to my first research question which evolved from *What does learning look like in online classrooms/these affinity spaces?* to *What are the participation practices that emerge in these multimodal spaces?* to *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* I systematically worked through the entire dataset again, "identifying aspects of the data items that are interesting and maybe informative in developing themes" (Byrne, 2021, p.1399) and generating initial codes that were "interpretive labels for pieces of information that may be of relevance to the research questions" (ibid). I added to my "descriptive analysis" from the earlier phase by using these semantic codes (Byrne, 2021, p.1397) that were derived from the data to help present and communicate the content of the data. Some examples of these initial semantic codes used during this phase were "teacher talk time", "student-student collaboration" and "teacher models practice" (Figure 4.10). RTA is a recursive and iterative process, and these initial codes were subsequently redefined in later iterations of coding to help develop useful themes for the research (Figure 4.11).

Participation Practices	Codes
Direct instruction	Teacher talk time [to class]
	Teacher talk time [breakout rooms/small group conferences]
Collaboration	Teacher-student collaboration
	Student-student collaboration
Modelling	Teacher models practice - locate, organize, use information from a variety of sources and media
	Teacher models practice - assess information to be informed or inform others
	Teacher models practice - make connections between various sources of information
	Teacher models practice - assess information to be informed or inform others
	Student models practice - locate, organize, use information from a variety of sources and media
	Student models practice - assess information to be informed or inform others
	Student models practice - make connections between various sources of information
	Student models practice - assess information to be informed or inform others
Student engagement	Student uses practice - collaborate with others
	Student uses practice - locate, organize, use information from a variety of sources and media
	Student uses practice - assess information to be informed or inform others
	Student uses practice - make connections between various sources of information
	Student uses practice - assess information to be informed or inform others
	Student uses practice - collaborate with others

Figure 4.10: Some preliminary codes derived from data during Phase Two

Iteration 1: Teacher talk

Iteration 2: Teacher models practice

Iteration 3a: Oral commentary by teacher to support visual instructional materials

Iteration 3b: Oral commentary by student to support visual instructional materials

Iteration 4: Oral commentary by learner to support visual materials

Figure. 4.11: Example of code changes during Phase 2

This iterative process of RTA also got me thinking more about the practice of collaboration among the participants and the outcomes of their co-construction efforts. This helped shaped my second research question which evolved from *What does participation look like in online classrooms* to *What are the shared literacy artefacts that are created, utilised, and shared in these spaces?*

In Phase Three, the focus of RTA shifts from the emergence of interesting ideas from the dataset to the "interpretation of individual data items within the dataset, to the interpretation of aggregated meaning and meaningfulness across the dataset" (Byrne, 2021, p.1403). The coded data was now reviewed and analysed to see how they shared meaning or formed themes in a narrative concerning learning in these spaces. It is important to emphasise that themes do not "passively emerge from either data or coding…but are creative and interpretative stories about the data" (Braun & Clarke, 2019, p.594). In Phase Three, I thought more about my data in terms of LOPI and affinity spaces as discussed in the earlier chapter, and I started using concept-driven latent codes (Byrne, 2021, p.1397) such as those derived from the overarching LOPI concepts like "apprenticeship", "guided participation" and "participatory appropriation". The process became more deductive at this point as I contemplated the connections among the latent codes and the narratives they reflect, and experimented with using conceptual models to illustrate my thought process (Figure 4.12 and Figure 4.13). Latent codes go beyond the descriptive level of the data to uncover hidden meanings and ideas that shaped or informed the semantic content of the data. As latent codes allow researchers to move away from the explicit and obvious content of the data,

analysis in this phase became much more interpretive, creative and active (Braun et al., 2019).

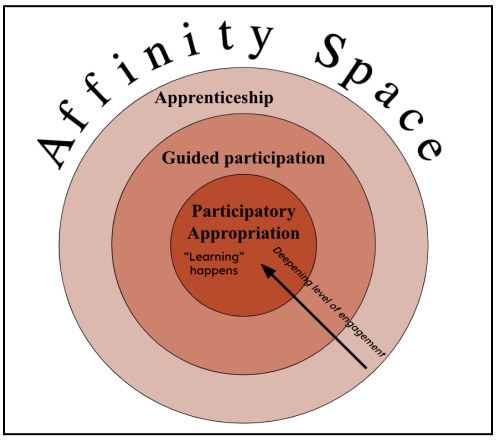


Figure 4.12: The initial development of a conceptual model to explain how learning happens in online classrooms using LOPI concepts. The final iteration of this model is found and will be discussed in Chapter VII of the thesis.

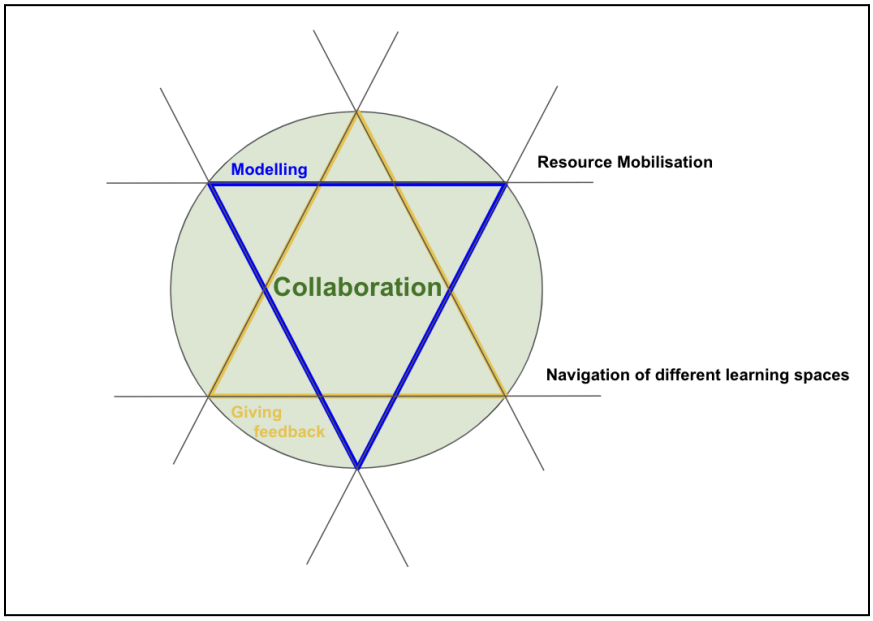


Figure 4.13: Using a conceptual model to make sense of the emerging practices observed in online classrooms. This model will be discussed in Chapter V of the thesis.

In Phase Four, the identified themes were reviewed in relation to the data set; they were "assessed as to how well they provided the most apt intepretation of the data in relation to the research questions" (Byrne, 2021, p.1404). It involves the review of the relationships among the data items, codes, and themes to ensure their coherence in forming a plausible narrative about learning in these online classroom spaces. To avoid ethnocentrism, as mentioned in an earlier section, I discussed my analysis with my supervisors to explain how my observations had led me to meaningful themes about learning. We discussed if my data was sufficiently "thick" and meaningful for the research. We also considered the quality of the themes in relation to my research questions and theoretical framework. With their critical feedback, we reviewed the themes and refined my research questions, and finalised the third question: *What does LOPI look like on the community, interpersonal, and personal plane in these spaces?*

In Phase Five, a detailed analysis of the thematic framework must be presented, with each individual theme and sub-theme expressed in relation to both the dataset and the research question. All themes should come together to create a "lucid narrative that with consistent with the content of the dataset and informative in relation to the research questions" (Byrne, 2021, p.1407). I aimed to draw my readers into the world that I studied by using the technique "verisimilitude or vraisemblance" (Angrosino, 2007, p.66), which is the use of rich descriptive language to create "a coherent, plausible, and recognizable narrative" by readers from their own experiences" (ibid.). In doing so, it enhances the credibility of my interpretations and ensures the quality of my research.

The write-up of the narrative should communicate the complexities of the data while remaining “embedded in the scholarly field” (Braun and Clarke, 2012, p. 69). RTA is an interpretive approach to analysis and the overall report should go beyond describing the data, providing theoretically informed arguments as to how the data addresses the research questions (Figure 4.15).

When it comes to the design of a space, there is one key defining feature: a portal or portals. A portal is “anything that gives access to the content and to ways of interacting with that content, by oneself or with other people” (Gee, 2005, p.13). The external design grammar sets up the main portals to these online classrooms. *Google Classroom* serves as the primary resource hub, while *Zoom* meetings facilitate online student gatherings. Through these two key portals, participants can gain access to and interact with the content in these learning spaces, independently or in collaboration with others. Within the external design grammar of these online classrooms, there could also be a number of different portals. The chat and polling functions on *Google Hangout* and *Zoom* meetings are portals, a URL link to a *Youtube* video or a collaborative *Google Doc* shared in the *Google Classroom* or during *Zoom* meetings is another portal, and breakout rooms in *Zoom* meetings are yet another portal. Each of these portals serves as an access point for participants, allowing them to access and engage with the content utilised in these online classrooms.

Portals are also found in the internal design grammar of these online classrooms. These online classrooms, as strong generators of content, “can also be portals” (Ibid., p.14). They make extensive use of interactive and multimodal elements to promote collaborative engagement. These portals not only provide participants access to the content in these learning spaces but also offer different ways in which they could act on the content. For example, students could utilise different portals to access a *Google Classroom*, a digital library, different online magazines, a website for a writing contest, and the school-published curriculum (Figure 6.17). Students could also utilise different portals to access different videos on *Youtube* (Figure 6.11), various migrant stories on the *Internet* (Figure 6.12a), and different interactive maps (Figure 6.12b).

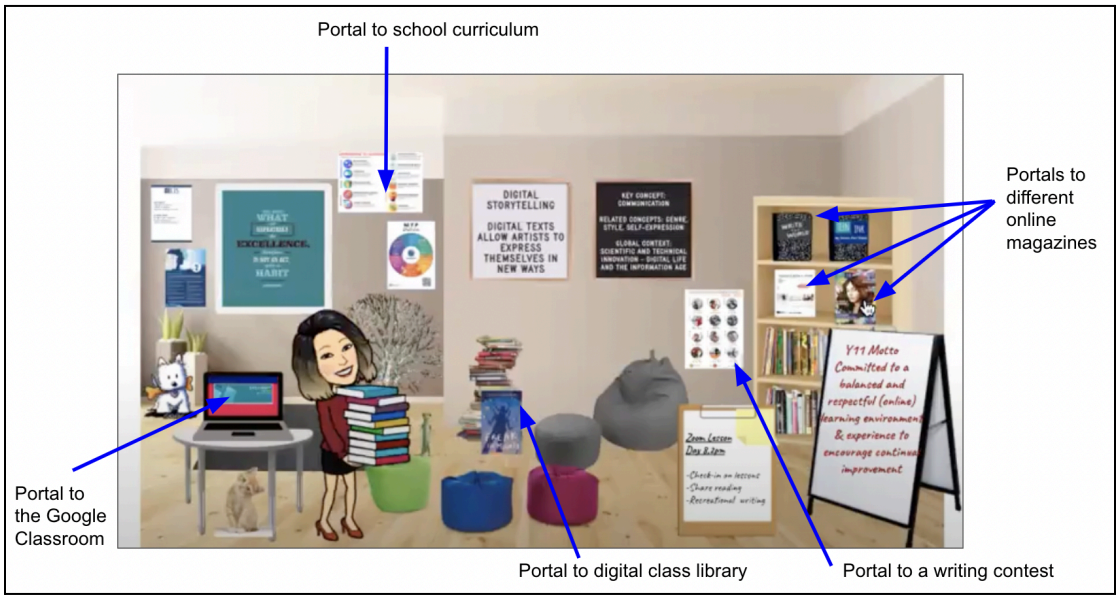


Figure 6.17 Multiple portals to gain access to content

Figure. 4.14: An illustrative writeup of the analysis grounded in theoretical underpinning and supported by observational data and relevant literacy artefact; an extract from Chapter VI.

Phase Six is all about producing the report. The write-up of qualitative research is “very much interwoven into the entire process of the analysis” and “rarely occurring at the end of the analysis” (Byrne, 2021, p.1409). Again, as with previous phases, the writing process was recursive. As codes and themes changed and evolved over the course of the analysis, so too did the write-up. The report aimed to present a cogent narrative of the data and the themes should connect in a logical and meaningful manner, as reflected in the systematic discussion of the research questions in Chapter V, VI and VII of this thesis, and the final conclusion in Chapter VIII. Themes should build upon previously reported themes while remaining internally consistent and capable of communicating their own individual narrative if isolated from other themes (Braun and Clarke, 2012, p.342).

4.12 Ethical Considerations

Conducting qualitative online research, which involves collecting and analysing data from human participants, raises important ethical considerations. Researchers must consider issues such as informed consent, privacy, confidentiality, and data security (Eynon, Fry, Schroeder, 2016). Privacy and confidentiality are essential to protect participants' personal information and ensure that they are not harmed in any way. Data security measures should also be in place to protect the information collected during the research process.

As mentioned in the *Researcher Role* section of this chapter, confidentiality was essential for establishing trusting relationships, as it protected the identities of participants. As a member of the community, I understood that my privileged role gave me access to this research field. Therefore, I emphasised to my participants that they should not feel any pressure to participate based on knowing me as a teacher or a colleague.

I obtained informed consent (Appendix A-D) from participants, ensuring they understood the nature of the research and their rights as participants; they were assured of anonymity and minimal risk of participation, and the option to withdraw from the study at any time. All participants were anonymised. Student participants are alphabetised in the order of their appearances in the discussion chapters of my empirical data. Teacher participants are referred to as “the teacher”. The pronoun “she” is used for generic third-person singular pronoun to refer to people of all genders. As mentioned in the *Participant Observation* section of this chapter, the relatively unobtrusive nature of this observational research also “lessens the opportunities for unfavourable interpersonal encounters between researcher and subjects” (Angrosino, 2007, p.67).

The entire dataset was saved on a cloud-based storage service with enhanced security provided by both schools that I worked at during the duration of my research. The data was only used solely for the purpose of the study. All of the data will be deleted upon completion of the study following university guidelines.

4.13 Conclusion

This chapter discussed in great detail the robust research design employed in the study to understand literacy practices observed in online classrooms of a formal learning institution. This chapter presented the rationale for using qualitative research and in particular the use of connective ethnography as the methodology for the research, and the measures taken to establish trustworthiness in this qualitative research. It detailed the ethnographic methods of participant observation and analysis of literacy artefacts in the four-stage data collection process through peripheral membership as an insider researcher, and the implementation of RTA through a six-phase process. Issues surrounding subjectivity and researcher bias were also discussed in various sections of the chapter to show the reflexive approach and steps taken throughout the study to mitigate potential bias and ensure the rigor, reliability, and quality of the research.

Chapter V: Participation Practices in Online Classrooms

This is the first of three chapters that foreground my empirical data. My study focuses on what learning looks like in online classrooms. In this chapter, I address my first research question: *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* This chapter explores the participation practices that emerge in these learning spaces to support learning. In Chapter Three, I conceptualised online classroom spaces as "affinity spaces" to enrich my discussion on school learning and push our research in more fruitful directions by expanding the walls of affinity spaces to include formal schooling environments. Like Gee (1994), I am interested in the constellation of practices found in these affinity spaces; what goes on and what flows through these online classrooms.

In my study, participants were observed to engage in many participation practices and regardless of their roles, whether they are students or teachers, novices or masters, the participation practices remain largely the same. However, the ways in which these practices are utilised vary. More importantly, these participation practices are more or less directly linked to the core practice of collaboration, which is pivotal to working towards a "common endeavour" (Gee, 1994). This chapter will focus on five participation practices: collaboration, modelling, feedback, navigation of learning spaces, and resource mobilisation.

From my observation of participation practices in these online classrooms, I identified collaboration as the core practice, modelling and giving feedback as two dominant

practices that directly influence collaboration, and navigation of learning spaces and resource mobilisation as auxiliary practices that support collaboration. I also created a conceptual model to illustrate these participation practices in online classrooms which will be discussed in this chapter

This chapter is divided into four sections. The first section looks at collaboration as the core practice that is critical in enabling participants to work towards a "common endeavour" (Gee, 1994). The second section explores the dominant practices of modelling and feedback as "different forms and routes of participation" (ibid.) that I identified are central to collaboration. The third section discusses the navigation of learning spaces and resource mobilisation as key participation practices that I identified are auxiliary to collaboration. Unique to online learning due to the affordances of a digital technologised environment, these two auxiliary practices were consistently utilised by participants in these online classrooms. The fourth section summarises the concepts discussed in this chapter using a conceptual model that I created. This chapter highlights the importance of sharing ideas among participants with diverse experiences and expertise, as well as relying on shared and distributed resources.

5.1 Collaboration as the Core Practice

In conceptualising online classrooms as affinity spaces where many participants converge and collaborate towards a common goal, collaboration emerges as the core practice. The instructional design by the teachers play a crucial role in facilitating collaboration among the students in these online classrooms. Nonetheless, it is

essential to recognise that the configuration of these learning spaces - specifically, how they are set up - serves as a prerequisite for enabling any form of collaboration.

In these online environments where participants are physically dispersed in different loci, collaboration among these individuals is only possible because of the affordances of online spaces. Without the breakout room feature, which allows participants to be reorganised into separate spaces while still on the main *Zoom* meeting, or the use of collaborative documents that enable simultaneous editing, participants' ability to collaborate with one another would be significantly restricted. The affordances of online spaces, as leveraged by the external design grammar (Gee, 2014) of these learning spaces, will be discussed in the following chapter, but it is mentioned here to make clear that while the external design grammar enables collaboration to happen, the setup itself does not ensure collaboration will happen.

Typically, the online lessons generally began with a short induction where the teachers took attendance and checked in with students in the main *Zoom* meeting. This was usually followed by two or three different learning engagements, each comprising one or more literacy events that involve reading, writing or talking about a text by the participants (Heath, 1983, Barton, 1994). These lessons, all longer than 40 minutes, show a blend of teacher-guided instruction in the main *Zoom* meeting and group activities conducted in breakout rooms. During group activities, students were usually put into breakout rooms, assigned or of their choice, to carry out the activities together. These online lessons generally ended with all the participants gathering back in the

main *Zoom* meeting for a short closure with a quick summary of the lesson's objective and content.

Data Set	Subject	Total Class Time	Approximate time spent in breakout room (minutes)
3	EAL	00:48:07	22
4	EAL	00:45:07	24
5	EAL	01:00:26	33
10	ELL	00:57:04	32
11	ELL	00:52:42	32
12	ELL	00:40:38	18
16	Drama	00:54:00	7
17	Drama	00:44:52	25
18	Drama	00:55:38	12
20	Humanities	00:52:37	26
21	Humanities	00:59:25	38
22	Humanities	00:55:19	27
26	Math	01:16:05	0
27	Math	00:59:33	0
28	Math	01:01:31	0
33	PHE	00:52:57	16
34	PHE	00:58:05	30
35	PHE	00:52:41	18
39	Science	00:54:29	34
40	Science	00:44:49	27
41	Science	00:53:08	35

Figure 5.1: Approximate time spent in breakout rooms

Data shows students spending close to or more than half of the total lesson time in breakout rooms working on group activities, except mathematics *classes.*

As seen in Figure 5.1, participants mostly spent around half or more than half of the total lesson time in breakout rooms, working on assigned group activities, with the exception of mathematics classes which will be explained later. Needless to say, merely putting groups of students in breakout rooms does not mean that collaboration would

happen. The teacher must provide specific instructions for the group task like those seen in the vignette below.

Vignette 5.1: Teacher-guided directions to guide collaboration in a Humanities class (Video 19: September 25). Teacher giving clear and specific instructions on what needs to be done before putting students into breakout rooms.

"Okay, everybody has access to this [the cursor hovers above the text 'OPCVL' which is an embedded link. I am going to put you into breakout rooms. You have 30 minutes. We are going to make a copy of the template and you are going to look at source A on the next slide and you are going to use the scaffold and follow these instructions [the cursor follows along], and there... is our next slide [different text is on now on display] and here is the question, 'With reference to its origin, purpose and content….'"

As the teacher reads, the cursor moves along to guide the reading. She then clicks on another embedded document. The teacher stops sharing the screen and calls upon a student to paraphrase the instructions. Student A paraphrases. The teacher shows a thumbs up.

"Make a copy of it in your groups. Please go to your breakup rooms. In your rooms there will be two or three people. I will go to your room to see you."

After a short discussion, the teacher turns off her camera and leaves the students to work together like before.

Vignette 5.1 shows a teacher giving specific directions to students before putting them into breakout rooms to carry out the group activity. This happened at the start of the lesson after the teacher had gone through the learning objectives of the day and spoke about an upcoming summative assessment as presented on a *Google* shared slideshow. In Vignette 5.1, the teacher was referring to the same slideshow as she gave clear and specific instructions to the students. She stated that they would be “put into breakout rooms”, “have 30 minutes”, and that they were to “make a copy of the template”, “look at source A on the next slide” and follow a set of instructions on the next slide. The teacher also said that she would check in on them in their breakout rooms.

The teacher not only provided clear instructions on what was expected of the students in completing the group task, the teacher also utilised tools that facilitated collaboration among the students. Along with *Zoom* breakout rooms, *Google* documents were frequently used in all these online classrooms, as they could be easily hyperlinked, duplicated, shared, and co-edit. In addition to *Google* documents, teachers also used interactive websites like *Stormboard* (Figure 5.2), *Padlet* (Figure 5.3), and *Kahoot* (Figure 5.13c) to facilitate collaboration, to name just a few.

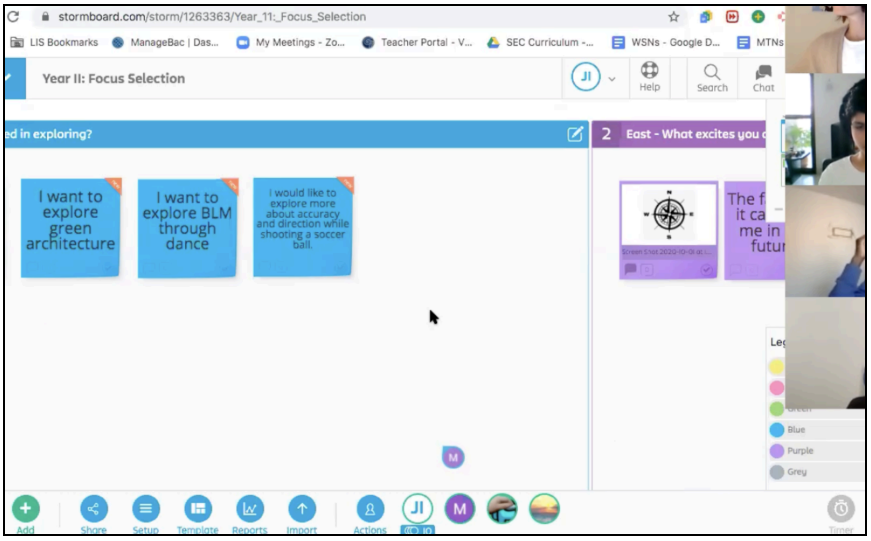


Figure 5.2: The use of a collaborative, digital whiteboard, Stormboard.

The teacher used Stormboard to facilitate collaboration among students during an English lesson, allowing them to brainstorm and share project ideas. Like a physical whiteboard, participants could share ideas for all to see. Unlike a physical whiteboard, participants do not need to be in the same physical environment, and could be saved and shared with different users. Participants need to be connected to the Internet and could login from a digital device from any location. (Video 1: September 6)

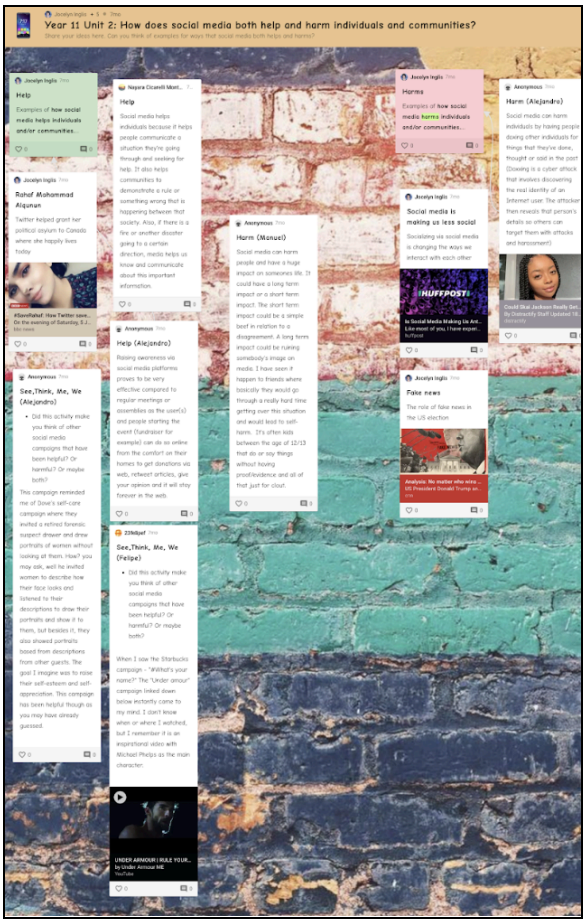


Figure 5.3: The use of a virtual bulletin board, Padlet.

The teacher used Padlet to facilitate collaboration among students during an English lesson, allowing them to discuss and share their responses on the topic: How does social media both help and harm individuals and communities? With internet connectivity, participants could respond to the question, and even share articles and videos from other sources. (Video 6: December 9)

In their instructional design, the teachers set up group activities that fostered collaboration among the participants in these online classrooms, but the way this was achieved differ. While the mathematics classes reported in Figure 5.1 did not use

breakout rooms, it does not mean that this is representative of all mathematics classes, nor does it mean that there was limited collaboration in those classes. Rather, the participants adopt different forms and routes of participation to collaborate with one another in these affinity spaces, which will be explained in the following sections.

5.2 Dominant Practices that Influence Collaboration

In my observation, I identified two dominant practices that are central to the practice of collaboration which are modelling and feedback. These practices show "different forms and routes of participation" that reify collaboration among participants. Vignette 5.2 below shows teacher-student collaboration through modelling in a mathematics class.

Vignette 5.2: Teacher-student collaboration through modelling in a mathematics *class (Video 30: December 8).*

All the questions for the second task are completed. As the teacher closes the tab, she says "Those workings that you see here. If you want to rewatch them. They have been recorded. And you can rewatch the video on Google Classroom if you wish."

The teacher now moves on to the third task, which is more challenging than the previous two. The teacher calls upon Student B to share.

Student B responds immediately and selects the question to answer. There is a long pause and then she says, "I am not sure…"

The teacher guides Student B through the process, her cursor moving around the triangle as she explains her thinking process and speaks directly to Student B, pausing every now and then to prompt the student for answers. The teacher writes down the workings as she speaks.

At one point, the teacher realises Student B does not have a calculator. She prompts her to use the calculator on the laptop. Student B says she only has a basic calculator on the laptop. The teacher then proceeds to sharing her screen to show Student B how to do so, “I will show you...Go to ‘VIEW’, and switch from basic to scientific”.

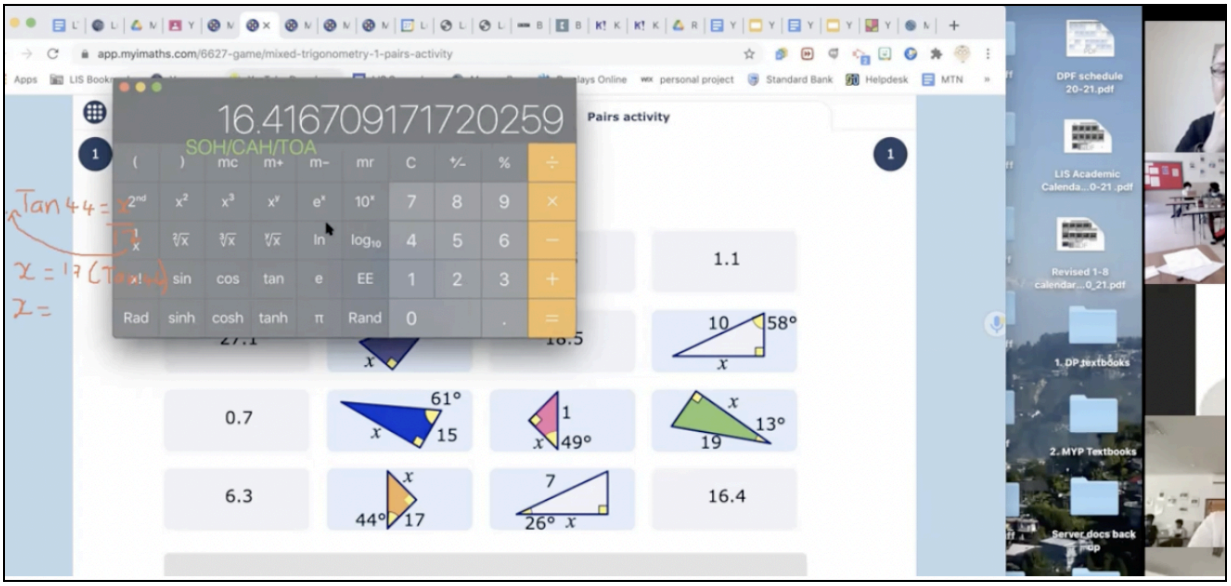


Figure 5.4: Modelling by the teacher

The teacher then continues to work on the question, saying “I will do it while you work on it as well,” taking the pressure of Student B.

Student C volunteers to answer next. Student C quickly selects her questions but is hesitant in her responses. The teacher again moves her cursor around the triangle as she explains her thinking process and speaks directly to Student C, prompting her with guiding questions.

The teacher writes down the workings as she speaks.

The teacher finishes her explanation and asks, “Which of these does it match up to?” The question is clearly directed at Student C. There is a long pause of 25 seconds. “F, have you got an answer to this one?” Pause of 2 seconds. “Ahhh….not really…”

The teacher waits another 10 seconds. On this screen, she searches up “desmos calculator”, a web-based scientific calculator, and proceeds to work through the equation, taking the pressure of Student C, and taking the opportunity to show the students another option of a scientific calculator, if they do not have a physical calculator.

Vignette 5.2 takes place during the second half of a mathematics lesson on algebra when the teacher was working on the third practice with the students in the class. Throughout the lesson, the teacher shared her screen, displaying an online app which showed the workings as she solved the mathematics questions with the students. The teacher had completed two earlier practices with the students before this literacy event. During these practices, the teacher called out individual students who would respond

accordingly. As the students shared their responses, the teacher wrote the workings down, and “drags” and “drops” the correct values to complete the table. The teacher also repeated and commented on the students’ responses as this happened.

Modelling

Modelling is where a participant explicitly demonstrates how something is done. A common practice observed in these online lessons, modelling was used frequently in these lessons during teacher feedback and instruction, especially in mathematics classes where the teachers showed and talked through their workings in solving mathematical problems. For example, in Vignette 5.2, the teacher took on the lead and modelled how things were done, “I will show you…” and “I will do it while you work on it as well”. As the teacher modelled how to use a web-based scientific calculator or solve a mathematical equation, she verbalised her thought process. Every step of what the teacher did was displayed on the screen. Students could follow the movement of her cursor and also see her handwritten workings in orange. As the online lessons were all recorded, students had the flexibility to access the videos at anytime and from anywhere to review what was taught to reinforce their learning. As the teacher explained, “Those workings that you see here. If you want to rewatch them. They have been recorded. And you can rewatch the video on Google Classroom if you wish.”

Modelling was also observed in other subject classes. In English classes, the teachers were seen modelling how to write an essay; in PHE classes, the teacher modelled how to carry out different versions of a push-up. In all these cases of modelling, the leaders,

who are the teachers, are resources (Gee & Hayes, 2012); they displayed what they do on the screen and talked through what they do. The modelling was then immediately followed by questions, posed by either the teacher or student, to check on student understanding. The modelling process observed in these classrooms generally followed a three-part structure: visual demonstration, accompanied by oral commentary, and immediate check-in.

Vignette 5.3: Student-student collaboration through modelling and feedback in a Physical Health Education (PHE) class (Video 34: November 19).

The teacher reminds Student D to first give an introduction to her video before sharing her video.

Student D, “I made an instructional video for the Year 10s showing them step by step the dance that my group and I made last year…and the Year 10s are going to see it, and they will have to fill up a survey and also it will help them to make their own instructional videos.”

The teacher interrupts Student D and tells the class that they are about to watch a good-quality video.

Student D shares her screen to show her exercise video, a dance demonstration. The video shows her performing the moves of the dance routines, with instructions as subtitles both in English and Portuguese. The video is edited to include other snippets

from dance routines performed before pre-Covid days, showing four students dancing in the school movement room. After sharing the video, Student D adds that she has posted an online survey on Google Classroom to get feedback from her classmates on her exercise video.

Figure 5.5: Student D sharing a video that she created for class

Student D then shares her second video to show the dance performance. At the end of the performance. The participants clap. The teacher commends Student D and invites the class to give her feedback. Student E comments on Student D being resourceful, Student F comments on the length of the video and how that is concise and effective. Student G likes the clarity of the movements and instructions.

Vignette 5.3 describes a Physical Health Education (PHE) class where students were presenting their finished products of an exercise video. In this class, Student D was

about to start her presentation and share her video products, which the teacher acknowledged at the start as “good-quality video”. Vignette 5.3 continues with Student D displaying “an instructional video for the Year 10s showing them step by step the dance that my group and I made last year”. The video showed Student D demonstrating the dance moves, the instructions were spoken aloud and also presented as captions in the video. The literacy event ended with the teacher and other students giving positive feedback to the work. In sharing their work, students assume the roles of the teacher to model their work. In these online classrooms, modelling was carried out by all participants, and not just exhibited by the teachers. Leadership is therefore porous and flexible (Gee & Hayes, 2012).

Figure 5.6a and Figure 5.6b show more examples of students modelling their work during oral presentations in these online classrooms. Through modelling, these participants also showed the utilisation of extensive knowledge (Gee & Hayes, 2012) such as the application of generalized skills such as video editing in a PHE class, making 3D models using *Google Sketchup* skills and creating an App in an English class.

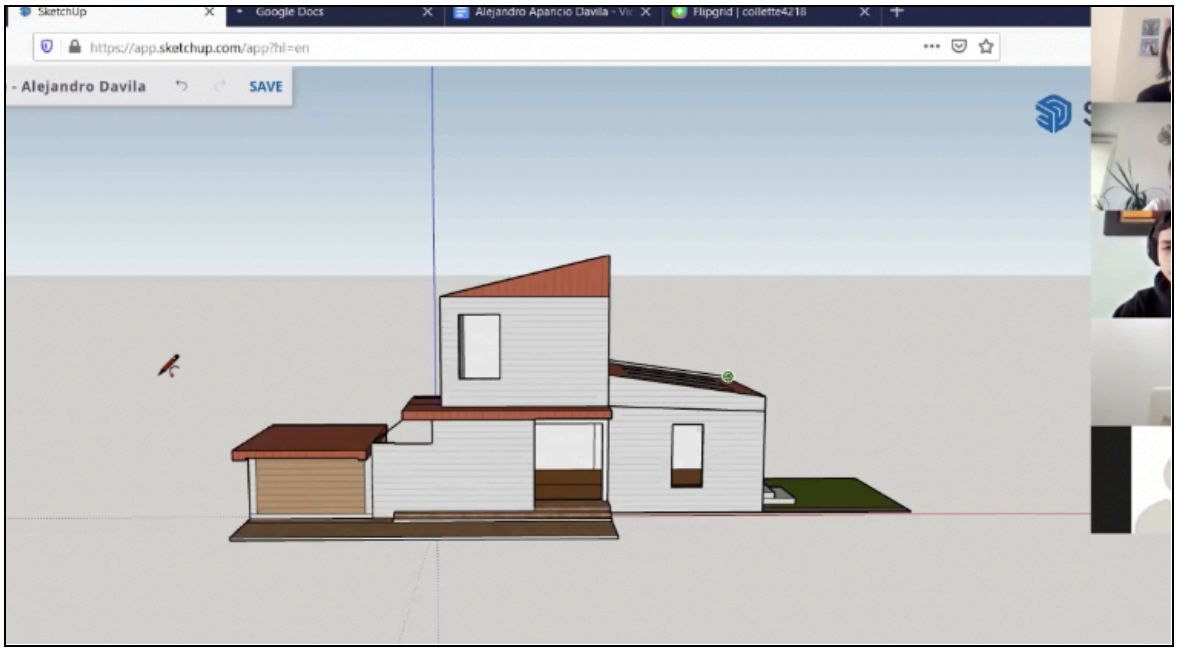


Figure 5.6a: A student sharing a model created using Google Sketchup work during an oral presentation in a Physical Health Education (PHE) class (Video 34: November 19).

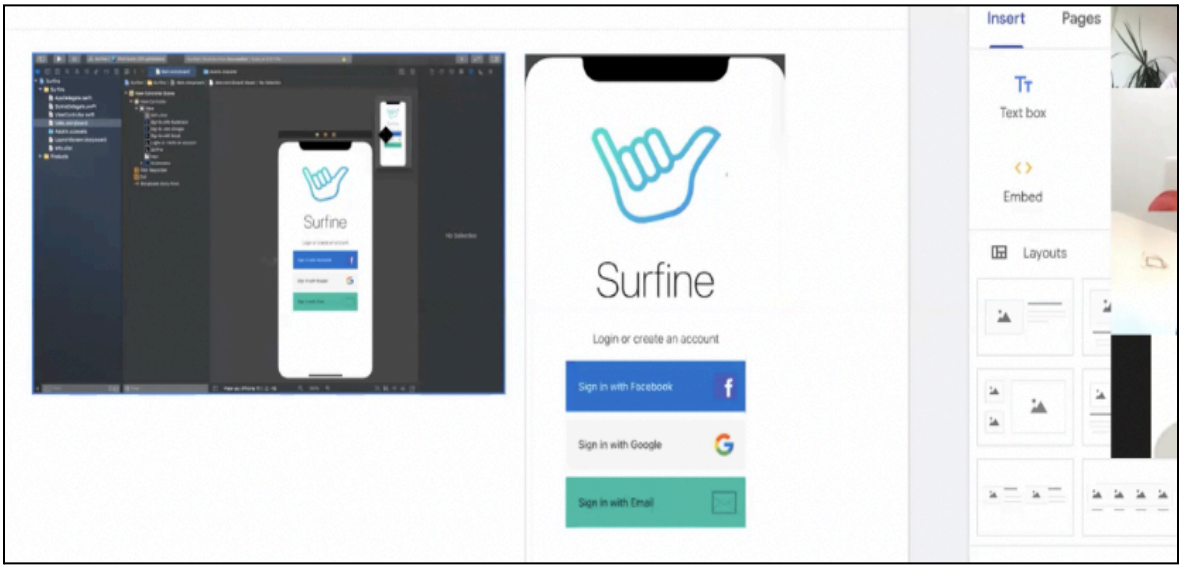


Figure 5.6b: A student sharing a App that she created during an oral presentation in a Physical Health Education (PHE) class (Video 34: November 19).

In addition to modelling, Vignette 5.3 also shows how “feedback is encouraged and used” (Gee & Hayes, 2012) in these affinity spaces. On her own, the participant, Student D, solicited feedback on her product by “posting an online survey on *Google Classroom* to get feedback from her classmates on her exercise video.” At the end of the sharing, the other participants responded spontaneously and with familiarity of the classroom practice when invited to provide feedback. The feedback they provided was specific, constructive, and varied. Vignette 5.4 provides another example of a student actively soliciting feedback. Student H actively sought feedback from the teacher when she asked “Can you give me feedback?” and added the specifics, “Ya, I managed to finish it but I am not sure if it’s detailed enough and needed more”.

In these online classrooms, it was also encouraged and a common practice to “show” how things are done as part of modelling. Vignette 5.4 takes place after the teacher had given feedback on a piece of student work in the main *Zoom* meeting. Students were then put into breakout rooms for a peer feedback session. Vignette 5.4 shows a conversation that took place in a breakout room during the peer feedback session.

Vignette 5.4: The common practice of “showing how things are done” in an English as an Additional Language (EAL) class (Video 3: November 10).

The students then go into breakout rooms for a peer feedback session. In the feedback room, the students share their screens and talk through their ideas. The teacher joins the breakout room. Student G: Teacher, I finished my blog two. Can you give me feedback? [Student G

shares her screen, which shows her Google Site, a Soccer Blog.]

Teacher: Student H, I am glad that you got your Google Site sorted out. Did you have a couple of problems? What happened?

Student G: I had one from my personal account, so that was the issue. And the other issue is...I cannot add pictures, I don't know why. You know how at the end of the text, but I can't. It doesn't let me add, and I don't understand why.

Teacher: Have you tried this embed button?

Student G: What's embed button?

Teacher: You see the top right, this button, ya? [Her cursor moving along]

Student G: Ya, I have tried. Yes, I have added this one and that one, but here...[her cursor can be seen hovering around the content that she is talking about] like here, it doesn't let me.

Teacher: Ok, if you scroll down [Student G's cursor can be seen following her instructions]

Student G: Oh, here, ya ya, but...it's okay Teacher, I will figure it out.

Teacher: Okay, so you will figure it out. Maybe after this breakout room, I can put you in a room with Student H. And she can just show you what she did. Yes, I read through your first blog. It is detailed, you connected with your readers. And yes it's good. You mentioned that you started the second blogpost?

Student G: Ya, I managed to finish it but I am not sure if it's detailed enough and needed more. Yes, I have done that as well.

Teacher:	Did you type it on a Google Doc?
Student G:	Yes, it's here. [Student G changes tab and a document of her draft post is seen. [The student scrolls up and down the document, pointing out the different drafts that she had done on the document]
Teacher:	Okay, yes, can you share that with me right now? I can't edit Google Site, but I can read this document, give you comments before you upload it on your site. [As she speaks, Student G opens up the sharing settings and then added teacher's email address.]
	At the end of the lesson
Teacher:	That reminds me, Student I. I am going to put you into a breakout room with Student H. Can you just show her how to add images and links to your blog?"
Student H:	Ya, okay, let me do that.

Vignette 5.4 offers a snapshot of the way participants "show" how things are done in these online classrooms. This common practice is first observed in this vignette when Student G shared her screen to "show" her *Google Site*. Then the teacher, in explaining what the "embed button" is, saying "You see the top right, this button, ya?" Her cursor moving, showing what she meant. The teacher then made a suggestion of putting both Student G and Student H in a breakout room so that "Student H can just show Student G what she did". Right before the class ended, the teacher asked Student H, "Can you just show her how to add images and links to your blog?" which she readily agrees.

Modelling among participants is a dominant practice that influences collaboration in these online classrooms.

Giving Feedback

In addition to modelling, Vignette 5.5 below looks closely at how feedback is used to promote collaboration among participants. Before this literacy event, students were put into breakout rooms to read a sample essay and identify the thesis statement, topic sentences, and best paragraph in the essay. In this vignette, the teacher engaged the students in a discussion of a thesis statement to critique a sample essay. The teacher involved all students in giving feedback and they collaboratively improved the introductory paragraph. In doing so, the teacher also modelled the writing and editing process.

Vignette 5.5: Collaboration among participants through modelling and feedback in an English Language and Literature (ELL) class (Video 10: November 26).

The teacher turns her camera back on and waits for the students to return back to the main Zoom meeting. The teacher looks around. “Has Student J left halfway through because of Internet connection?” she asks. Student I nods. “Okay. Now, let’s have a look here [the screen switches to show the sample essay]. Ummm. Can I ask, let’s see… Student I, in your group, what did you decide was the thesis statement? Or what conversations did you have about that?”

“We said that the thesis statement is usually at the end of the introduction paragraph, so I guess… I guess it would be the ‘The title, Diggin’ is carried… and so on....” As Student I reads, the teacher is seen selecting the sentence.

“You reckon this is the thesis statement?” The teacher clarifies.

“I..yes.. yes, good.” Student I says.

Following that, the teacher highlights the sentence in green, “Yup, ok. So, ‘The title, Digging is carried thematically throughout the poem by the speaker, both literally in the physical work of his father and grandfather and metaphorically as he digs into and reflects on the past and his own future. Ummm.” Student I is seen nodding. “Ahhh, Student A and Student J, what do you reckon?” Short pause. Student J signals Student A to respond. “Hmmm, we had a different one. We both think the right one is the second one, ‘To do this…’”

The teacher interrupts and continues reading the rest of the sentence, “...’the poet vividly creates the setting with descriptive and engaging language, highlights the importance of his forefathers, adopts a reflective tone when depicting both past and present, and conveys a positive and proud attitude about the past accomplishments of his ancestors and the way that he will try to carry on that tradition in his own way’ [pretending to be catching her breath as she finishes reading aloud the sentence]

Phew, ok, [the teacher highlights the sentence in blue] so we maybe have two contenders here. So Student A and Student J, why did you settle on this one?

Again, Student J nods to signal Student A to respond. “We chose this one because even though it is not at the end of the sentence, it is the one that includes the main ideas, like the other one don’t really talk about it; this one, the person that wrote it, states the main factors that help other people think about what the poem is about.” Student J is seen nodding along, supporting Student A’s response.

The teacher nods, “Hmmm ya ya, so it kind of highlights “descriptive and engaging language…importance of his forefathers… a reflective tone…a positive and proud attitude… so, where you would expect there would be body paragraphs about these ideas, about this and about that., yup ahhh, Student F, you were in the other group…how does that sound to you? Was that convincing or were you still thinking that the green one is the thesis statement?

Student F furrows her eyebrows as she responds, “I think the blue one does make sense because usually the blue one has the topic and then the main things that are going to be in the essay. So I think the blue one makes sense.”

The teacher, looking thoughtful and resting her hand on her chin, prompts another student to respond, “Hmm yup, Student K, what are you thinking?”

“At first I thought it was the green statement, ah, the green line, but now that they have pointed out the blue one, and ya I guess it, I think the blue one makes more sense.” Student K replies confidently.

“Student C, what do you reckon?” The teacher asks.

“Ahhh, I still think green.”

“Why?

“I feel like, I don’t know, I feel like it summarises the main point better.”

The teacher adds, “Hmmmm, kind of summarizes the argument that the student will be making overall in the essay.” Student C nods. [Student I puts up her hand]. “Student I?”

“Yes, I agree with Student C. The thing is that the blue one is more of like, it talks about the essay, how the ideas are organised, but the green one talks about the actual poem. So, now that it is confusing, I still think green except for the structure, because it still talks about the poem.”

The teacher smiles as she responds, “To be honest, I have shifted a little on this. I was of the same opinion as Student A but I am not sure anymore, as I see what

Student I and Student C are saying. [Student A raises her hand] The green one really carries the argument. This is the main point, 'The title, Digging is carried thematically throughout the poem…both literally…and metaphorically', the overall point the student is trying to make. And the blue stuff is how…Heaney achieves the green stuff. Student A, what are you thinking?"

Shifting in her seat, Student A retorts, "Hmm, I thought it was, I still think it is blue. Normally, the topic sentences are based on or about the ideas that are stated in the thesis statement. When you read the thesis statement, you will see that the topic sentences are derived from the blue sentence. I just think that he…or she just didn't structure the paragraph very well. It would make sense if the green sentence is below the blue sentence. [The teacher duplicates the paragraph, and reorder the sentences. There are now two versions of the introduction in the sample essay.]

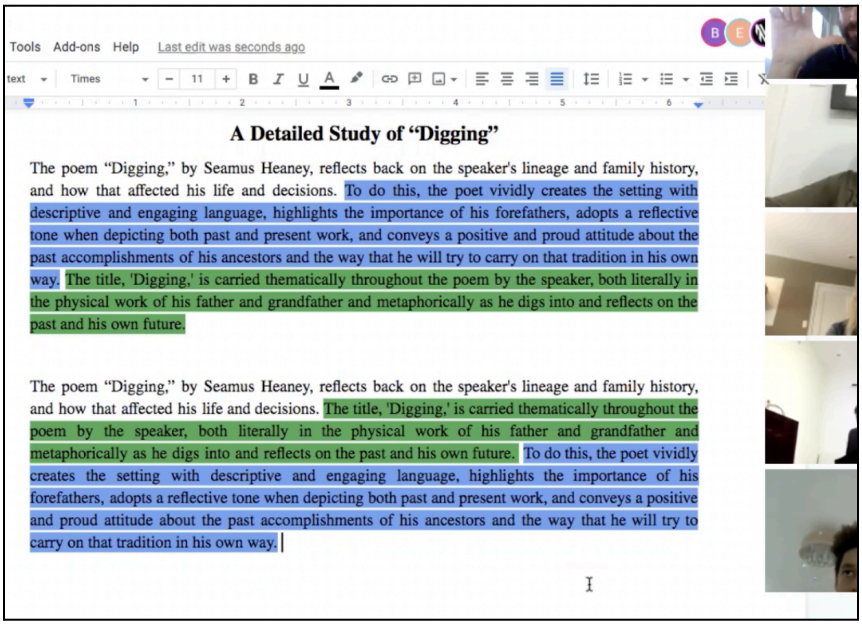


Figure 5.7a: Editing of a paragraph using feedback received in an English class

“You would want to do something like…” The teacher seeks confirmation.

Student I interjects, “ I actually agree with Student A. The structure, changing a little bit. It sounds better. The green one is more general, and the blue one goes into more depth.”

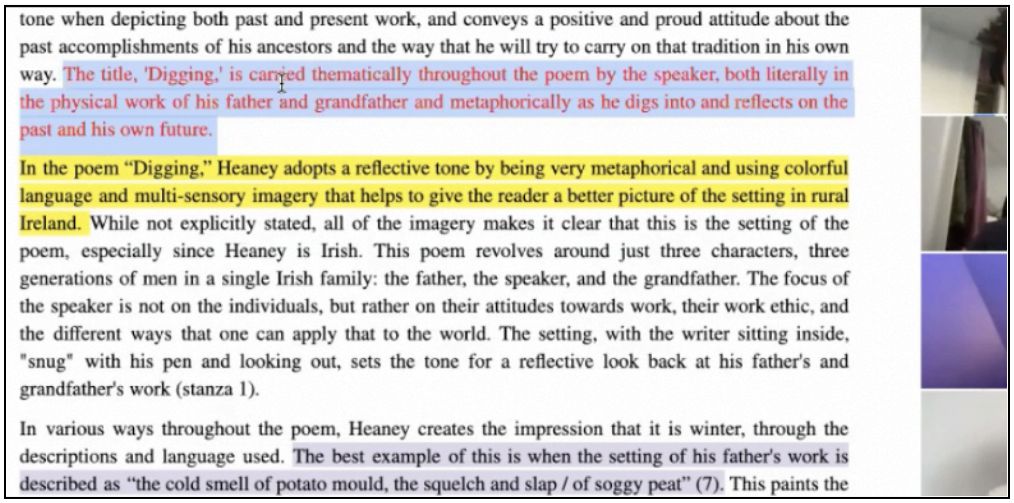
“So that is often something we want to do in an introduction paragraph, like an upside down triangle, starting broad, then it gets narrower and narrower, until it states specifically what it wants to achieve in the essay. I like Student I’s comment. The green is rather general, looking at the thematic concern, and the blue gets pretty specific. Do we like this second version?” The teacher follows up with a quick comment on the structure of the new paragraph and a question.

Student A shows a thumbs up, but then quickly adds, “Wait Teacher I think it is not just one thesis statement, but two.”

Student J then adds, “I think it is just confusing the way the sentence is worded. The blue sentence is pretty problematic in itself; it reads like a run-on sentence, and that itself meant that it is not specific, which takes it back from being a good, clear thesis statement. It’s kind of hard to understand because there is just so much.

The teacher laughs, “Yes, like how I had to catch my breath at the end of that one sentence. I think we can all agree that yes it does work as a thesis statement, but it is

not perfect. I want to move on from this because we only have ten minutes [chuckles] left to look at the rest of the essay, but this is awesome. I really really really like the conversation and the talk we had about this. In this discussion and on your own in your groups, you have thought about it really clearly and carefully."


tone when depicting both past and present work, and conveys a positive and proud attitude about the past accomplishments of his ancestors and the way that he will try to carry on that tradition in his own way. The title, 'Digging,' is carried thematically throughout the poem by the speaker, both literally in the physical work of his father and grandfather and metaphorically as he digs into and reflects on the past and his own future.

In the poem "Digging," Heaney adopts a reflective tone by being very metaphorical and using colorful language and multi-sensory imagery that helps to give the reader a better picture of the setting in rural Ireland. While not explicitly stated, all of the imagery makes it clear that this is the setting of the poem, especially since Heaney is Irish. This poem revolves around just three characters, three generations of men in a single Irish family: the father, the speaker, and the grandfather. The focus of the speaker is not on the individuals, but rather on their attitudes towards work, their work ethic, and the different ways that one can apply that to the world. The setting, with the writer sitting inside, "snug" with his pen and looking out, sets the tone for a reflective look back at his father's and grandfather's work (stanza 1).

In various ways throughout the poem, Heaney creates the impression that it is winter, through the descriptions and language used. The best example of this is when the setting of his father's work is described as "the cold smell of potato mould, the squelch and slap / of soggy peat" (7). This paints the

Figure 5.7b: Student working on collaborative documents in breakout rooms

In this literacy event where the "talk revolves around a piece of writing" (Heath, 1983, p.386), the teacher encouraged the use of feedback to promote collaboration among the participants. The teacher first created small group discussions in breakout rooms before inviting students to contribute or calling upon specific students to share. In this learning space, everyone can a resource and has reciprocal responsibility (Gee & Hayes, 2012). Even though the participants might have different levels of skills and content knowledge, for example, with Student C who seems to show the least confidence and Student J who appears to display the most knowledge, they all possessed sufficient knowledge and understanding of essay writing to engage in such a critique. For example, Student I

stated that the thesis statement is usually found at the end of the introductory paragraph and Student A commented that the organisational structure of the essay should be evident in the thesis statement. In general, the feedback given is supported by an explanation. If no explanation was given, the teacher would prompt for one by asking "Why". Through participating in this feedback process where students responded to questions asked, they were seen developing intensive knowledge (Gee & Hayes, 2012); using specialized and subject-specific knowledge such as the structural elements of a written paragraph to critique the piece of writing.

The teacher actively solicited responses from the participants, with some students such as Student A and Student I, showing more "proactive learning" (Gee & Hayes, 2012) than others. It is important to note, however, that verbal responses are not the only indicator of "proactive learning". Especially in a multimodal environment, there are different and varied ways to engage. Some students might have spoken up more in the small group discussion that took place in the breakout rooms, others might have volunteered to read aloud the paragraph or made annotations on their group documents, still others might have typed their responses using the chat function or even written down their notes in a physical notepad. In this vignette, Student J yielded twice during the group discussion and signalled her partner, Student A, to respond, "Again, Student J nods to signal Student A to respond." Student J remained quiet until the end of the vignette where she wrapped up the discussion with a comment on the effectiveness of the syntax used, going beyond the organisation of ideas in the paragraph but focusing on the use of language mechanics instead. For the most part of

the group discussion, Student J chose to take on a more peripheral role, and only spoke at the end. Her route of participation is different but it does not make her learning less proactive.

What is most notable about this literacy event is that the “content is transformed by interaction” (Gee & Hayes, 2012, p.137). The piece of writing that was talked about was highlighted, duplicated, recomposed, showing how the original resource is acted upon and collaboratively changed through feedback. Encouraged and utilised by all participants in these online classrooms, modelling and feedback are dominant practices used in these online classrooms to promote collaborative learning.

5.3 Auxiliary Practices to Support Collaboration

I now turn my attention to two other participation practices observed in these online classrooms that I considered are key features of online learning which are the navigation of learning spaces and resource mobilisation. Since the rise of the Internet back in the mid 1990s, the affordances of the digital environment have allowed individuals to access different spaces and resources at their fingertips which prompt learning by demand. The ability and ease to navigate different learning spaces and to mobilise resources, and how they shape collaboration are two practices that also influence collaboration in online classrooms, and reflect the ethos of distributed resources and collective intelligence in such learning environments. These participation practices utilised by individuals are auxiliary to collaboration in online classrooms.

Vignette 5.6: Teacher navigating learning spaces in a Humanities class (Video 22: November 2).

The teacher then shares her screen, which shows her slideshow titled “Time, Place and Space”. It displays the instruction that she gave at the beginning of the lesson, and the first learning engagement which is to complete an online quiz.

“Today, we will begin with a quiz.” As she says this, her cursor is seen moving towards the hyperlink, and clicking it. The webpage shows up on the screen: https://www.ined.fr/en/everything_about_population/population-games/quiz/etes-vous-demographe/

The teacher gives a quick introduction to the quiz and explains its purpose. The students begin working on the quiz. As they work on the quiz, they are prompted to record down interesting/surprising ideas in their electronic notebooks.

The students work quietly as the teacher says, “I will be jumping into your document in a moment”.

The teacher switches back to *Google Classroom* and is seen looking through all the electronic notebooks, checking that the students are writing down ideas.

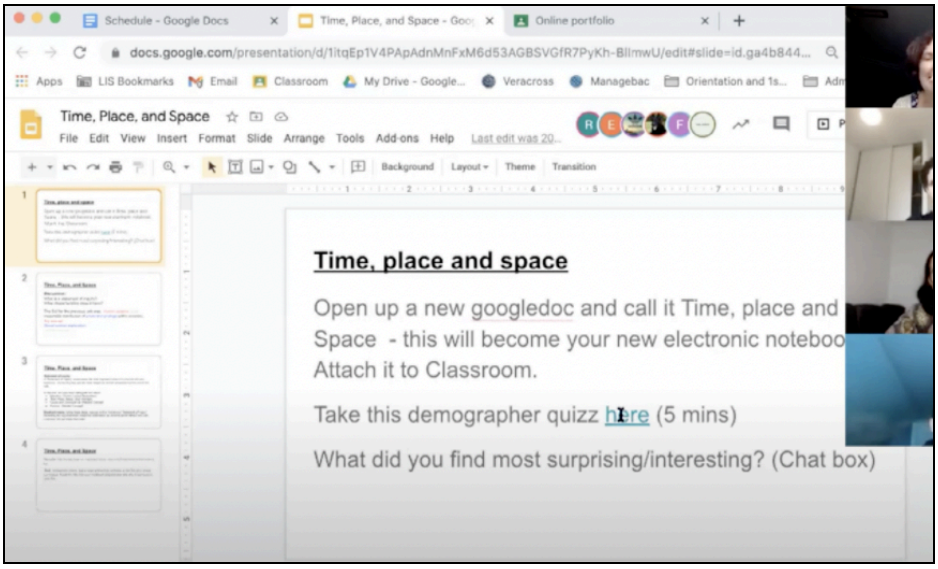


Figure 5.8a: Participants occupying different learning spaces: Zoom & Slideshow

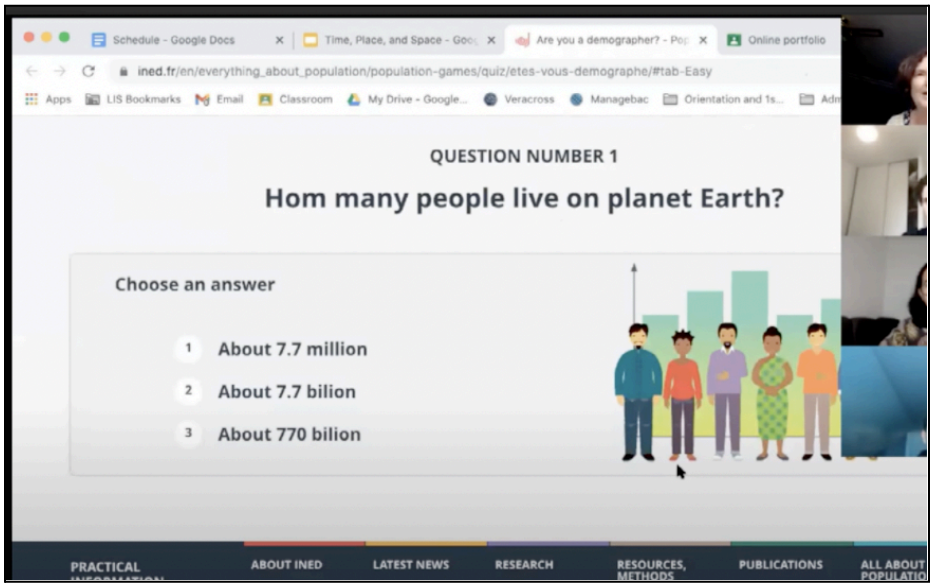


Figure 5.8b: Participants navigating different learning spaces: from hyperlinked slideshow to online quiz

The teacher then moves back to the slideshow and says, “I am going to put you into breakout rooms in awhile so you can be with your friends and talk.

Students then leave to join their breakout rooms

On the shared screen, the teacher is seen managing the single system of operation, her tabs showing her slideshow, *Google Classroom*, unit plan, and learning document as she clicks through the different digital notebooks on the online portfolio. Private comments between the teacher and students can also be seen alongside the documents.

As the teacher checks the document, students can be seen typing, documenting the discussion that they are currently having in the breakout rooms. Even though the teacher is not in the breakout rooms, she tracks her students’ work, and seems to have a good idea of what is going on. The teacher stops sharing her screen. The teacher continues to look at the documents, nodding every now and then.

The teacher joins a breakout room to check on student progress. Students choose different sources to share. The first student shows a news article which the teacher is happy about. As the other three sources are not news stories, the teacher clarifies the task and asks them to research again. The teacher pops into the different breakout rooms and reminds students that she wants news stories, not educational websites. The teacher also shares her screen to illustrate what she means.

Navigating Learning Spaces

These online lessons took place in the main *Zoom* meeting and its breakout rooms, but the interactions among the participants extended across different learning spaces. In addition to using *Zoom* meetings, the teachers all set up a *Google Classroom* for each of their classes as a single management system. These *Google Classrooms* were updated every lesson and hosted all the resources for the lessons so that participants can access these resources both asynchronously and synchronously. The resources ranged from *PDF* files (Figure 5.13a), to collaborative *Google Slides* (Figure 5.12a and Figure 5.12b) and *Google Docs* (Figure 5.7a and Figure 5.7b), to web-based quizzes (Figure 5.13c). As seen in Figure 5.9a, the participants were occupying at least two learning spaces together, the main *Zoom* meeting and the *Google Slide*. Figure 5.8b shows the teacher using an online quiz, traversing across a new learning space with her students.

During the lesson, I observed the teacher clicking on different tabs to navigate different learning spaces. From her work station, the teacher was able to update her teaching resources, checked the homework in her students' digital notebooks, and tracked the collaborative documents that her students were collaborating on in their breakout rooms. Later, when the teacher joined a breakout room to check on her students, she redirected some students in their research, prompting them to navigate a different learning space to access the right resource.

Vignette 5.7: Overlap of physical and virtual spaces in a Science class (Video 39: November 9) Teacher mobilising resources for differentiated instruction.

Teacher?

Is it Student J?

Yes. [The teacher turns her camera on]

“I have the book here”, Student J lifts an opened textbook so it can be seen on the camera. “and it doesn’t say anything about torque.” The student looks at the book and is seen to be scanning through the pages. “Like I am looking at the different types of forces, and there is nothing.” The student shakes her head and looks at the camera/teacher expectantly.

The teacher stands up and walks away, “let me grab the…” [The teacher moves away from her work station, away from the camera. The teacher is no longer seen on the screen but her voice could still be heard.] “It’s here…”

34 seconds later. “So…hmmm…choo choo choo” [The teacher returns and seats herself down.] “It’s 150 and something right?” [Pages flipping]

“I was on page 16, so I guess it’s not.” Student J smiled, a little embarrassed.

“Ahhhh, that’s why!” The teacher exclaimed, with a big smile. “154. I don’t know if it is entirely useful, but have a look anyway. Torque is not really related, but it can be discussed. Wait a minute…” [The teacher looks down, pages flipping] “Wait a minute…it’s on page 157 and there is a nice example of the calculation of momentum…and of a dancer dancing. I know it is a a ice skater, but definitely related to a ballerina dancing.”

“Ya, probably.” Student J nods in agreement.

Later during the lesson

On the shared screen, the teacher is looking intently, probably going through the lab reports of her students.

“Student L, I shared a link with you. Check out that resource. It has a lot of information, it is a difficult website. Try to summarize the website and make sense of it. A, there is a video on Google Classroom for you. Have a look.

The teacher then turns off her video. For the rest of the lesson, the teacher’s video is off, but she is heard giving instructions. There is no expectation for students to turn on their cameras either. The teacher is comfortable giving feedback to the students with the cameras off.

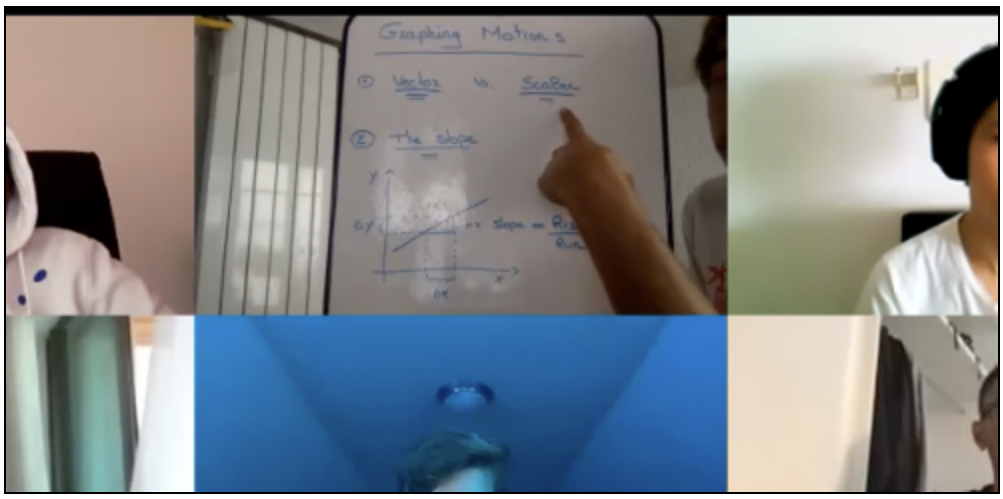


Figure 5.9: Traversing different learning spaces

The teacher giving instructions in a online classroom by referring to a whiteboard in her physical space.

In these online classrooms, there was also the overlap of physical and virtual spaces. In Vignette 5.7, both the teacher and student were seen flipping through and referring to physical textbooks in their interaction, “I have the book here”, “I was on page 16”, and “It’s on page 157…” Both participants were seen accessing resources found in their physical spaces. In Figure 5.9, the teacher was using a whiteboard in her physical space to explain scientific concepts, blending the use of physical and virtual spaces in her class. This practice of navigating different learning spaces was fundamental to online learning in these online classrooms. Participants navigated different learning spaces with ease and intuitively. It allowed participants to come together to collaborate and also access different resources.

In these online classrooms, participants navigated learning spaces in order to connect with others and access resources. However, having the access is not enough, it is what one does with the resources that matters, how individuals utilise dispersed knowledge and contribute to distributed knowledge (Gee & Hayes, 2012) in these learning spaces. What is important about collaboration in these online classrooms is the way participants mobilised distributed resources to add to collective intelligence in these multimodal and multifaceted learning spaces.

Mobilising Resources

As illustrated in Vignette 5.7, the teacher mobilised resources to differentiate instruction in a Science class. The teacher directed students to different spaces to access specific resources to help extend or support learning. At the start of the class, the teacher directed Student J to page 157 of a physical textbook that they were both referring to, and shared an example that was related to ballerina dancing that would help with the student's calculation of momentum for the task. Later, while the teacher was going through the laboratory reports, she shared a link to a "difficult website" with "a lot of information" that would extend Student L's learning.

Vignette 5.8: Participants utilising dispersed knowledge and contributing to distributed knowledge in a Humanities class (Video 23: November 9)

Figure 5.10: Curated resource showing a collection of interactive maps embedded on a Google Slide

The teacher then shows a slide with a collection of interactive maps.

“Actually, I have not looked at this map. Let’s click on this (life expectancy) map and check it out.” The teacher immediately clicks on the map and engages students in discussion, drawing real data from the map, to discuss the local situation here in Angola and identifying factors that might have contributed to the low level of life

expectancy.

“Teacher, I want to say that the one we were just seeing, connects also with the one ‘Years lost due to Communicable Diseases’”

“Well done. Yes Student I. Let’s click on this one one. Does it say that about Angola?”

“Yes. All of Africa!”

The screen now shows another map. The teacher’s cursor is hovering above the African continent as she explains the data that she is seeing, pointing out the clever connection made by Student I.

The class looks at another example of a human map. Student G chooses ‘Happiness’. Immediately, the country Bhutan is mentioned. The student does not know where Bhutan. Here, the teacher says that Bhutan is North of India. As she says that, she opens up a new browser and search up Bhutan, which shows up many images of Bhuhan.

As the teacher engages the students in conversation, she also types the question directly into the browse “Bhutan - how do you measure happiness”. The teacher then looks at the first most appropriate image and explains the various factors, her cursor hovering above the different bullet-points. This discussion and sharing is

spontaneous, and very intuitive, probably the way students search up information as well. The teacher then quickly clicks back to the map th*ey were looking at Self-reported Life Satisfaction' and continues their discussion*

The literacy event described in Vignette 5.8 resolves around a talk that the participants had on maps in a Humanities class. The content in Figure 5.10 shows a collection of interactive maps which the participants used in their discussion. Mobilised by the teacher and curated as a teaching resource in the form of a *Google Slide*, these interactive maps were highly useful as they provided updated statistics and relevant data that students could use in their discussion that was specific to their local context in Angola and the continent of Africa. Depending on their interests, students also chose different maps to look at. For example, Student G was curious about the map on Happiness, and a conversation started about the indicators of world happiness. The teacher engaged students further in conversation by mobilising more resources by searching up images of Bhutan to give students a visual representation of the country, and searching up more about the national happiness index of Bhutan. Whenever students had questions, the teacher encouraged them to "Go ahead you can search it up on the Internet. It's not cheating. You can Google it. It's not cheating". Like their teacher, the students were subsequently seen searching up the Internet. Together, the participants, both the teacher and the students, mobilised distributed resources in their conversation, adding to the collective intelligence of the learning space. Figure 5.11, 5.12 and 5.13 show other examples of another teacher mobilising resources and curating them as teaching resources to support learning.

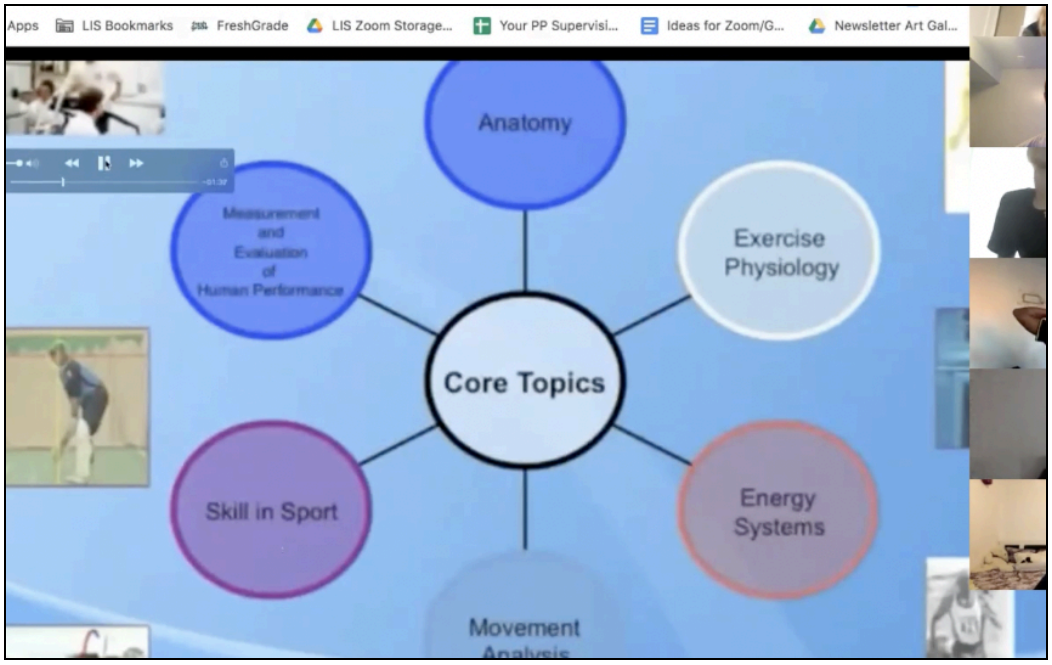


Figure 5.11: Curated resource showing Youtube videos of different exercises embedded in a Google Doc used in a Physical Health Education (PHE) class

(Video 34: November 19)

Figure 5.11 shows the screenshot of a *Google Doc* used by the teacher during a *Physical Health Education (PHE)* class. It shows a spidergram of the core topics of the unit which the teacher was reviewing. To illustrate what she was recapping, the teacher mobilised resources, *Youtube* videos of different exercises, and embedded them to the *Google Doc*. Students could also review the topics on their own using this curated resources.

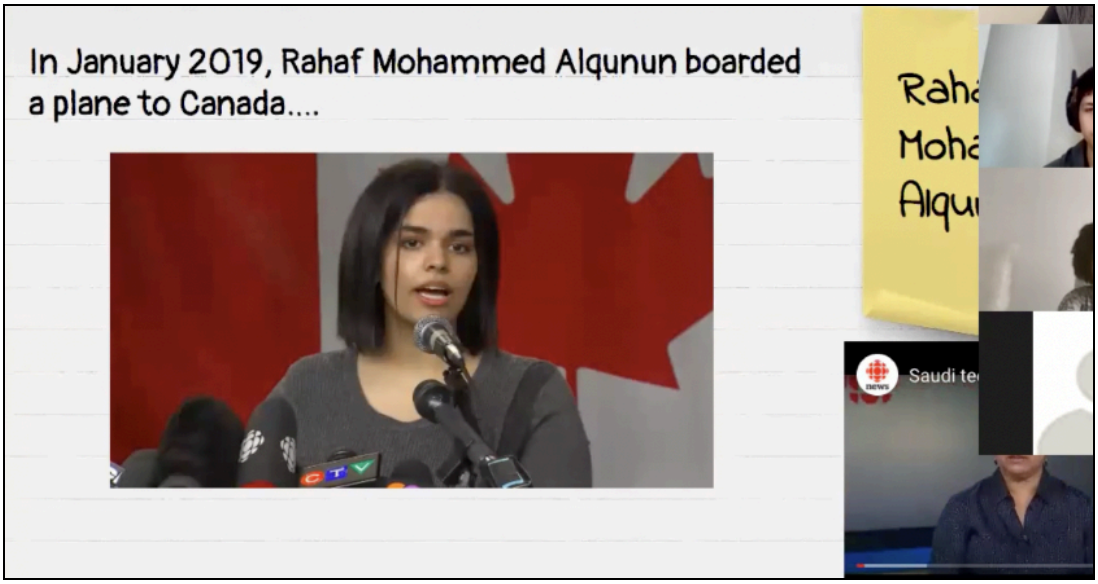


Figure 5.12a

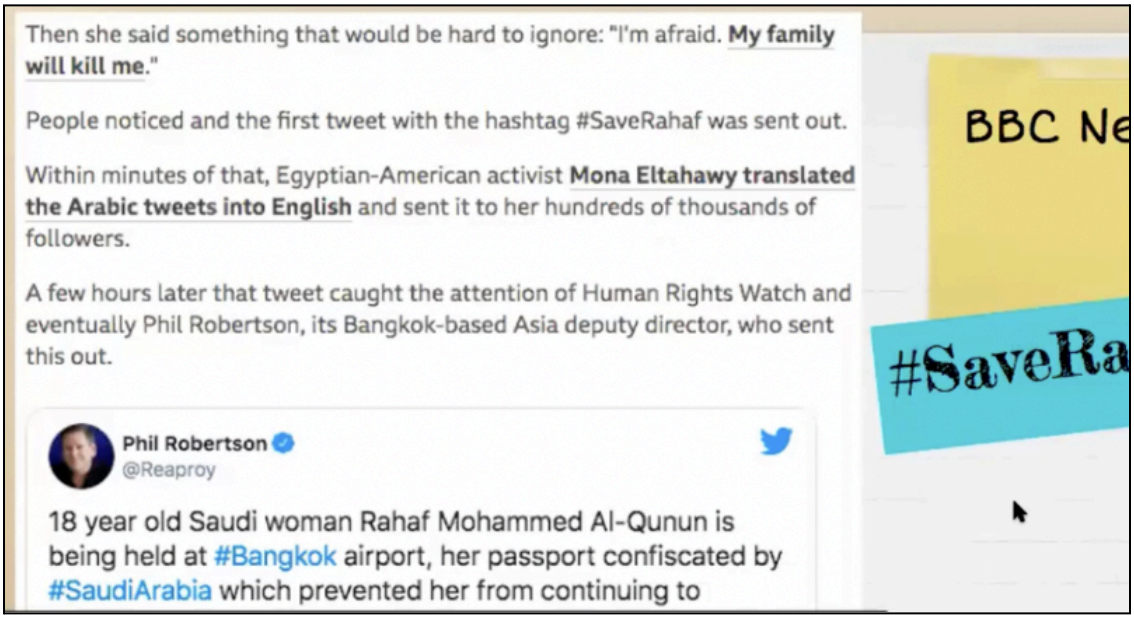


Figure 5.12b

Figure 5.12a and 5.12b: Curated resource showing news video, news article, Twitter post about Rahaf Mohammed Alqunun on a Google Slide presentation used in an English as an Additional Language (EAL) class. (Video 6: December 9)

Figure 5.12s and 5.12b are screenshots of a *Google Slide* presentation used by the teacher to introduce a unit on social media. Figure 5.12a shows a hyperlinked video of a CBC news of Rahaf Mohammed on the slideshow. Figure 5.12b shows a print screen of the *Twitter* account and *Twitter* feed of Rahaf Mohammed. The teacher curated these resources to engage students in a discussion on social media as a news source.

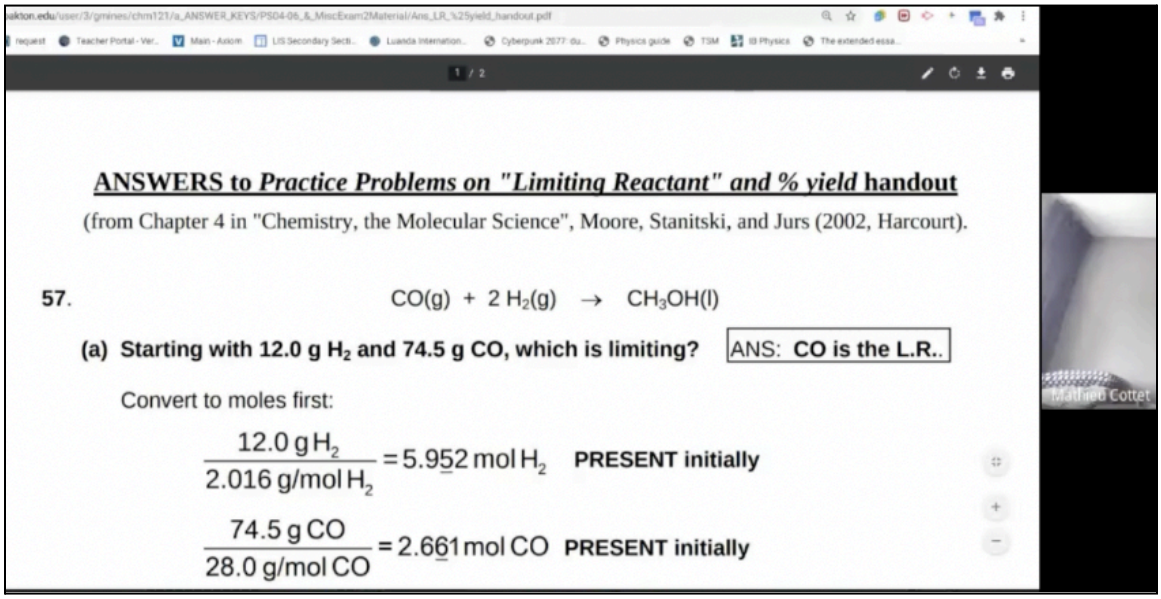


Figure 5.13a: A PDF document of a science textbook

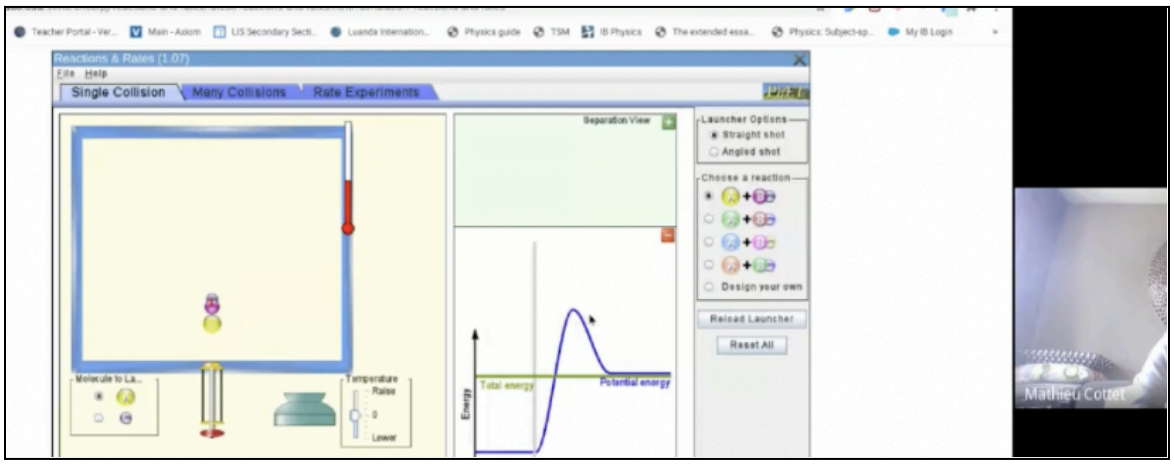


Figure 5.13b: A website with a video explanation

of the reactions and movements of molecules

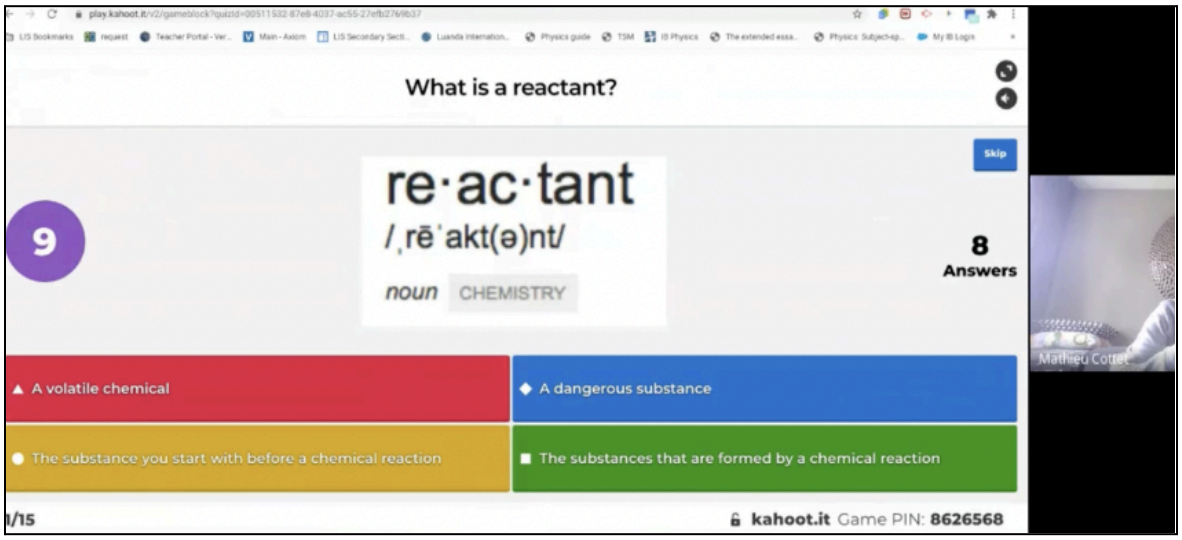


Figure 5.13c: An interactive quiz using Kahoot,

a game-based learning web-based learning platform

Figure 5.13a, Figure 5.13b and Figure 5.13c: Mobilising different resources in a Science class (Video 40: November 27)

Figure 5.13a, 5.13b, and 5.13c show the variety of resources that is mobilised by a teacher in one Science class; the teacher referred to a PDF document of a science textbook to illustrate the calculations of a practice problem, the teacher then used video explanations found on a website to explain the reactions and movements of molecules. Finally, the teacher used an interactive quiz that she created to review the lesson.

5.4 Conclusion

Through my discussion in this chapter, I responded to my first research question: *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* The chapter closely examined the participation practices that emerged in online classrooms to support learning.

Participants were observed to engage in many participation practices and regardless of their roles, whether they are students or teachers, novices or masters, the participation practices remain largely the same. However, the ways in which these practices are utilised vary. More importantly, these participation practices are more or less directly linked to the core practice of collaboration, which I identified as the core practice in these online classrooms. I identified modelling and giving feedback as two dominant practices that directly influence collaboration, and navigation of learning spaces and resource mobilisation as auxiliary practices that support collaboration. Dominant practices are essential for collaboration while auxiliary practices on their own do not result in collaboration. I developed a conceptual model, shown in Figure 5.14, as a framework to summarize and illustrate how these five participation practices operate and interconnect within online classrooms.

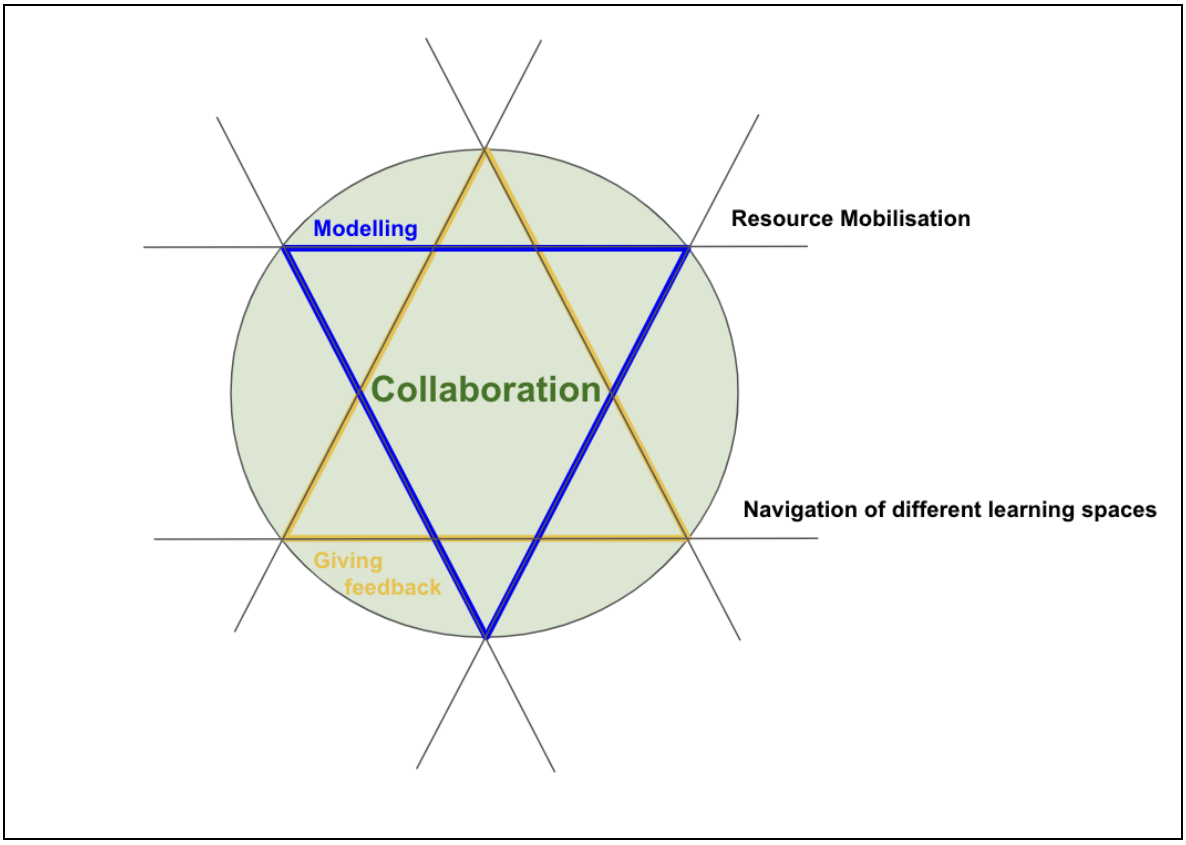


Figure 5.14: Model of Participation Practices in Online Classrooms

Collaboration as the key practice; modelling and giving feedback as dominant practices; navigation of learning spaces and resource mobilisation as auxiliary practices.

The green circle in Figure 5.14 denotes the learning space of an online classroom. Everything that one does in the circle influences collaboration, the core practice of these online classrooms. Because the teachers and students have different expertise and experience, they participate differently in these online classrooms.

The two dominant practices that directly influence collaboration are modelling and giving feedback which are represented by the blue and yellow triangles respectively. These

dominant practices are ways in which participants interact and engage with one another and are essential for collaboration in these learning spaces. The blue triangle represents practices relating to modelling, while the yellow triangle represents practices related to feedback. Positioned directly opposite each other, the triangles highlight the distinction between these practices while emphasising their equal importance. The differing directions of the triangles' lines represent the various routes in which participants can engage in these practices. Together, the two triangles form a star, illustrating how these practices frequently overlap, as shown in the model. As leadership is porous and flexible, everyone can be a resource and can step up to model and "show how things are done". In these learning spaces, participants take on reciprocal roles and actively use feedback in their collaborative efforts with one another.

The two auxiliary practices that support collaboration are the navigation of learning spaces and resource mobilisation. These auxiliary practices are ways in which participants access and act on resources in these learning spaces. On their own, auxiliary practices do not result in collaboration. Represented by the lines that run across and extend out of the circle, these practices are fundamental to online learning but auxiliary to collaboration. As illustrated in the model, there are various ways to access distributed resources and they go beyond the learning space of the online classroom. These lines also overlap with the blue and yellow triangles to demonstrate how they support these dominant practices in promoting collaboration. The affordances of the digital environment have given participants the ability and ease to navigate different learning spaces and mobilise distributed resources to add to collective

intelligence in collaborative work. Ultimately, what is important about collaboration in these online classrooms is the way participants mobilised distributed resources to add to collective intelligence in these multimodal and multifaceted learning spaces.

Chapter VI: Collaboration by Design

The chapter continues to explore what learning looks like in online classrooms. In Chapter Two, I conceptualised online classroom spaces as "affinity spaces" to enrich my discussion on school learning and push our research in more fruitful directions by expanding the walls of affinity spaces to include formal schooling environments. In the preceding chapter, I discussed participation practices that emerged in online classrooms and identified collaboration as the core practice in these learning spaces. This chapter addresses my second research question: *What do the literacy artefacts reveal about the design grammar of these online classrooms?* In this chapter, I argue that literacy artefacts have meanings that are specific to a particular semiotic landscape. In this particular context, literacy artefacts are coded by participants through their interactions with meaning that is specific to the context of online classrooms. For example, we expect some of these literacy artefacts to be hyperlinked documents, multimodal resources, and collaborative products because of the recognisable content and participation practices that we have over time come to associate with these learning spaces.

Online classrooms are learning spaces designed for collaborative learning. They did not happen by chance but were created for a purpose and later shaped by feedback gathered over time from ongoing interactions by participants in these learning spaces. I adopt Gee's terminology of design grammar (2003) to emphasise that these elements that we have come to associate with online classrooms were "designed by someone" (p.32). The concept of design grammar was introduced earlier in Chapter Two. Design

grammar provides a useful method for deconstructing a design into its component parts and analysing how they fit together to create meaning. Design grammar can thus be used to understand not only the structure of the literacy artefacts, but also the ways in which individuals use and interact with them. This chapter looks at an array of literacy artefacts that capture or show the facilitation of the core practice of collaboration. By examining the design grammar of these artefacts collected from the online classrooms, I hope to gain insight into the ways organisational and compositional elements work together to enable collaboration in this learning environment.

This chapter is divided into four sections. The first section examines the external design grammar of these online classrooms to understand how the setup of these learning spaces facilitates collaborative work among participants. The second section looks closely at the internal design grammar of these online classrooms, the types of content generated in these learning spaces; what they revealed about the participation practices, and how they contribute to collaboration. The third section explains portals as the key defining feature of the design grammar of online classrooms.

6.1 External Design Grammar

When examining online classrooms as affinity spaces, the primary setup and configuration of these online classrooms as collaborative learning spaces are attributed to the external design grammar. External design grammar affects the operation of these online classrooms; without which, individuals would not be able to connect from different physical loci to participate in literacy events and engage in common practices. In

Chapter Five, I asserted that the external design grammar of these online classrooms is a prerequisite for fostering collaboration. The external design grammar of these online classrooms leverages the affordances of online spaces to enable the potential for collaboration. However, it is essential to note that the mere existence of the external design grammar does not guarantee collaboration. While it creates the conditions necessary for collaboration to occur, the actualisation of collaborative efforts depends on various factors beyond the structural setup alone.

In the virtual world of computer games, gaming platforms, handheld controllers, and hard drives constitute what Gee (2003, p.33) refers to as the external design grammar. The external design grammar enables gamers within the same affinity space to interact with others and engage in similar practices without being physically present. Similarly, in online classrooms, external design grammar consists of technological platforms like learning management systems, interactive websites, and video meetings. Because of the external design grammar, participants can come together in these learning spaces and engage in collaborative practices. While the external design grammar appears to primarily comprise technological aspects and serves as a virtual infrastructure, it is this setup that promotes a particular way of working among the participants in these learning spaces (Ibid.). External design grammar sets up these online classrooms as affinity spaces, enabling collaborative engagements among the participants.

All the video data used in this study were recorded using *Zoom,* a video communication platform. These videos show the lessons that took place in these online classrooms.

Teachers used *Zoom* as the primary tool to connect with all their students. *Zoom* meetings were used for synchronous participation. For each lesson, participants gather every other day on this platform in this online classroom and engage in communication for at least 45 minutes together. Participants could access these online classrooms from anywhere in the world using a computer and an internet connection. As seen in Vignette 6.1, lessons in these online classrooms typically started with the teacher waiting for students to show up in the *Zoom* meeting and checking in with them. Irrespective of where they are and the time zone, participants could connect and gather in an online space together. The interaction between the teacher and the students appeared natural and fluid, and there was ease of communication among the participants. Even though the participants were physically apart, there seemed to be little sense of distance on screen, as the interactions somewhat mirrored those in a physical classroom setting.

Vignette 6.1: Teacher welcoming students at the start of a lesson in a Zoom meeting of a humanities class (Video 22: November 2)

The image of the teacher fills the screen.

The teacher's face lights up and a big smile appears on her face when she hears a loud and cheery "Hello" from Student M who pops into the screen. They spoke briefly about how their day went.

At this point, other students are beginning to pop into the Zoom meeting. The teacher welcomes each student with a big smile and a wave, and addresses each by name.

As they joined, they acknowledge the teacher. Some students unmuted their microphones, saying “hi” and “how are you”, some engaging in a short interaction with the teacher. Others just waved and smiled. The immediate on-screen acknowledgment feels personable, welcoming and relaxing. The teacher was in the UK, and there were students joining from different parts of the world, Angola, Columbia, South Africa and Russia, to name a few. The interaction among the teacher and the students seem natural, with no felt distance on screen.

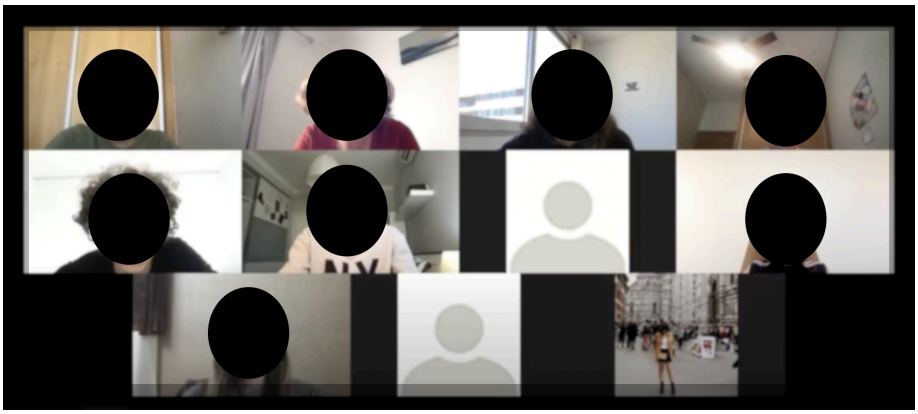


Figure 6.1: Participants gathering on a Zoom meeting for a humanities class (Video 22: November 2)

22 minutes into the same lesson, after the teacher had completed her direct instruction, the teacher said, “I am going to put you into breakout rooms in awhile so you can be with your friends and talk.” In those breakout rooms, the students were tasked to generate individual statement of inquiry, discuss their sentences and choose the best statement to share with the class. As they worked in their assigned breakout rooms, the teacher joined the different groups to check in on their progress (Vignette 6.2).

Vignette 6.2: Breakout rooms in the Zoom meeting of a humanities class (Video 22: November 2) This is the same lesson as above; students are now working in groups in different breakout rooms.

The teacher joins another breakout room. Students are seen happily chatting. The teacher joins in for a few moments, and then refocuses the group. Student D shares the group's idea, which is positively received by the teacher. The teacher again shows much enthusiasm, praises the group for their work together, and reminds them to share their idea with the class when they are back in in the main room in awhile.

The teacher then joins another breakout and invites the students to share. Student M begins, giving a summary of their discussion and then said, "It seems like we kind of shifted towards mine. I will send it to you, privately, in the chat."

The teacher reads aloud the idea, squints her eyes as she thinks about it, and proceeds to nodding her head, "Yes it does work. Wow, it's quite a complicated sentence, took me awhile to process it. Yes, I like that. There obviously was an alternative one since you said yours won the competition that sort of thing. What is the other one that you've got? Can somebody else post it in there for me?"

Student N responds, "Ya, it was mine. I would just, I would just...Well, Student L also have one, so...Student L, you should send yours too right?"

Student L then adds, "Mine was not fully developed, but ya."

Student N quickly adds, “Oh, sorry, sorry sorry, my bet.”

The teacher reads Student N’s idea aloud, nods her head, “Yup, good. Which one do you like better, Student N? Yours or Student M’s?

“I like Student M’s more. I guess,” replies Student N.

The teacher responds, “Ya, of the two, Student M’s seem to flow a little better. But yours is just as good. Can I ask all of you, when we get back to the main room, to post the one that you like best as a group into the chat, ya?”

The teacher returns to the main room and waits for all the students to return to the main room. The students from the previous discussion have also returned.

As seen in Vignette 6.2, *Zoom* does more than just provide a virtual meeting space for the participants in these online classrooms to gather. *Zoom,* with its breakout room function, creates more opportunities and enables more possibilities for collaboration. In the humanities class, the participants were assigned to small breakout rooms to work on a specific group task. They had to first generate individual statements of inquiry, then discuss their sentences, and finally choose the best statement to share with the class when they return to the main *Zoom* meeting. Participants in the first breakout room seemed highly efficient; by the time the teacher checked in with them, they appeared to have finished their task and were chatting casually with one another. They also had their

statement ready to share with the class. In the other breakout room, the discussion was still ongoing among the participants when the teacher joined them. In addition to the opportunities created by the video conferencing discussed thus far for collaboration, the utilisation of the chat function on *Zoom* to facilitate more collaboration is now evident. Rather than reading it aloud, Student M communicated the sentence to the teacher for feedback via the chat function, “I will send it to you, privately, in the chat.”. Subsequently, the teacher also requested another sentence to be shared using the same mode of communication, “Can somebody else post it in there for me?” Here, the teacher supported the negotiation of ideas but all participants, including the teacher, collaboratively contributed. At the end of the class, all participants reconvened in the main *Zoom* meeting to share the outcomes of their collaboration.

Vignette 6.3 shows a *Zoom* meeting of a drama class. In this lesson, the teacher was introducing the assessment task of the unit. The teacher then puts students into breakout rooms to discuss what they would like to work on for this assessment task. At the beginning of the vignette, the teacher referred to the *Google Classroom*, and directed the students to resources that were shared on this platform, “Criterion A is here…and you can see the objectives of the task here”. In the video data of all these online classrooms, teachers regularly refer to *Google Classroom*, which is the learning management system utilised by the school for teaching and learning. The teachers created these *Google Classroom* for each of the classes they teach and enrolled their students accordingly. In *Google Classroom*, the teachers can post and distribute learning materials, create platforms for discussion, assign and evaluate tasks, and

provide feedback, all of which are essential for fostering collaborative work. Unlike the utilisation of *Zoom* meetings for synchronous participation, *Google Classroom* was set up for asynchronous participation and as the key portal for housing resources.

Vignette 6.3: Using Zoom meetings and Google Classroom in a drama class (Video 14: December 6). The teacher is checking out a new feature on Zoom that enables participants to select their breakout rooms, showing how the external design grammar affects the practices of the participants and vice versa.

The teacher shares her screen to show the post on *Google Classroom,* "You can see your Google Classroom on my screen right?" The teacher stays on the page and points out a few important documents, "Criterion A is here…and you can see the objectives of the task here", her cursor moving along as she speaks. The teacher clicked on an assessment task sheet. The screen now shows the assessment task sheet. The teacher continues to explain the information on the task sheet. As she speaks, her cursor is seen moving along, highlighting the relevant sections as she scrolls down the document. When the teacher is done with the explanation, she said, "What I will do now is…I will put you into breakout rooms. Ahemm..I will do it randomly for now, and see if people want to change later. Okay, so…"

"Teacher…" Student I asked.

"Yes Student I?" The teacher responded.

“There is a new command on *Zoom* that you can let people choose their breakout rooms.” Student I shared.

“Okay, how do you do that?” The teacher asked, curious.

“Like when you choose breakout rooms, you have options. I mean, did you update?” Student I continued.

The teacher, now looking intently at the screen, speaking aloud as she checks out the new function, “Allow participants to choose rooms. Okay, this is interesting. This is kind of fun! Ok, I will allow you to choose rooms, see how this works. If I feel that this is not working, for whatever reason, I will change the grouping. Okay, I am going to open all rooms..cool… choose your groups. You can discuss, tell one another what you want to do.”

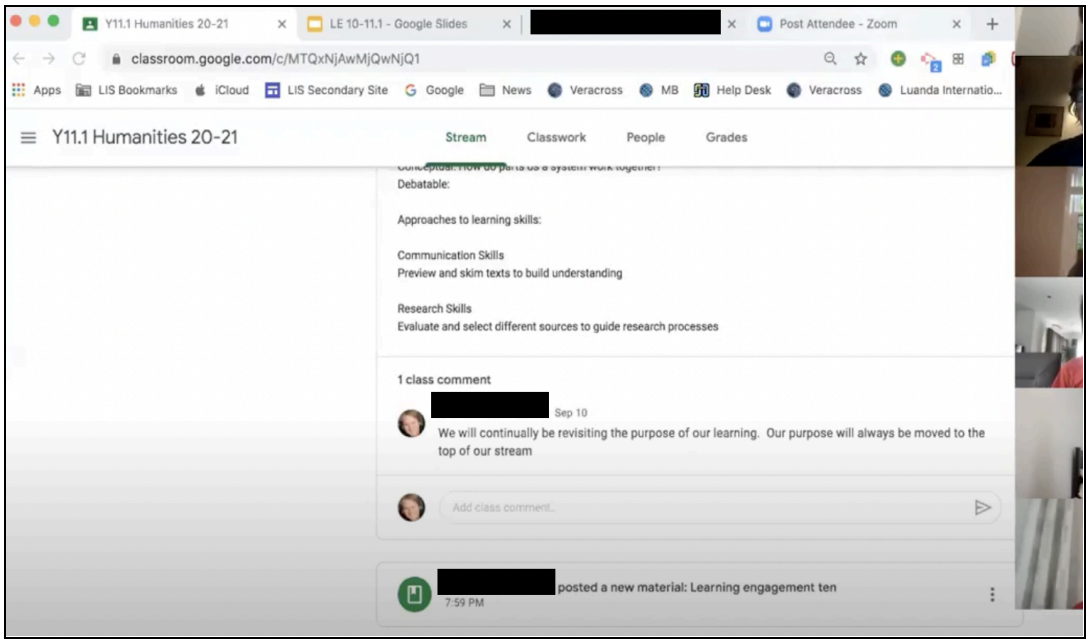


Figure 6.2: Use of Google Classroom in a humanities class (Video 24: December 4)

As observed in these online classrooms, G*oogle Classrooms* and *Zoom* meetings constitute key components of the external design grammar of these learning spaces. The utilisation of *Google Classrooms* and *Zoom* meetings ensures efficiency and consistency in the system of the school and an overall smooth running of the online lessons. Participants could join these online classrooms from either portal, but engaging on both platforms allows for fuller participation. *Google Classroom* was updated regularly with new materials to reflect the lessons that were taught (Figure 6.2). Participants could access these resources, which included the recorded *Zoom* meetings, whenever they wanted to and wherever they were. Participants could also post and respond to comments directly on the posts. *Zoom* meetings allowed participants to come together to occupy a common learning space, while also encouraging additional collaborative possibilities through breakout rooms. Both

platforms form the basic setup and configuration of these online classrooms, the external design grammar, which is essential for collaborative practices among the participants in these learning spaces.

Designers have created online platforms such as *Zoom* video conferencing and *Google Classrooms* primarily to ease online communication, with the latter specifically designed to support online learning. These platforms constitute an integral part of the external design grammar within online classrooms. The evolution of these platforms, however, is influenced not only by the designers but also by the ongoing social interaction among their users (Gee, 2003, p.32). As highlighted in Vignette 6.3, the updated version of *Zoom* mentioned by Student I introduced a new feature enabling participants to select their breakout rooms, thereby fostering greater autonomy in collaborative work. This evolution reflects the active role of participants in shaping the external design grammar of these affinity spaces, which will in turn, affect the practices of the participants.

In addition to *Google Classroom* and *Zoom* meetings, the external design grammar of these online classrooms also includes *Google Docs, Google Slides, Google Extensions* like *Talk and Comment*, and other web-based learning platforms like *Kahoot* and *Padlet* where participants could be added as a “viewer”, “commenter” or “editor” (Figure 6.3) or added as “collaborators” for collaborative work. Unlike *Google Classroom* and *Zoom* meetings whose primary function was to host resources and gatherings, these others functioned as content generators where participants could act on and interact with content related to the subject matter of the various classes. The external design

grammar establishes the learning environment and also provides the tools for collaboration among the participants in these online classrooms. There was extensive use of *Google Docs* and *Google Slides* in these online classrooms, where participants co-construct content together. This idea of co-constructing content will be discussed in the later sections of this chapter on the internal design grammar of online classrooms.

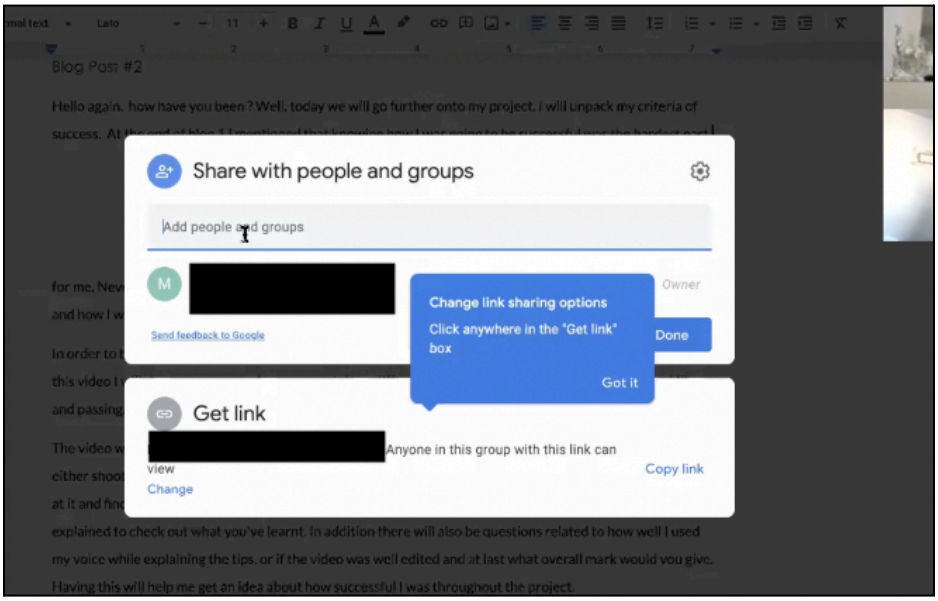


Figure 6.3 Use of Google Docs to facilitate collaboration among participants in an English as Additional Language class (Video 3: November 10)

Figure 6.3 shows the sharing options available to users of *Google Docs*. They have the choice to either directly include an individual by typing their name, which prompts their email address to appear or generate a link to share with others. In this instance, the student intended to share a draft of their blog post with their teacher to seek feedback and was about to type in the name of the teacher. Once added to this *Google Doc,* the teacher would then be able to post comments or directly edit the text. Figure 6.4

illustrates an example of such collaborative contribution by the teacher in a physical education classroom. The text highlighted in yellow shows the sections that the teacher is commenting on, and instead of typing the comments, the teacher recorded voice notes using *Google Extension Talk and Comment.* In these multimodal learning spaces, participants have different choices in the way they act and interact with content in these online classrooms which enhances collaboration opportunities. Figure 6.4 also shows participants in a *Zoom* meeting. The teacher was reviewing the comments made on the student's work. The multiple open tabs at the top show different *Google Docs* that belonged to different students. While the use of a *Zoom* meeting enabled all participants to see the various texts used during this literacy event, the utilisation of *Google Docs* and *Google Extension Talk and Comment* allowed the teacher to navigate different learning spaces efficiently to interact with their content and generate more content that was related to these texts.

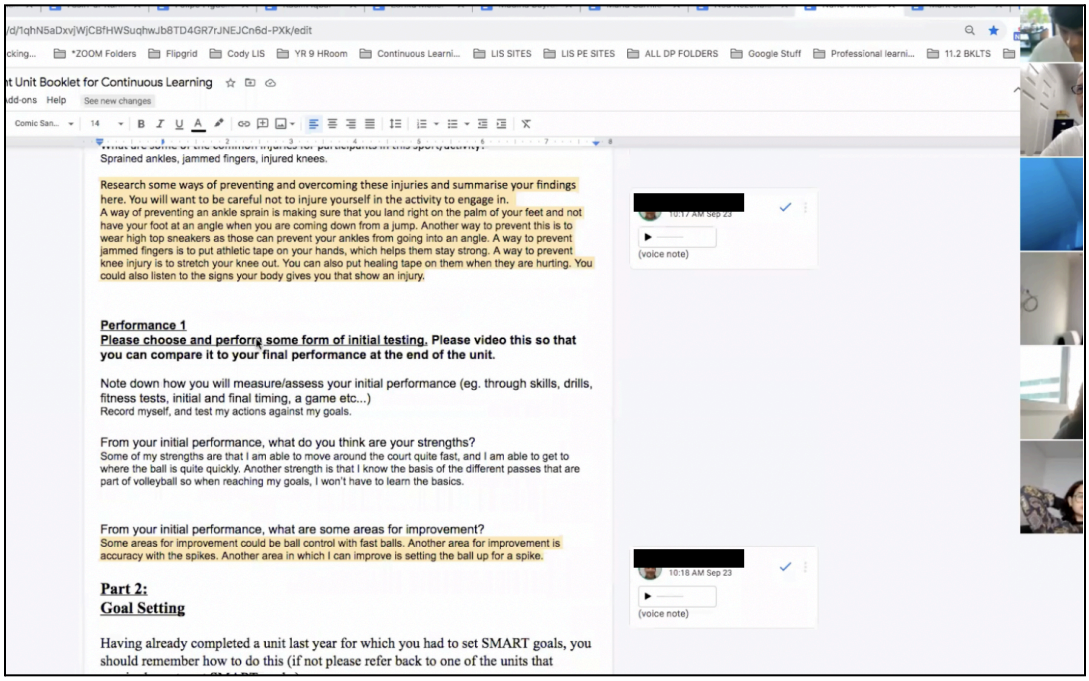


Figure 6.4: Using Google Doc and Google Extension Talk and Comment to enable feedback practices among participants in a Physical Health and Education class (Video 32: October 8)

Vignette 6.4: The use of two different types of video discussions, Zoom and Flipgrid, in a Physical Health Education class. (Video 35: November 26). Students leave the Zoom meeting to join Flipgrid, where they watch prerecorded videos and recorded video feedback for their peers. They return to the Zoom meeting when the peer feedback activity is done.

The students have all returned from the breakout rooms and reconvened in the main *Zoom* meeting. The teacher does a head count, nods her head, and continues, “As I mentioned at the beginning of the lesson, there are three parts to this task that I will be giving you a formative grade on: your plan, which should be in the booklet, your reflection video, and the feedback videos you record for your friends. Look into the booklet at the bottom, you will see that it mentions that making Flipgrid videos regularly is part of Criterion B. Again this is formative, not a summative. They should not stress you out, just a way to encourage regular exercise.”

The teacher stops talking but appears focused on her screen, and then she smiles, “Student N, you have eight views! You are very popular! You should consider a *Youtube* channel” [Student N can be seen laughing. A few others nod approvingly, also laughing.] “What it means,” the teacher continues, “is a bunch of you actually went in and watched her videos, which is what a lot of you have done, but some of

you have not made one yourself. So…don't be shy, ok. It's actually really nice…to look at friends' videos. I would like to encourage comments, something like 'keep up the good work', 'keep up the good stuff' so that we can have a community and encourage each other to exercise, work out and try to achieve our fitness goals regularly."

"So action items!" The teacher changes her tone, sounding more serious. "One, some of you need to ensure that your plan is in your booklet. Two. some of you need to record your *Flipgrid* videos. Three. If you have the plan and your video, please watch a few videos and leave some comments, at least two…Today, hmmm, I am going to keep us all together here. Hmmm, can you make a *Flipgrid* video while you are on *Zoom*? [Student M shakes her head]. No? OK. Then let's do that. Since we can't use videos in two different apps, you will leave and come back, leave and come back. Ok? Ten minutes will be enough time."

Student J put up her hand. "Yes, Student J?"

"You said to leave comments. But must it be a video comment? Can I just type my comments? Student J asks.

"Excellent question, and thank you for reminding me." The teacher goes on, "Differentiation! If you would like to leave a video comment which is quick and easy, go ahead. But if you prefer to leave a written comment, which you can do so now on

Flipgrid, you can do so as well." The teacher shows two thumbs up. "Thank you, great question. [Student J smiles.] Any more questions? If not, see you in ten minutes." Students all leave while the teacher remains in the *Zoom* meeting.

Vignette 6.4 illustrates the use of two web-based tools for video discussions in an online classroom. This particular lesson focused on peer feedback. Following the teacher's instructions for the peer feedback activity, students were encouraged to log out of *Zoom* and transition to *Flipgrid* because "we can't use videos in two different apps". There, they first watched pre-recorded videos posted by their peers, and then recorded their own video feedback for their peers. They could also leave a written feedback. In this instance, *Zoom* served as the platform for hosting the online classroom, fostering collaboration through synchronous communication, while *Flipgrid* acted as a content creation tool where participants generated videos for asynchronous communication. The external grammar design not only facilitated collaborative work among participants but also influenced the ways in which they engaged with the texts.

The above analysis of the external design grammar of online classrooms reveals two salient features of their design as learning spaces that facilitate collaboration among participants. Firstly, the capacity of these learning spaces to serve as hosts for gatherings and resources stands out as a fundamental element. The structural design enables the facilitation of interactions and engagements essential for collaborative learning. Secondly, the ability to generate content within these online classrooms emerges as pivotal. This aspect encourages active participation, allowing individuals to

contribute, create, and share texts, thereby enriching the collaborative process. In order for these online classrooms to function effectively to enhance collaborative participation, the external design grammar must have the capacity to host resources and gatherings, and to generate content.

6.2 Internal Design Grammar

Unlike external design grammar which concerns the setup and configuration of these online classrooms, internal design grammar looks at the content that is shared and acted upon by the participants in these learning spaces, and how it contributes to the overall meaning and functionality of these online classrooms.

This section closely examines literacy artefacts that capture or show the facilitation of the core practice of collaboration in these online classrooms. The contents of these literacy artifacts offer insights into the internal design grammar of these learning spaces. They reveal how participants design their content to collaborate effectively within these learning spaces. These artefacts shed light on the ways in which participants engage and collaborate with one another in these online classrooms.

These online classrooms are generally strong generators of shared, multimodal content, and the content is typically specific to the subject of different classes. From the analysis of my observation, there are three categories of shared content deployed by participants in these learning spaces: created content, curated content, and co-constructed content, which I will provide examples of and go into more discussion in the following sections. I

define created content as content produced by the participants specifically for use in these online classrooms. I define curated content as content selected and gathered from other sources, and composed for use in these online classrooms. I define co-constructed content as content collectively transformed by different participants for use in these online classrooms.

6.3 Created Content

There were different types of created content used in these online classrooms. In general, there was the use of text-heavy created content to deliver instructional information, the use of graphic-heavy created content for demonstration, and the use of interactive created content to promote independent exploration.

The most common type of created content was produced by teachers to deliver the subject content and provide written instructions for their lessons (Figure 6.5a, Figure 6.5b, and Figure 6.5c). This type of created content was commonly created on G*oogle Docs* and *Google Slides.*

This type of created content was used regularly and composed ahead of time to present fresh content to the class every lesson. Examples of such content include an outline of a unit, an overview of a lesson, or detailed instructions for a task. Designed for the purpose of delivering information clearly and efficiently, such created content tended to be text-heavy and basic in design, with little consideration for its aesthetic appeal (Figure 6.5a). In terms of graphology, the use of bold, underlining and italics was

common and used to separate content or add emphasis (Figure 6.5b). Bulleted and numbered lists were also common visual features. The use of other visual elements was minimal; when used, they served to illustrate the meaning of the written text. For example, the teacher used the idea of a “temperature gauge” to communicate the timeline of the given task. On the slide, the teacher included a supporting image of the thermometer (Figure 6.5c).

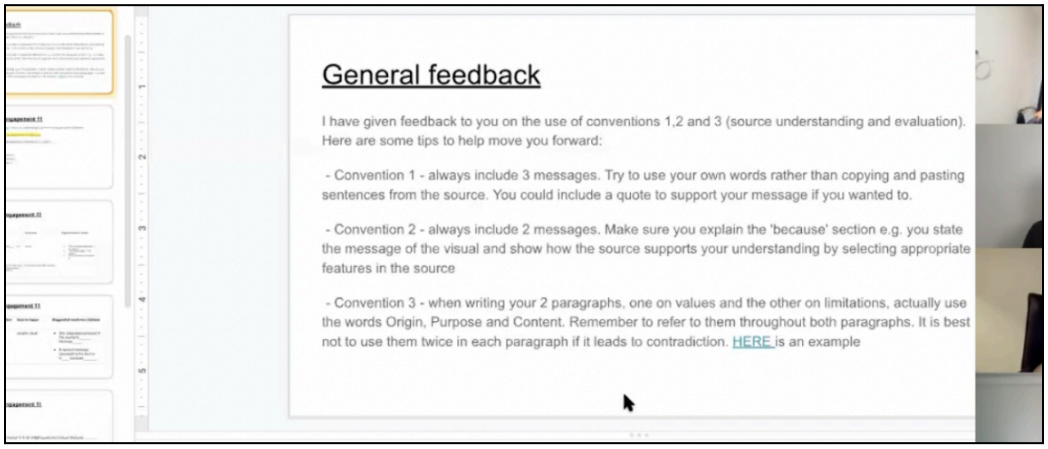


Figure 6.5a: Created content that is text-heavy and basic in design. Produced by a teacher using Google Slides for classroom instruction in a humanities class (Video 20: September 29)

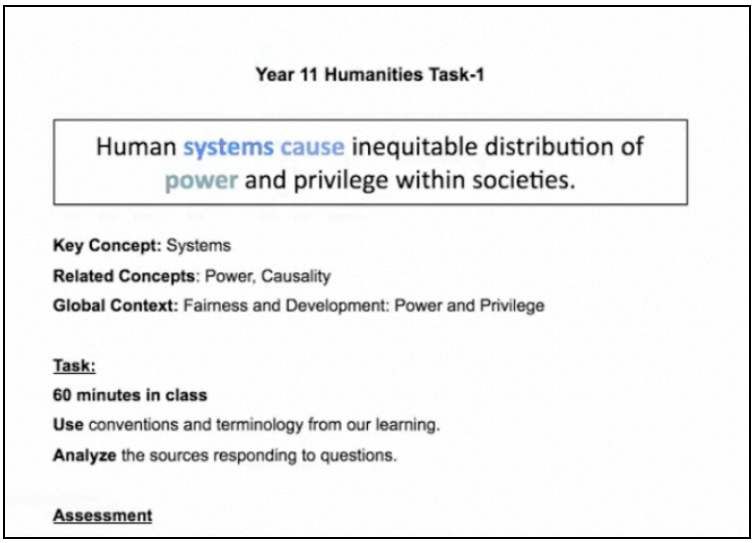


Figure 6.5b: Created content with attention to graphology techniques such as bolding and colour to emphasise specific details on the document. Produced by a teacher using Google Docs as part of unit information and resource in a humanities class (Video 19: September 25)

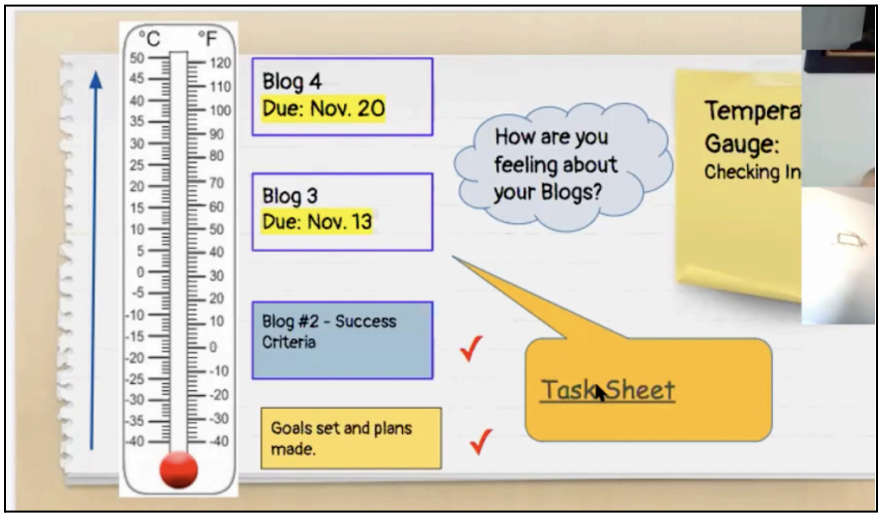


Figure 6.5c: Created content with accompanying images to illustrate the meaning of the written text. Produced by a teacher using Google Slides in an English as Additional Language class (Video 3: November 10)

Another common type of teacher-created content observed in these online classes, particularly in mathematics and science classes, is seen in Figure 6.6a and Figure 6.6b. This type of created content was produced during the duration of the lessons to "show" what was being said. These literacy artefacts show the workings of a mathematical problem, written down as the teacher was explaining how to solve the mathematical problem. The teacher composed the content as the lesson progressed, typing or digitally handwriting what was being demonstrated. Produced simultaneously, this type of created content was graphic-heavy and showed the use of different visual elements such as coloured typeface, bullet points, vectors, tables, and symbols to elucidate the explanation process.

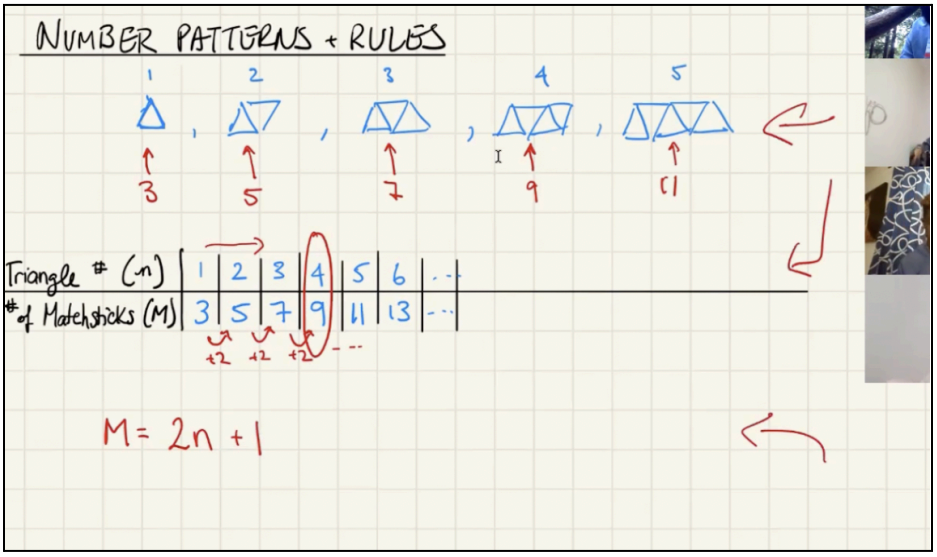


Figure 6.6a: Created content that is graphic-heavy and produced instantaneously by a teacher in a mathematics *class, and showing the use of visual elements such as colours, vectors, and symbols. (Video 26: September 6)*

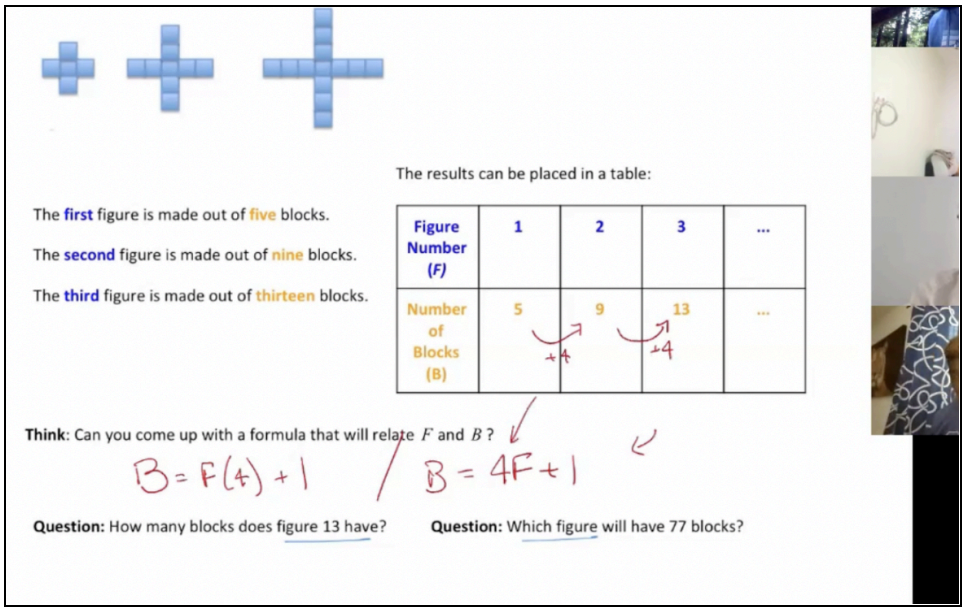


Figure 6.6b: Created content that is produced instantaneously and superimposed on another text by a teacher in a mathematics *class. (Video 25: September 2)*

The third type of teacher-created content observed in these online classes was designed to engage student participation in an independent activity. The *Kahoot* quiz shown in Figure 6.7a and the *Escape Challenge* shown in Figure 6.7b are examples of such interactive teacher-created content. The interactive quiz (Figure 6.7a) was created by a teacher using *Kahoot*, a game-based learning web-based learning platform, and used at the end of a science class to review the lesson. The interactive *Escape Challenge* activity (Figure 6.7b) was created by a teacher using *Google Slides* to introduce an inquiry project. Designed as an "Escape Room", a puzzle game, participants were required to work together in teams to complete a mission (escape the room). To promote collaboration among the participants, this created content was embedded with other teacher-created content to provide further directions for the

Escape Challenge activity. There were written clues to the game, a set of task instructions for the game, and an audio clip recorded by the teacher:

> Dear Year 11 students, I fear for you, and I sincerely hope that this letter gets to you as I do not wish for you to share the same fate as me, trapped in this purgatory state, doomed for the rest of eternity. So listen carefully if you want to escape. Enter this door and you will find a set of clues for six keys. Stay close together and help one another out. Do not give up. Leave no one behind. Together, you can escape. Be brace. Good luck. Stay safe.

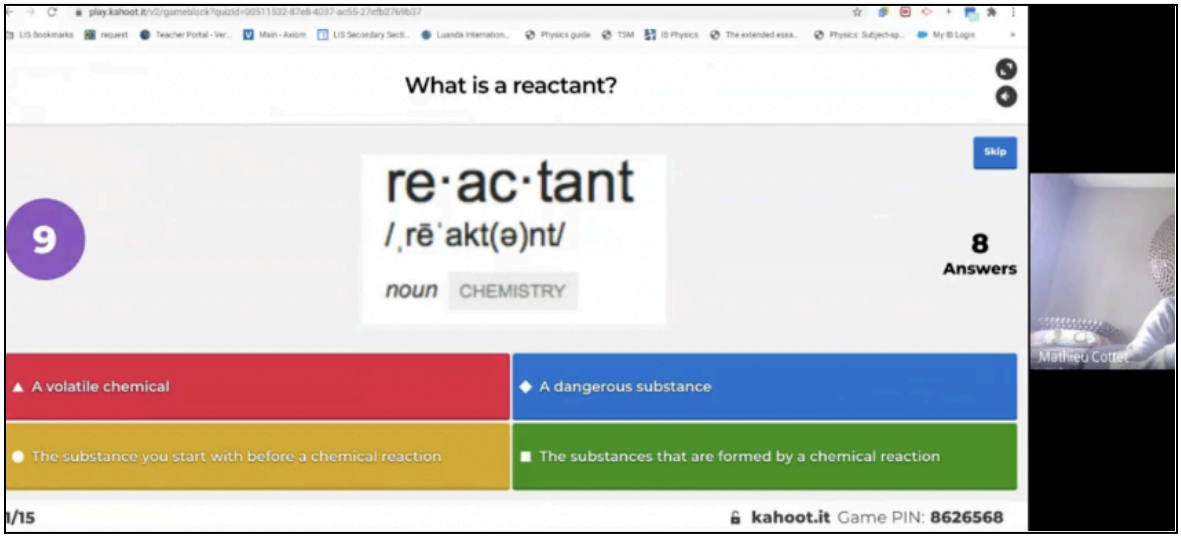


Figure 6.7a: Interactive created content that is produced by a teacher using Kahoot, a game-based learning web-based learning platform, in a Science class

(Video 40: November 27)

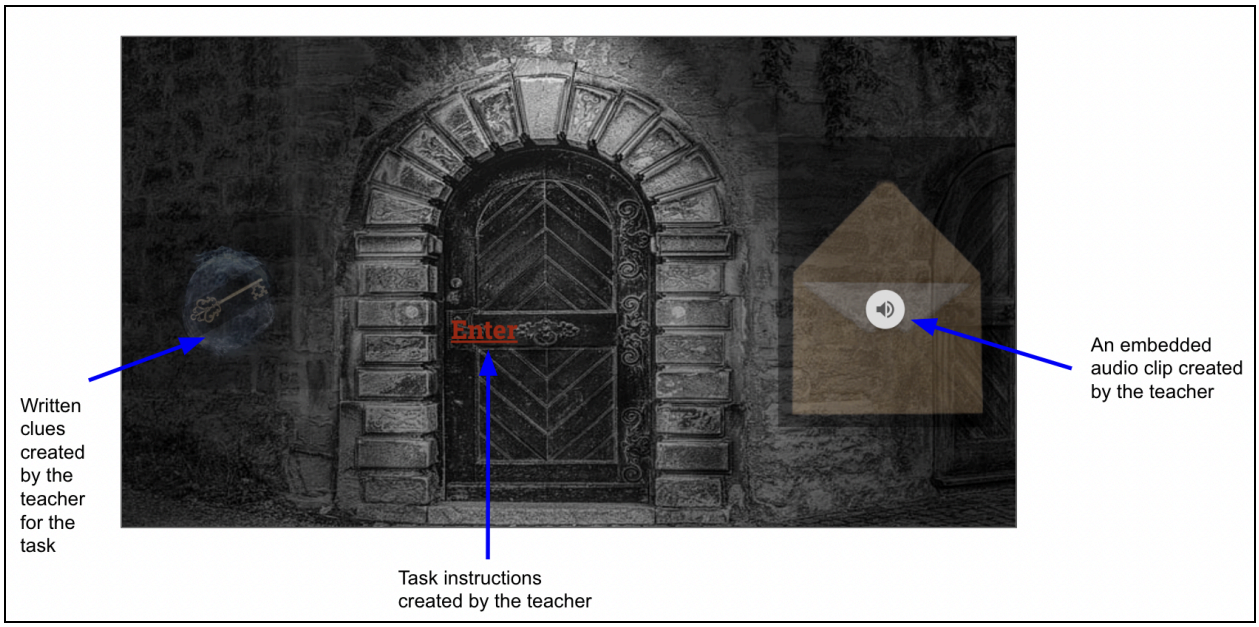


Figure 6.7b: Interactive created content that is produced by a teacher using Google Slides in an English as an Additional Language class (Video 2: October 4)

Students also created content as they participated in these online classrooms. This participation will be examined more closely in the next chapter where I discuss participation as a form of learning through Learning by Observing and Pitching (LOPI) introduced by Rogoff (2008). Through active participation in these online classrooms, participants acquire the literacies relevant to their tasks.

Depending on the task assigned, the content produced by students could be graphic-heavy (Figure 6.8a) or text-heavy (Figure 6.8b). These literacy artefacts show participants utilising both intensive subject-specific content and extensive, more generic skills to produce this content. In this *English as an Additional Language* class, students were engaged in an inquiry project. In both cases, the students were tasked with

composing written reflections on their research process and delivering an oral presentation of their completed projects. Beyond the conventional receptive and productive skills utilised in a language learning class, students had to employ supplemental, broader and more generic skills, like using different digital tools to design a model (Figure 6.8a) and build a blog page (Figure 6.8b). The close examination of created content offers insights into the internal design grammar of these online classrooms. These learning spaces provide participants with more choices, encouraging autonomy in the application of both subject-specific and generic skills.

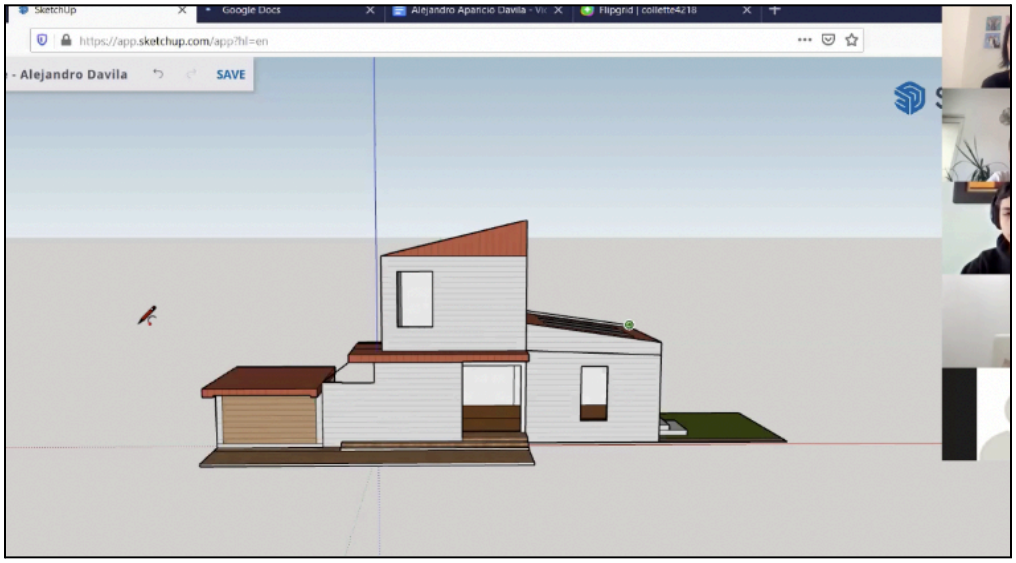


Figure 6.8a: Created content that is graphic-heavy, a model produced by a student using Google Sketchup in an English as an Additional Language class (Video 4: November 24).

Figure 6.8b: Created content that is text-heavy, a blog post produced by a student using Google Sites in the same English as an Additional Language class as above (Video 4: November 24).

6.4 Curated Content

The second category of content observed in these online classrooms was curated content. Selected and gathered from other sources, these resources were sourced and put together by the participants for different purposes. The most common type of curated content was produced by teachers to share credible resources related to the subject content they were teaching. This type of curated content was commonly created on *Google Docs* and *Google Slides* with hyperlinked resources. Figure 6.9 illustrates a *Bitmoji* classroom, an interactive learning space created using *Google Slideshow*. Students could access different resources that were hyperlinked to this *Bitmoji* classroom; they could access the school-published curriculum, their *Google Classroom*,

their digital class library, websites of different online magazines, and the website to a writing contest.

Figure 6.9: A Bitmoji classroom with hyperlinked resources, showing curated content produced by a teacher using Google Slides in an English Language and Literature class. (Video 7: October 23).

Figure 6.10 shows a video explanation sourced from *The Economist* used on a *Google Slides* for a Humanities class. The composition of this literacy artefact shows consideration of typographic hierarchy, emphasising important information by giving it greater prominence. In this case, the students' focus is directed towards prominently displayed red bar graphs, a hyperlinked image occupying more than half of the slideshow. This image is hyperlinked to a video explanation sourced from *The Economist.* The rest of the curated content presented on the slideshow also demonstrates attention to graphology. There is the use of a larger font size for the title, bolding to emphasise the sequence of particular steps, and numbering for the prompts

and questions. These visual and textual elements contribute to establishing typographic hierarchy, effectively guiding and directing students' attention within the content.

Figure 6.10: Curated content showing consideration of typographic hierarchy produced by a teacher using Google Slides in a humanities class (Video 24: December 4). Students' attention is directed to the video explanation sourced from The Economist.

Figure 6.11 shows curated content on an extract from a *Google Doc* used in an *English Language and Literature* class where students were reading and analysing poems. Students were on the "Fourth Reading" of these poems by the time they got to this point of the document. Here, students were tasked to watch the oral commentaries of the poems, which were two *Youtube* videos that the teacher had sourced and embedded into this document, before reading the poems again and adding to their notes. Figure 6.12a shows curated content on a slideshow used in a humanities class where students were exploring the topic of migration. This literacy artefact comprises a collage of multiple frames, each featuring a photograph and the name of a migrant. Each frame

serves as a hyperlink leading to a distinct migrant story sourced from the *Internet* by the teacher. Students were tasked with selecting specific stories to read and record significant ideas and emerging patterns from their readings. Figure 6.12b provides another example of curated content found on the same slideshow. This slideshow is embedded with a collection of interactive maps, allowing students to access updated and diverse economic indicators of various countries, thereby facilitating discussions on the push and pull factors of migration. Students also curated content when they participate in these online classrooms, and through that engage in *Learning by Observing and Pitching In* (LOPI), which I will explore further in the following chapter. Figure 6.13 shows curated content on a *Google Doc* created by a student for an assessment task in a physical and health education class. This literacy artefact presents a table of information on different physical movements used in sports and shows the use of different images and videos that the student had sourced from the Internet.

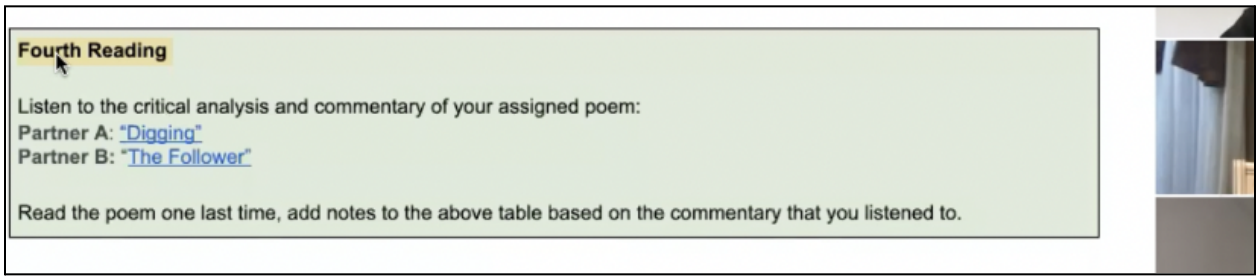


Figure 6.11: Curated content with Youtube videos of oral commentaries produced by a teacher using Google Docs in an English Language and Literature class (Video 9: November 20)

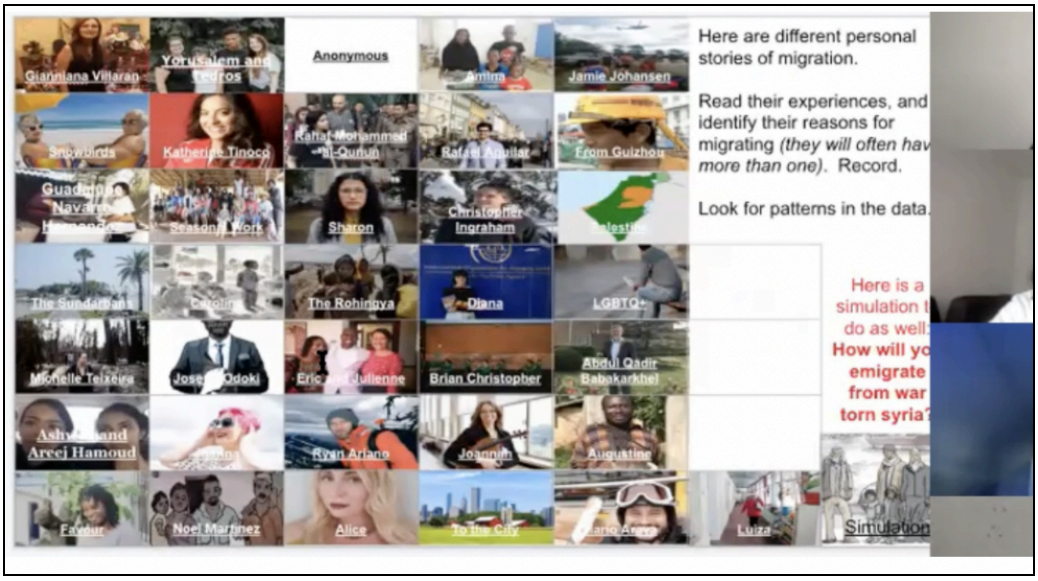


Figure 6.12a Curated content of different migrant stories produced by a teacher using Google Slides in a humanities class (Video 23: November 9)

Figure 6.12b: Curated content of different interactive maps produced by a teacher using Google Slides in the same humanities class as above (Video 23: November 9)

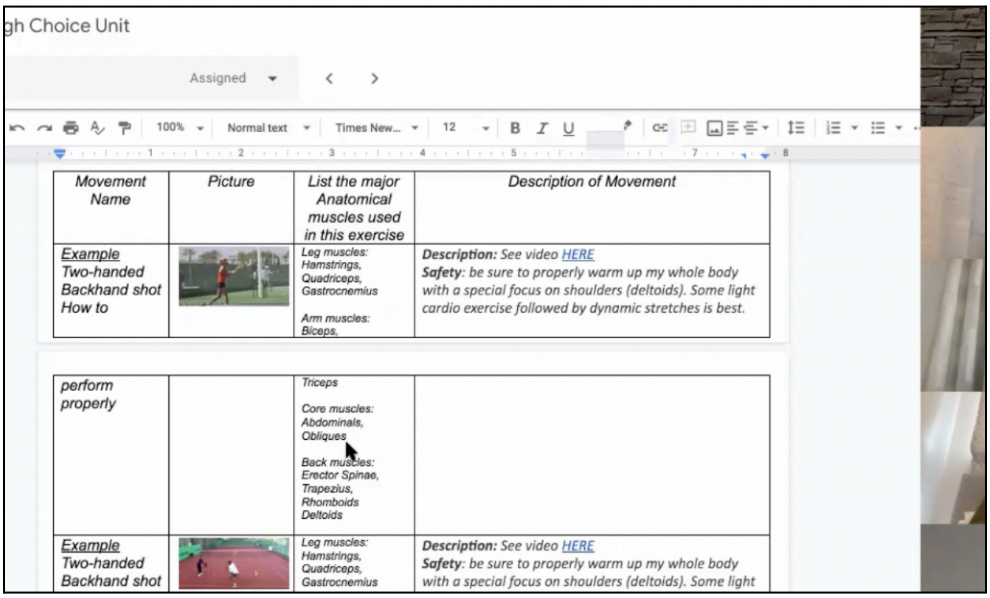


Figure 6.13 Curated content produced by a student using Google Docs in a physical and health education class. (Video 32: October 8).

The close examination of curated content offers further insights into the internal design grammar of these online classrooms. Curated content comprised of sourced and credible resources with accompanying instructions on their utilisation and are characterised by the use of hyperlinks and multimodal texts, especially video clips. Curated contents are intentionally composed and serve as valuable resources in these online classrooms. Curated contents not only provide students with access to diverse and reliable resources but also promote collaborative engagement through the use of interactive and multimodal elements.

6.5 Co-constructed Content

The last category of content observed in these online classrooms is co-constructed content. Co-constructed content is content collectively produced by different participants for use in these online classrooms. A *Google Doc* template created ahead of time by a teacher that is then acted upon by a student is not co-constructed content (Figure 6.11). However, it could be co-constructed content if two or more teachers produced the template together. A *Google Doc* showing teacher notes on a student's document is not co-constructed content (Figure 6.4). However, it could be co-constructed content if the content was edited as a result of the feedback received from the teacher's notes.

Figure 6.14 shows co-constructed content on a *Google Doc* produced by two students in an *English Language and Literature* class. For this task, students were tasked with identifying and explaining the linguistic features present in the poems assigned to them, namely, "Digging" or "Follower". The literacy artefact depicts a table being filled out collaboratively by two students. Both students shared this *Google Doc* and worked together in tandem. One student contributed ideas in the second column, while the other added ideas in the third column. Together, they built upon the content of this document. Figure 6.15 shows co-constructed content on a collaborative, digital whiteboard, *Stormboard*, produced by all the students in *an English as an Additional Language class* as they were brainstorming ideas for their inquiry project. The literacy artefact captures a section of the process, the blue quadrant, and the different ideas contributed by the students can be seen on the different blue "sticky notes". Collectively, they construct the content of this digital whiteboard. Figure 6.16 shows co-constructed

content on a virtual bulletin board, *Padlet,* produced by all the students and the teacher in *an English as an Additional Language class.* The teacher used this platform to facilitate a collaborative discussion during the class. The literacy artefact displays varied responses by the students and the teacher to the question: How does social media both help and harm individuals and communities? The co-constructed content shared by the participants in this learning space consists of written comments, sourced articles and videos from the internet. As a class, the participants construct the content of this virtual bulletin board. The close examination of co-constructed content provides a deeper understanding of the internal design grammar of these online classrooms. Co-constructed content shows the contributions of different participants, composed concurrently or non-simultaneously. Co-constructed content is dynamic in nature, and it evolves as participants act upon the content.

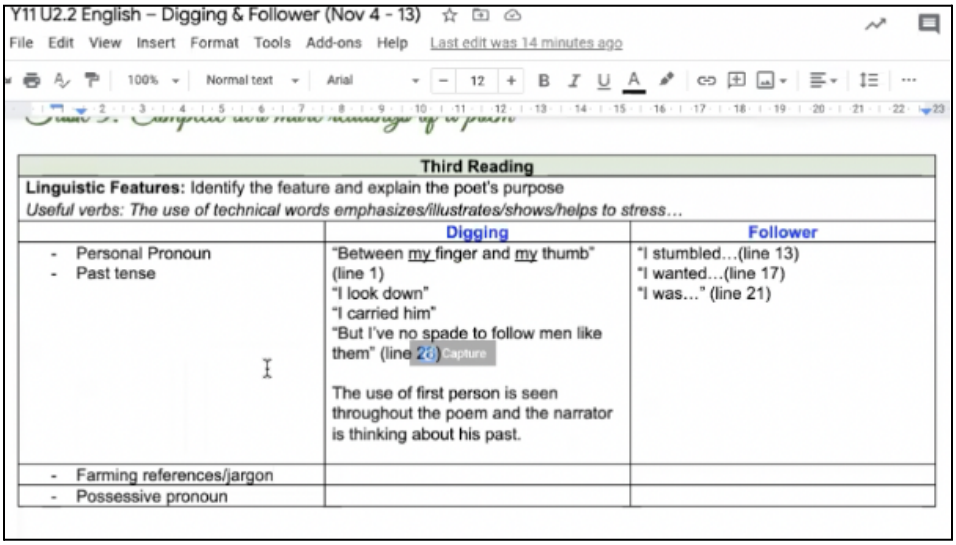


Figure 6.14 Co-constructed content created by two students using Google Docs in an English Language and Literature class. (Video 8: November 6).

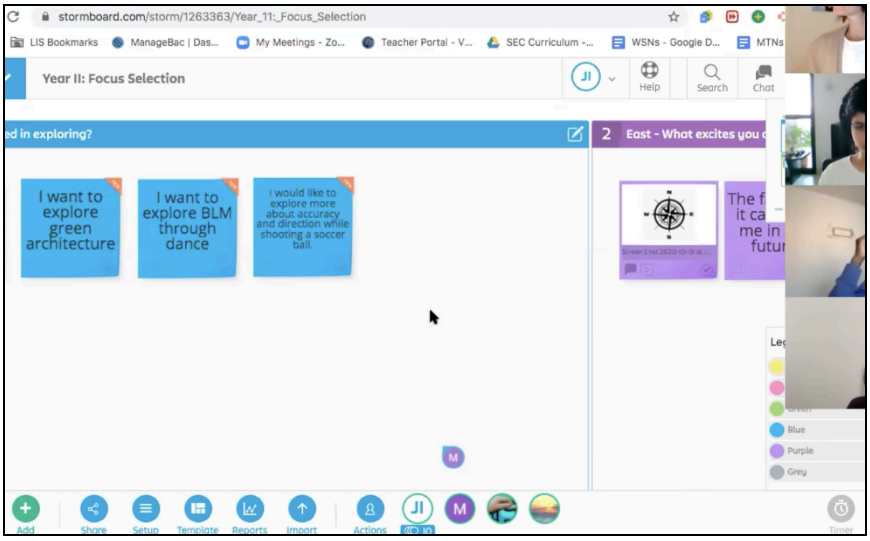


Figure 6.15: Co-constructed content created by students using a collaborative, digital whiteboard, Stormboard, is an English as an Additional Language class.

(Video 1: September 6)

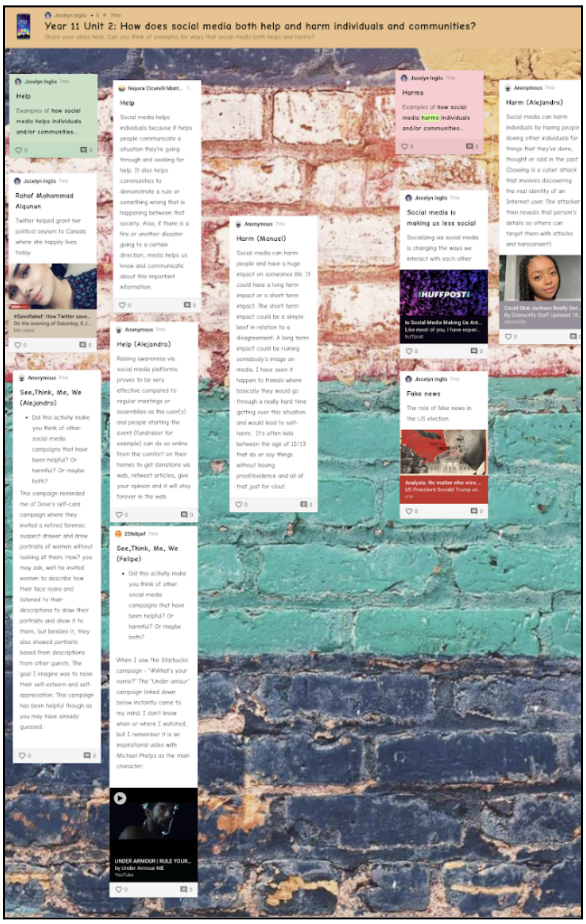


Figure 6.16: Co-constructed content created by students and teacher using a virtual bulletin board, Padlet, is an English as an Additional Language class.

(Video 6: December 9)

The above analysis of the internal design grammar of these online classrooms reveals that all content produced in these learning spaces was created, curated or co-constructed to facilitate collaboration. Participants were actively contributing, sharing and collaborating. First, created content is produced by participants in these learning spaces to communicate subject matter, with the most common being produced by teachers to provide written instructions for their lessons. Students also created content to communicate their understanding of the subject matter while participating in these online classrooms. Next, curated content is produced by participants in these spaces to share sourced and credible resources, promoting collaborative engagement through interactive and multimodal elements. Finally, co-constructed content is collectively produced by different participants for use in these online classrooms. Co-constructed content shows the contributions of different participants, composed concurrently or non-simultaneously.

Further, the internal design grammar of these online classrooms, acting as content generators, reveals extensive use of interactive and multimodal elements to promote collaborative participation. It also employs typographic and textual hierarchy to guide the way in which participants act on and interact with the content. The internal design

grammar of these learning spaces is dynamic, evolving through interactions and active participation of those involved.

6.6 Portal

When it comes to the design of an affinity space, there is one key defining feature: a portal or portals. A portal is “anything that gives access to the content and to ways of interacting with that content, by oneself or with other people” (Gee, 2005, p.13). The external design grammar sets up the main portals to these online classrooms. *Google Classroom* serves as the primary resource hub, while *Zoom* meetings facilitate online student gatherings. Through these two key portals, participants can gain access to and interact with the content in these learning spaces, independently or in collaboration with others. Within the external design grammar of these online classrooms, there could also be a number of different portals. The chat and polling functions on *Google Hangout* and *Zoom* meetings are portals, a URL link to a *Youtube* video or a collaborative *Google Doc* shared in the *Google Classroom* or during *Zoom* meetings is another portal, and breakout rooms in *Zoom* meetings are yet another portal. Each of these portals serves as an access point for participants, allowing them to access and engage with the content utilised in these online classrooms.

Portals are also found in the internal design grammar of these online classrooms. These online classrooms, as strong generators of content, “can also be portals” (Gee, 2005, p.14). They make extensive use of interactive and multimodal elements to promote collaborative engagement. These portals not only provide participants access to the

content in these learning spaces but also offer different ways in which they could act on the content. For example, students could utilise different portals to access a *Google Classroom*, a digital library, different online magazines, a website for a writing contest, and the school-published curriculum (Figure 6.17). Students could also utilise different portals to access different videos on *Youtube* (Figure 6.11), various migrant stories on the *Internet* (Figure 6.12a), and different interactive maps (Figure 6.12b).

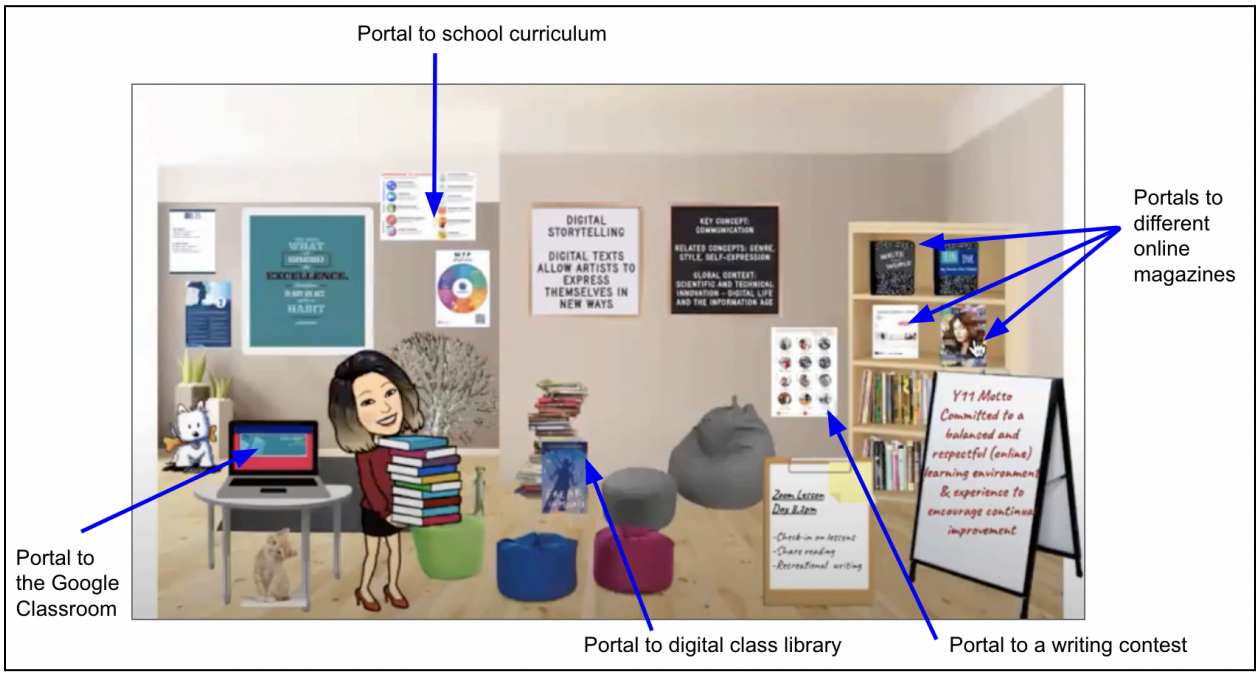


Figure 6.17 Multiple portals to gain access to content

These portals can also "be or become generators themselves" (Ibid., p.15) if they allow participants to "add to the content or change the content other generators have generated" (ibid.). As discussed in the earlier section on internal grammar design, there was extensive use of interactive and multimodal elements to promote collaborative work in the content of these online classrooms. Such portals are, therefore, very common in

these learning spaces and essential for collaboration among participants. Examples of such portals discussed in the earlier section include *Flipgrid (Vignette 6.1), Stormboard* (Figure 6.15), *Padlet* (Figure 6.16), and collaborative *Google Doc* (Figure 6.14). These platforms allow participants to add to and change the content by posting written texts, recording audio or video responses, and sharing sourced information from the Internet.

Portals are considered strong when they lead to dynamic content and are content generators themselves, allowing participants to not just access content but to act on and change content. *Flipgrid* is an example of a strong portal. As a discussion forum, participants could record and even creatively edit videos to respond to one another. Weaker portals, on the other hand, provide access to more static content with limited interaction. For example, a portal to a *PDF* textbook document offers little interactivity; a participant can read or download the document, but cannot directly use it in collaboration with others.

Portals are a key defining feature of online classrooms. As part of the external design grammar, portals serve as access points to these online classrooms so that participants can access and interact with the content utlised in these learning spaces. Within the internal design grammar, portals are utilised in all the content produced in these online classrooms, whether they are created, curated or co-constructed content.

6.7 Conclusion

The study of literacy artefacts gathered from these online classrooms from the lens of design grammar has provided insight into their setup as collaborative learning spaces. First, the analysis of the external design grammar identifies two salient features concerning the setup and configuration of these online classrooms. These learning spaces are designed to accommodate both participants and resources, and their ability to generate content plays a critical role in promoting collaborative engagement among the participants.

Next, the analysis of the internal design grammar reveals that all content produced in these online classrooms - created, curated, or co-constructed - was designed to facilitate collaboration. Acting as content generators, the internal design grammar of these online classrooms shows extensive use of interactive and multimodal elements to promote collaborative participation. It also employs typographic and textual hierarchy to guide participants in interacting with the content. Importantly, the internal design grammar of these learning spaces is dynamic, evolving through continuous interactions and active engagement of the participants.

Finally, portals are essential features of these online classrooms. Portals are where participants gain access to and interact with the content in these learning spaces, independently or in collaboration with others. Portals are found in both the external and internal design grammar of these learning spaces. Core portals are established in the external design grammar to delineate these learning spaces, hosting resources and

facilitating gatherings. Building on the discussion in Chapter Five on participation practices that emerged in these learning spaces, weak portals generally involve auxiliary practices where participants navigate learning spaces to access resources, while strong portals are essential for dominant feedback and modeling practices among participants. Collectively, these features and practices promote collaboration among the participants in these learning spaces.

Chapter VII: Learning by Observing and Pitching In (LOPI) in Affinity Spaces

This final analysis chapter continues to explore what learning looks like in online classrooms and addresses my last research question, *What does Learning by Observing and Pitching In (LOPI) look like on the community, interpersonal, and personal planes in these spaces?* In Chapter V, I discussed the participation practices that emerge in online classrooms to support learning. In Chapter VI, I examined the design grammar of literacy artefacts collected from online classrooms to understand the ways organisational and compositional elements work together to enable collaboration in this learning environment. In this chapter, I will explain how Rogoff's three planes of analysis framework can be applied to effectively deconstruct observed practices and gain an understanding of LOPI as it unfolds across the personal, interpersonal, and community planes in classrooms.

In Chapter II, I discussed the relevance and application of Rogoff's learning theory, LOPI, in the context of online classrooms. I explained how LOPI which is described as "informal" and "less conceptual or cognitive than formalised school learning" (Paradise and Rogoff, 2009, p.102) is also found in formal classroom settings. I argue that similar to the children observed by Rogoff in indigenous communities, students who actively participate in online classroom activities engage with other participants and through LOPI develop the literacies relevant to their tasks to support learning.

This chapter provides a detailed examination of the activities taking place in online classrooms to observe how LOPI manifests on the community, interpersonal, and

personal planes as a way to explain learning in online classrooms. The chapter also presents a conceptual model to serve as a framework for comprehending LOPI within these affinity spaces. The chapter is divided into four sections. The first section explores LOPI on the community plane of these online classrooms, which is characterised by the prevailing ethos of apprenticeship that defines these learning spaces. The second section investigates LOPI on the interpersonal plane, analysing the practices of guided participation that take place among participants in these online classrooms. The third section shifts its focus to the personal plane, examining the adaptation of practices by individuals as they engage in the process of participatory appropriation. The fourth section summarises the dynamics of LOPI on the community, interpersonal and personal planes and utilises a conceptual model to explain these interconnected processes that take place in these online classrooms. Each section will highlight the activities on these planes, with an overlay of ideas to expand upon the descriptions and discussions, revealing their “inseparable, mutually constituting” (Rogoff, 2008, p.139) nature.

7.1 LOPI through Apprenticeship on the Community Plane

For my research, I am focusing on online classrooms that I conceptualised as affinity spaces where small groups of individuals are involved in a culturally organised activity and working towards a common endeavour, which is to support the enculturation process of the “less experienced” (Rogoff, 2008, p.142) in a community. The organisational and interactional pattern observed in these online classrooms reveal both the active roles of newcomers and also others in arranging activities and support for

developing participation, as well as the institutional goals of the activities to which they contribute which reflect apprenticeship on the community plane.

The model of apprenticeship has at times been used to focus on expert-novice relationship between two individuals but it can involve more than dyads (Rogoff, 2008, p.143). As mentioned above, my research focuses on apprenticeship that relates to a group of individuals that engages in activities that are oriented towards the group's accomplishment. I observed groups of individuals in online classrooms that are part of a formal education institution, an international school with a highly organised system and established curriculum and pedagogy where students who are "the less experienced", are apprenticed by others through their engagement in activities, to become "more responsible participants" in the cultural activity of schooling. The groups of individuals in these online classrooms may comprise "peers who serve as resources and challenges for each other in exploring an activity, along with experts, who, like peers, are still developing skills and understanding in the process of engaging in activities with others of varying experience" (Ibid.). As established in Chapter V, participants in these online classrooms were observed to engage in similar practices regardless of their roles, but the ways in which they utilised these practices vary. In other words, all participants, whether they are students, teachers and anyone who join these online classrooms, are considered learners, as they are in some ways or others involved in apprenticeship and developing their practices in these learning spaces.

Through their interactions in these online classrooms, all participants were engaged in some form of cognitive development, which according to Rogoff and established in Chapter III, “involves appropriation of the intellectual tools and skills of the surrounding cultural community” (Rogoff, 1990, p.11). I want to emphasise again that this definition differs from the psychological understanding of cognitive development which sees progress as unidirectional and closely tied to skills in academic activities such as formal operational reasoning and literate practices (Ibid., p.12). To avoid confusion, I will use the term “development” instead of “cognitive development” for my discussion in this chapter. For my research, I perceive learning as a sociocultural process and I am interested in how people come to understand their world through active participation with others. Development is multidirectional and progress is built on the opportunities to stretch knowledge and skills in the cultural community (Ibid., p.11). LOPI looks at the active processes of development such as “thinking, re-presenting, remembering, and planning” (Rogoff, 2008, p.151) as a way to explain the learning that takes place in these online classrooms as participants engage in an unfolding event or activity and develop their practices. What follows in this section is a discussion of the “institutional structure” (p.143) of these online classrooms and the “intellectual activities” (p.143) that take place in these learning spaces to explain the concept of apprenticeship, or LOPI on the community plane.

As pointed out by Rogoff, cultural systems such as schooling in which one is completely immersed tend to be taken for granted by researchers; such cultural activities are often regarded as “the way things must be rather than just one way that things happen to be”

(p.144). This cultural system only became apparent to me when formal schooling shifted online, allowing me to observe apprenticeship in online classrooms, which might have gone unnoticed in a physical classroom setting. To understand LOPI on the community plane, it is essential to draw attention to the structure of the institution, which many might overlook as an important feature of apprenticeship.

As mentioned earlier, these online classrooms are part of a formal education institution that promotes the cultural activity of schooling so that “the less experienced” can be apprenticed by others through their engagement in activities, gradually becoming “more responsible participants”. The institutional structure of these online classrooms is thus set up to promote learning through apprenticeship. As discussed in Chapter VI, the institutional structure of these classrooms can be seen through their external design grammar which concerns the structural setup - what is acceptable and typical - of these learning spaces. The analysis of the external design grammar in Chapter VI of online classrooms reveals that the institutional structure of these learning spaces enables the facilitation of active participation among individuals for collaborative learning. For example, to enable students and teachers to come together and engage in community activities, *Google Classrooms* and *Zoom* meetings were utilised by the institution to promote asynchronous and synchronous participation respectively, which allowed students to participate in four different *Zoom* meetings throughout the day from Monday through Friday, or engage in activities in *Google Classrooms* whenever they wanted. In addition to *Google Classrooms* and *Zoom* meetings, the use of *Google Docs, Google Slides,* and other web-based learning platforms such as *Jamboard* and *Padlet* also

allowed participants to engage as a “viewer”, “commenter”, “editor” or “collaborator” and utilise one another as support and resources as they develop their practices in these learning spaces. These online classrooms were set up to enable participants to come together and over time, develop their practices through participation with one another in these learning spaces. The institutional structure of these online classrooms, seen through their external grammar, promotes the development of practices through LOPI on the community plane in culturally organised activities.

In apprenticeship, one way in which the “less experienced” (Rogoff, 2008, p.142) becomes a member of a social practice is by acquiring “a way of reading a certain type of text”. This involves individuals reading, talking, and interacting with a specific type of text in a particular way (Gee, 2015, p.48), which is the focus of this section. In these online classrooms, students are acquiring the literacy of a mathematician, a scientist, or a humanities researcher and it is this literacy development that my research is concerned about. I now turn my attention to the “intellectual activities” (Rogoff, 2008, p.143) that I observed in these online classrooms to explain LOPI on the community plane.

Vignette 7.1: Students seeking clarity on the convention of writing mathematical equations in a mathematics class (Video 26: September 6). Students developing mathematical literacy through their interactions with, and being apprenticed by their teacher.

Student E: Teacher. Do you need to put the bracket with 4, or can you put 4F + 1?

Teacher:	It can totally be B = 4F + 1, actually this is the preferred way. There is nothing wrong with what Student I has done here. This is how you will probably end up writing, especially when you will work with it later.
	14 minutes later
Student I:	Teacher. Must the equal always have to be on the left side?
Teacher:	It doesn't always have to be, but it's weird..on the other side, you know what I mean? It's not wrong on the right, but generally we like to be the variable on its own on the left side. That's how we write equations like this, y = mx + b. We could write mx + b = y, it's just convention that tells us to write it the first way. Does that help, Student I?
Student I:	Yes.

The literacy event depicted in Vignette 7.1 shows the teacher going through a set of mathematical sums that students completed for homework on the topic of "Number Patterns and Rules". To do so, the teacher invited students to share their workings. As they spoke, the teacher annotated the document that was shared on the screen. The teacher repeated what the students said as she wrote down the workings. During this review, two students asked questions about the written presentation of mathematical equations, "Do you need to put the bracket with 4, or can you put 4F + 1", and 14 minutes later, "Must the equal always have to be on the left side?" More experienced individuals, such as the teacher, would likely not have needed this clarification and

would have probably gone through the review without paying much attention to the use of parenthesis and the equal sign in the equations because it is “a way of reading a certain type of text” (Gee, 2015, p.48). Having two similar questions asked during the same class in a short span of time could therefore reflect a lack of such mathematical literacy among the students in this class. This specific development of mathematical literacy was also emphasised when the teacher responded, saying that the written presentations were just a “preferred way” and a “convention”. This example of learning the convention of writing mathematical equations is foundational for the learning of more complex mathematical concepts. This vignette illustrates students developing their practice through their interactions with, and being apprenticed by their teacher, as they develop the literacy development of a mathematician.

Vignette 7.2: A student practicing the use of subject-specific terminology in a Humanities class. (Video 19: September 25). The student developing the literacy of a humanities researcher through their interactions with, and being apprenticed by their teacher.

Hi guys, how are you getting on? [The teacher smiles as she joins the breakout room.] Student N jumps in right away, “Teacher, we have a question. This is in an interview. So, when they asked who wrote it. Can we say the person who wrote it was the interviewer and the other person was the girl?”

“Absolutely, you can also use that as the purpose ya? That the purpose is an interview. What do you think the purpose of the interview is?

Student H responds immediately, “About perspective..”

“Ya, maybe the interview is trying to find out what this perspective has on Apartheid, because her perspective might be different, why might her perspective be different?

“Because she is a...girl?” Student H replies, a little hesitant.

“Possibly,… more importantly than her gender, what else?” The teacher probes.

“Race!” Student N exclaims.

The teacher's smile widens, “Say again?”

“Race.” Student N repeats.

With her hand resting on her chin, the teacher changes her tone and seems more thoughtful in her explanation, and asks a few more questions.

“Student N, you are sort of doing this [with her hands up in the air, the teacher does a little head and body shake, to imitate the student’s body language, and smiles] ...so

what do you think?”

Without any hesitation, Student N responds instantly.

“Valuable because she is a history teacher. Meaning she has some expertise and she knows what she is saying... and she also did grow up during Apartheid, which also gives her that first hand… ahhh… primary evidence, as you said it [The student smiles, knowing that she is using the right terminology]

“Absolutely”, the teacher gives a big smile to acknowledge that the word is used correctly and appropriately.

“...but it is primary evidence, so it may be ‘emotional’ [her hands signing air quotation marks, while using the words that the teacher used earlier during the class] which may be biased….”

“Limitation!” Student N adds.

“Yes, lovely.” The teacher smiles as she acknowledges Studnt N’s response. The teacher then continues, “You know, there is only one way in which you can make the answer better, and that is to prove it. So if you are going to say she is emotional, and … try and pick, and this is how you are going to get your content in there...try and pick, a couple of words in that source that show you that. So, why don’t everyone look

at that now...and what language is there to suggest that she is emotional?”

Vignette 7.2 shows the interaction among a teacher and her students in a breakout room during a humanities class. The teacher was checking the progress of a group of students working in a breakout room. Prior to this group activity, the teacher was going through a set of slideshow with the students on source analysis and reviewing the use of an OPCVL (Origin, Purpose, Content, Value, Limitation) table. In particular, the teacher wanted the students to think about this question: “How can the author be of value to the source?” Students were then put into breakout rooms to complete a group task where they had to study a source and complete an OPCVL table.

In the vignette, Student N posed a clarifying question the moment the teacher joined the breakout group, “Can we say the person who wrote it was the interviewer and the other person was the girl?” Immediately the teacher connected the idea to the purpose, a key concept on the OPCVL table. The teacher prompted the students to develop the concept and together, they derived the content (another key concept on the OPCVL table) of the source which is about the personal experience of a person of race during the Apartheid. It was at this point that the teacher gave student Student N a confident nudge to expand the discussion further, “Student N, you are sort of doing this [with her hands up in the air, the teacher does a little head and body shake, to imitate the student’s body language and smiles] ...so what do you think?” Student N responded right away, saying that the source is “valuable because she is a history teacher”, value being another key concept on the OPCVL table. As Student N explained her point, she

was about to say “first-hand experience” when she found a more fitting, subject-specific terminology “primary evidence”, which is more appropriate for the discourse of academic history. The student smiled with relish satisfaction as she made the adjustment. The teacher responded with a big smile and a positive affirmation, “Absolutely!” which encouraged the student to keep going. Student N continued her explanation, discussing the possible biases in the primary evidence before exclaiming “limitation” (the last key concept on the OPCVL table), knowing again that she was using the appropriate terminology for a source analysis discussion in a humanities class. This example shows a student using subject-specific terminology and adopting a particular way of talking and interacting when it comes to source analysis, akin to a humanities researcher. Similar to the earlier example, this vignette illustrates a student developing her practice through her interactions with and being apprenticed by the teacher.

A third example of literacy development took place in a science class on the calculation of molecular mass. In this literacy event, the teacher first showed an explanatory video to revise the concept of moles (Figure 7.1). The teacher then taught students to extract specific information on atomic numbers and mass numbers from an interactive online periodic table (Figure 7.2), which is “a way of reading a certain type of text” (Gee, 2015, p.48). Following that, the teacher engaged the students in a discussion of molecular mass and the correct use of unit. The teacher said, “So that’s the number of mole, and we use m-o-l as the unit. Mole is the word, the name of the variable, spelled the same way as mole the mammal, but M-O-L is the unit”. Thereafter, the teacher worked on the

calculation of molecular mass with the students (Figure 7.3) Throughout the lesson, the teacher explicitly “taught” the students to read, talk, and interact with a certain type of text in a certain way (Gee, 2015, p.48). The “intellectual activities” (Rogoff, 2008, p.143) described in this example and the above two vignettes illustrate the dynamics of LOPI on the community level. In these online classrooms, participants engaged in an apprenticeship system where the “less experienced” (p.142) individuals were apprenticed into the social practice of cultural activities through their ongoing interactions with others, specifically teachers in all three cases, who were more experienced or had greater expertise.

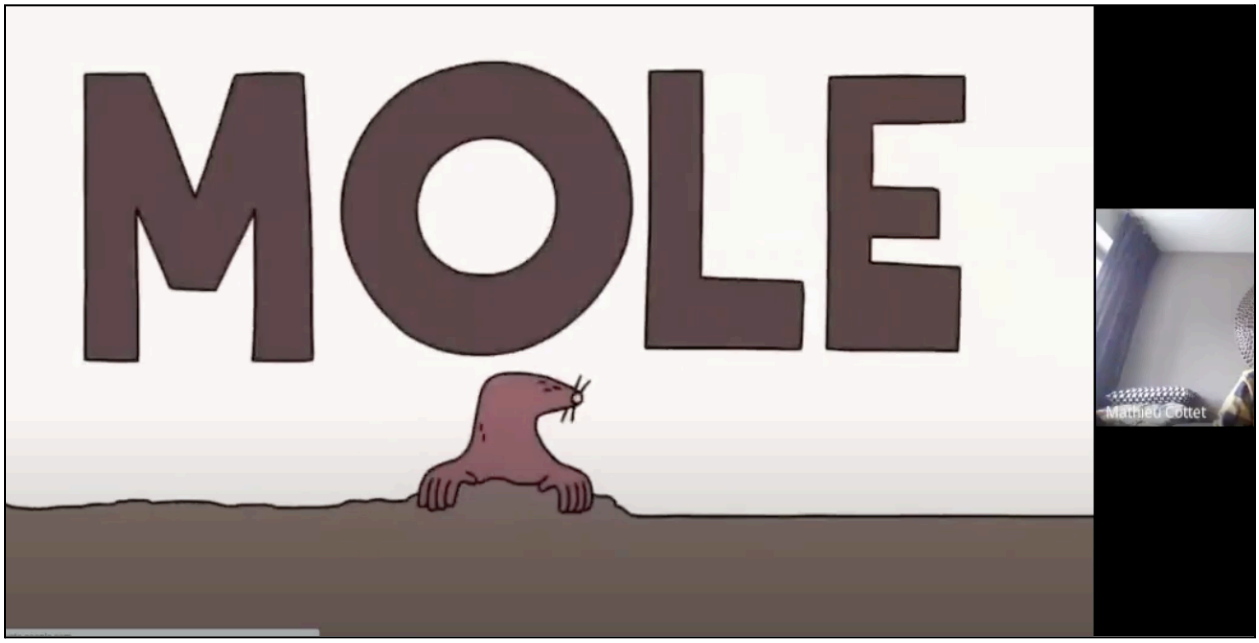


Figure 7.1: A teacher showing a Ted-Ed video, “How big is a mole? (Not the animal, the other one.)” in a Science class (Video 41: December 10)

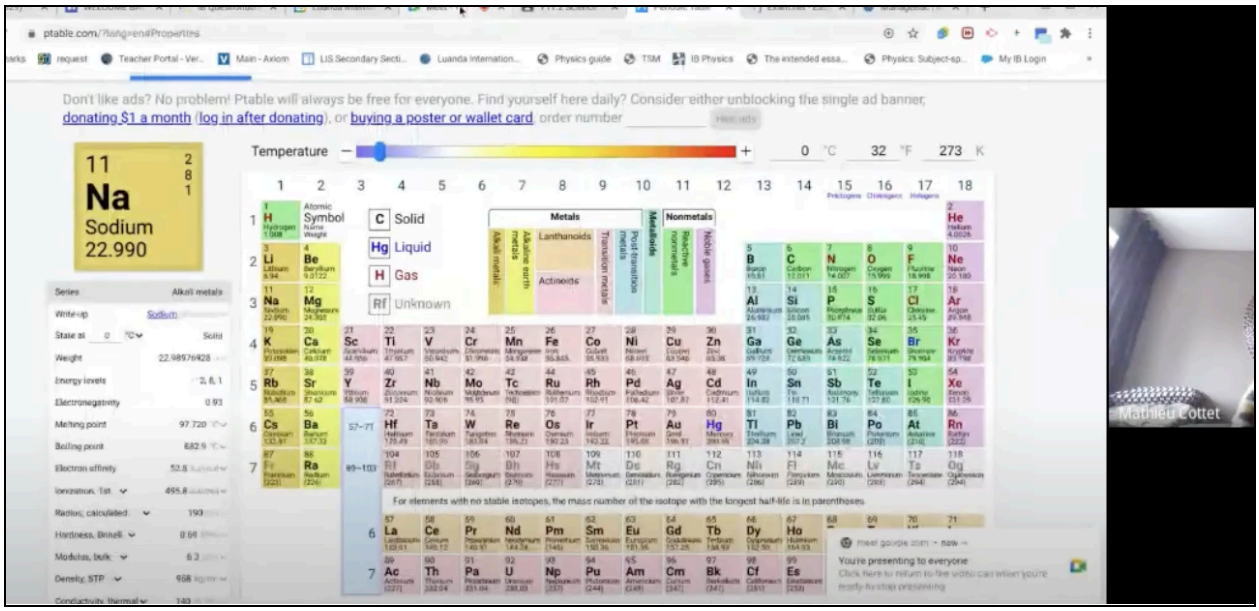


Figure 7.2: A teacher teaching students to read an interactive online periodic table, and specifically to identify the atomic number and mass number of different elements in a Science class (Video 41: December 10)

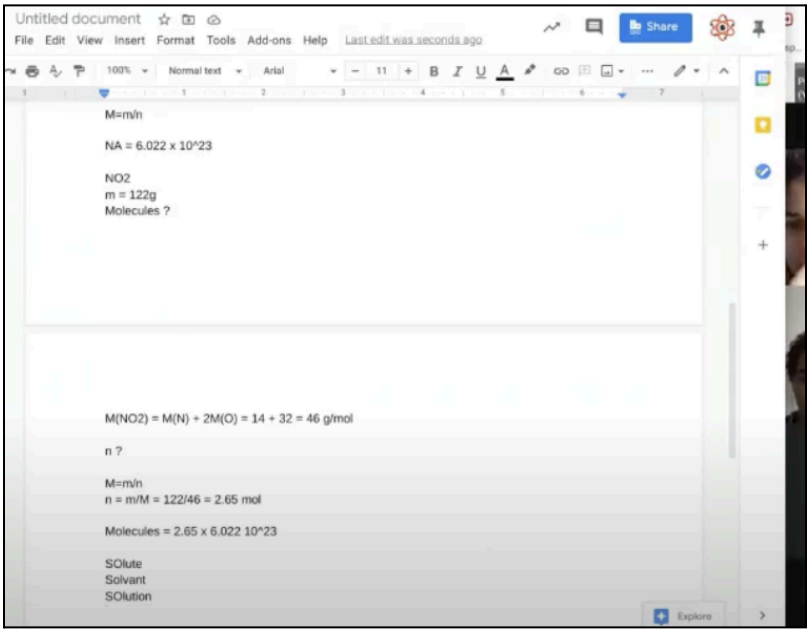


Figure 7.3: A teacher showing the calculation of molecular mass in a Science class (Video 41: December 10)

7.2 LOPI through Guided Participation on the Interpersonal Plane

I will now move on to discussing LOPI in the form of guided participation on the interpersonal plane of these online classrooms. Guided participation stresses the mutual involvement of participants who communicate and coordinate their involvement as they engage in cultural activities (Rogoff, 2008, p.146). As mentioned at the beginning of this chapter, this section will highlight the activities on the interpersonal plane while expanding upon the discussions of the earlier section on the community plane, showing their "inseparable, mutually constituting" (Ibid., p.139) nature. In the preceding discussion on apprenticeship, the focus was on the teacher support given to the "less experienced" students in becoming more confident in their practices in these online classrooms. In this section, the discussion continues to revolve around "a system of interpersonal involvements and arrangements in which people engage in culturally organised activities" (Ibid., p.143), but the central emphasis is on the "processes of communication and coordination of efforts" among the participants in these learning spaces. This specifically pertains to how the "less experienced" strive to make sense of the activities and engage in communication and coordination with others to establish a common understanding in order to proceed with the activity (Ibid., p.148).

I refer back to the examples discussed in the previous section to illustrate how students actively "put themselves in a position to participate" (Rogoff, 2008, p.148) and the communication by their teachers to promote a common understanding in order to move forward with an activity in these learning spaces. In Vignette 7.1, the active engagement was seen in both Student E and Student I as they tried to make meaning of the way

mathematical equations are meant to be written. This active attempt to make sense of an ongoing activity was also seen in Vignette 7.2 when Student N asked a clarifying question the moment the teacher joined the breakroom. In both of these examples, the teachers' responses were directed at helping students arrive at a common understanding. Without understanding that the written expressions of mathematical equations are just conventions, Student R and K could have remained confused, potentially distracting them from tackling more cognitively complex problem-solving in mathematics. Similarly, without affirmation and guidance from the teacher, Student N might not have used the OPCVL table with confidence, as demonstrated later in the vignette. The third example from the Science class is also noteworthy. The teacher had to ensure that the students all have a common understanding of the periodic table and develop the necessary literacy before they could progress to using the information to calculate molecular mass. In all three instances, the communication and coordination of efforts by the different participants fostered a growth of understanding in these learning spaces. The same examples discussed in the previous section also exemplified the processes of guided participation on the interpersonal plane within online classrooms, highlighting again the dynamics of LOPI on these "inseparable, mutually constituting planes" (p.139).

Vignette 7.3: Guided participation in a mathematics class (Video 30: December 8). Participants managing their own and others' roles, and structuring situations in which they observe and participate as needed or when they are ready.

Without saying anything, the teacher shares her screen to show an online app. The

online app/website shows an incomplete mathematical table. The layout of the information appears like any textbook, but it has function buttons like “close” and “mark it”. It also allows users to “drag and drop values” from the center column and check the answers immediately [as opposed to looking up the answer section in a textbook]. The teacher first encourages students to volunteer by calling out their answers, but there is little response.

“When I ask questions, sometimes it is difficult to hear you. Try to say the answer, but if I can’t hear you. Please type your answer.”

The teacher then calls out individual students who respond accordingly. As the students share their responses, the teacher “drags” and “drops” the correct values to complete the table. The teacher gives spoken commentary as this happens. As the teacher does so, she moves her cursor across the screen, pointing out the diagrams and referring back to the table. The teacher moves the cursor left and out, top and down. The reading of the content is not unidirectional, but it remains intuitive.

“Those of you who are waiting to hear Student O speaking, she is sharing her answers in the chat. So, go ahead, and refer to the chat if you want to see her answer.”

“This was the first of three tasks that you were assigned last lesson, and it took us around 15 minutes as a class to complete. Individually, it would have taken you

around 10 minutes. Of the whole class, only around 4 students have completed it. You really need to be trying this work. If not, when it comes to a test, you will be clueless. We will be building on this as well, in later years… you can't just ignore it. If you don't understand, you need to let us know and let us help you," the teacher says, in a respectful and polite note.

The teacher now moves on to another task. The teacher is still sharing her screen, but it is now showing a different set of questions.

The teacher calls upon Student P to choose a question to respond to. As Student P articulates the equation, the teacher writes the equation on the screen. As Student P explains her thought process, the teacher displays the workings.

After the first example. Student G volunteers to respond. Like the first student, Student G articulates the equation, which the teacher then writes down. As Student G explains, the teachers show her workings.

When the trigonometry question is paired with the correct answer, the two corresponding boxes disappear from the screen. The second time this happens, the teacher says, "This is a bit of a game, but we are still doing a little bit of revision for trigonometry."

Students start volunteering to answer the questions, back to back, almost

immediately, with no prompting from the teacher.

“Student O has requested the green one!” The teacher reads from the chatbox and moves her cursor to the green triangle/question. The second task moves on with ease and keen participation.

“Ok, all correct so far. This is going very well. Let’s keep going.” Teacher talk becomes less as more questions are attempted. There is less scaffolding as the lesson progresses. The teacher ends up just repeating the equation and answers that are articulated by the students.

All the questions for the second task are completed. As the teacher closes the tab, she says “Those workings that you see here. If you want to rewatch them. They have been recorded. And you can rewatch the video on Google Classroom if you wish.”

As discussed, guided participation on the interpersonal plane includes direct interaction and engagement in activities in these learning spaces. However, the participation by the different individuals does not need to be symmetrical. As seen in the above vignette, when the teacher first invited students to share their answers, there was little response. Then, when the teacher called upon individual students to answer, they could do so and respond accordingly. A key aspect of LOPI is observing. Students might have chosen not to answer initially, not necessarily because they did not know the answer, but they were “actively observing and following the decisions made by the teacher whether or

not they contributed directly to the decisions as they were made (Rogoff, 2008, p.147). The interactions initiated and promoted by the teacher in this literacy event were meant "to instruct" (Ibid., p.150) as seen in the teacher talk. The teacher called upon students to respond, offered them the choice to engage by typing their responses in the chat, clarified and reinforced students' ideas with verbal commentary, supported the explanations with the use of visual aids as she wrote and displayed the workings to the mathematical questions, worked on a few practice problems with the students, and even injected a bit of fun, making the practice feels "a bit of a game". As the expert in this class, the teacher directed the activity by actively involving students in the activities and gradually removing the support required as they became more confident in their attempts. It is important to note that even though the teacher's actions seem intuitive, they were her responses to ongoing observations of what was happening during the lesson. When the teacher saw that there was no response to her invitation for a volunteer, she called upon individual students to respond. When the teacher noticed someone typing in the chat, she directed other students to read the responses in the chat, utilising the multimodality of the online classroom to promote participation. The teacher said, "Those of you who are waiting to hear Student O speaking, she is sharing her answers in the chat. So, go ahead, and refer to the chat if you want to see her answer." The teacher also acted upon the student's request, "Student O has requested the green one!", adjusting the situation accordingly. The teacher's timely and effective participation was a result of her paying attention and observing the ongoing activities in the classroom. Guided participation, as observed in this literacy event, involves teacher

and students managing their own and others' roles, and structuring situations in which they observe and participate as needed or when they are ready.

Vignette 7.4: Guided participation to support group activity in an English Language and Literature class (Video 8: November 6). Students show active participation through observing and supporting others through "yielding".

Students Q, R, S in a breakout room.

"Ok, so who wants to go first? Not me", Student Q asks.

"Ok, I will go first," Student S volunteers.

Student S shares aloud her written responses, which she reads directly from the document. Student S's responses are general, short and direct responses to the questions on the document. Student R then goes next, sharing her impression of the poem, her responses are relevant and longer than Student S'sl, but deviate more from the questions on the document. Student R supports her responses with textual evidence from the poem.

"So I guess it's my turn," Student Q then responds. .

Student Q begins with a summary of the poem, and also offers an evaluation of the poetic techniques used, and why the imagery are well used. Student Q also uses

textual evidence from the poem, and poetic terminology to discuss mood and atmosphere.

Similar dynamics of guided participation were observed among students on the interpersonal plane as well. As described in Vignette 7.4, Students Q, R, and S were analyzing a poem as a group in a breakout room as part of the English Language and Literature lesson. Before the breakout room group discussion, the teacher had read a stanza closely with the class and modelled how to go about analysing a poetic feature. The teacher read aloud a line, pointed out a feature, and commented on its significance. The teacher then invited two students to do the same, before putting students into groups to further their discussion in breakout rooms.

In this literacy event, Student Q took the lead by asking “Who wants to go first?” And also immediately stating, “not me”. As evident from the thorough responses that Student Q shared later in the vignette, Student Q was ready to share but did not rush to share her responses. Rather, Student Q “pitched in” by establishing the order of sharing. Student S was the first to share and gave “general, short and direct responses”. Student R went next and contributed more extensive and substantiated responses. Finally, Student Q wrapped up the discussion, beginning first with a summary and then followed by a well-substantiated explanation, using the appropriate terminology, showing the most competence and confidence at “read*ing*, talk*ing* and interact*ing* with a *poem* in an analytical way” (Gee, 2015, p.48, *my emphasis*). As mentioned above, Student Q appeared ready to share at the start of the discussion but she had chosen not to.

Instead, the student structured the discussion by “avoiding activities” (Rogoff, 2008, p.147), declaring “not me”. By doing so, Student Q was managing her own and others’ roles and encouraging contributions from everyone. I describe such intentional acts of relinquishing as “yielding”. An interesting observation of guided participation on the interpersonal plane of these online classrooms, students “yielded” to create opportunities for others to “pitch in”.

In these online classrooms, the participants - teachers and students - managed their own and others’ roles, and helped structure situations that encouraged participation in these online classrooms. As teachers observed their students and modified their actions to support the development of practices among students, students were observed to do the same. While teachers were seen removing support to increase or deepen participation, students who were confident in their practices were observed “yielding” so that others could “pitch in” and contribute to the “common endeavour” of the learning space as well. In LOPI, the participants “pitch in” when they are ready, and they “pitch in” to contribute; whether they are impacting the outcome of the activity or supporting the growth of another participant.

7.3 LOPI through Participatory Appropriation on the Personal Plane

On the personal plane, LOPI occurs when individuals “transform their understanding of and responsibility for activities through their participation” (p.150), also known as participatory appropriation. In other words, students show change through their participation and are better prepared for the activities in these online classrooms; they

learn by doing. The outcome of LOPI is the participation itself, the process of appropriation through development that is socially mediated. Like apprenticeship and guided participation, participation appropriation emphasises the active, dynamic, and social roles of the participants in development. Appropriation occurs when the individual adapts practices and changes through participation in an activity, contributing to further changes to the activity itself and also showing more readiness for similar activities.

Vignette 7.5: Participatory appropriation in a Science class (Video 37: October 8)

The teacher shares her screen to show a slideshow. The teacher asks, “Can you see?” Students raise their (real) thumbs to acknowledge that they can see the slideshow. The teacher stops to ask questions on different slides to check in on the students’ understanding of the distance/time graphs. After each response, the teacher would add on to reiterate and elaborate on the students’ responses.

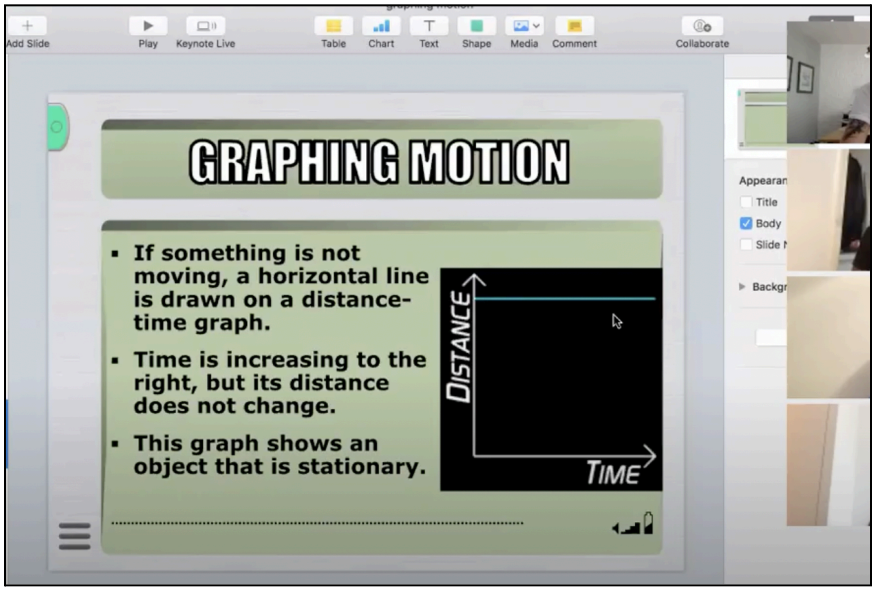


Figure 7.4: Teacher slideshow showing a horizontal line on a distance/time graph

Teacher: What is the meaning of a horizontal line like that? (Figure 7.4)

Student M: Ahem, the speed is constant…there is no increase in speed

Teacher: Ok, that's correct, but that's not specific enough. Student J, you put your hand up earlier?

Student J: That...I was going to say the same thing, but I guess it's not…Right?

Teacher: The object is not moving. There is no change in the distance. It is a stationary object. So you are right, the speed is constant. It is zero. The object is not moving at all. A horizontal line like that on a distance/time graph just means that the object is not moving.

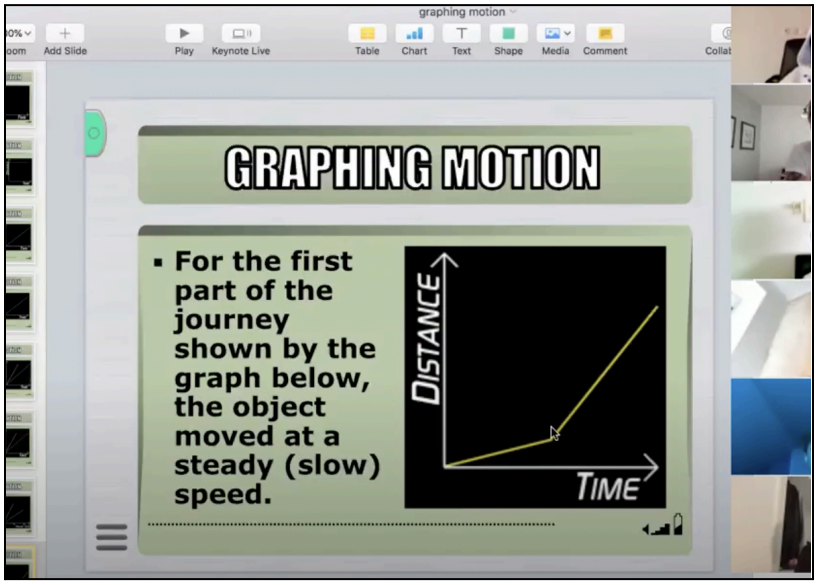


Figure 7.5: Teacher slideshow showing a change of speed on a distance/time graph

Teacher: What about that one? (Figure 7.5) Who wants to go for that one? Who can describe this? [Student J puts up her hand.] Yes Student J, go ahead.

Student J: Ahem...like it goes and then it suddenly becomes faster…

Teacher: Yup yup, there is a change in the speed of the car at this point. Alright, let's assume this is 10 seconds, so from 0 to 10, assume that the car is travelling at 1m/s, then we have increased the speech from 5 or 6m/s. So we have a change in the speed of the car, let's say at 10 seconds. Okay?

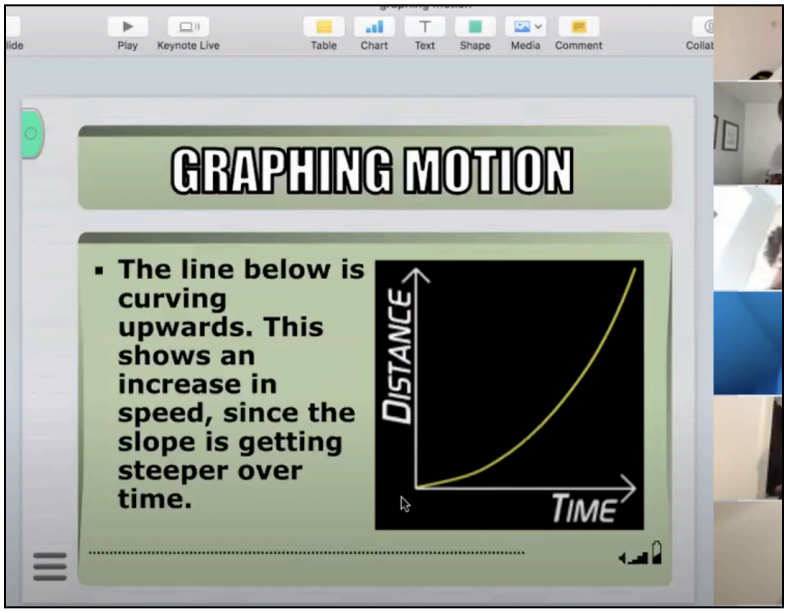


Figure 7.6: Teacher slideshow showing speed acceleration on a distance/time graph

What about that one? (Figure 7.6) That's a cool one! First of one, is it a linear relation? [Students I and M are seen shaking their heads] Correct Student I, it is not a straight line, so it is not linear, so what is the

relation? Is the speed constant? [Student I raises her hand] Student I, go ahead.

Student I: No it's not constant, it is actually getting faster.

Teacher: Yup, you are right. It is getting faster and faster so we can say that the car is accelerating. Okay? [Student I is seen nodding] I will show you how to calculate the non-linear relation later. It is going to be a bit complicated, but we will do that by the end of the week. On the graph, we can see that the car is accelerating, the speed of the car is increasing. [The teacher gestures to show an upward movement]. When speed increases, the car accelerates.

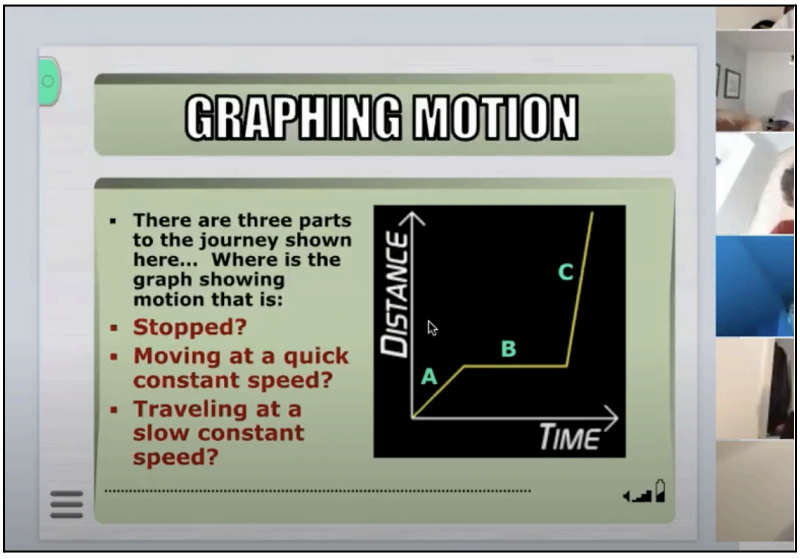


Figure 7.7: Teacher slideshow showing no change in speed on a distance/time graph

What about this one? (Figure 7.7) What's going on there? [The cursor

moves to the straight horizontal line of Graph B] [Student I raises her hand] Yes Student I?

Student I: Maybe it is stuck in a traffic jam, or something like that.

Teacher: Yes, exactly, exactly. The car is stuck in a traffic jam. No change in distance. So the car is not moving. The car moves at speed A, then it stops, and then the car moves at speed C. The cursor follows closely along the line of the graph. Clear? [The students put their thumbs up]

The teacher shares another slideshow. This time the graph shows written explanatory notes. The teacher runs through the graph, summarising the ideas that are discussed

Vignette 7.5 illustrates the process of participation appropriation in a Science class. At the start of the lesson, the teacher first gave an overview to introduce the new unit on physics and informed students that all resources and supporting materials for this unit have been made available on *Google Classroom*. As this was a new unit, the assumption was that the students had limited knowledge and understanding of what was being taught. This vignette follows after the teacher had done some direct instruction on the interpretation of distance/time graphs, apprenticing “a way of reading a certain type of text”. In this literacy event, the teacher was now checking the understanding of the students. Even though the teacher had taught the concepts at the beginning of the lesson, the interpretations of Students M on the first distance/time graph (Figure 7.4), “Ahem, the speed is constant…there is no increase in speed”, and Student J, “That...I was going to say the same thing, but I guess it’s not…Right?” show

uncertainty and incomplete understanding. The teacher, upon observing the responses of the students, clarified their understanding through guided participation. The teacher expanded on the idea contributed by Student M by first reframing the student's idea from "there is no increase in speed" to "The object is not moving. There is no change in the distance. It is a stationary object. So you are right, the speed is constant. It is zero." The teacher reframed the idea several times to promote understanding. Thereafter, the teacher added what was lacking in the students' understanding, which is "The object is not moving at all. A horizontal line like that on a distance/time graph just means that the object is not moving", directly making connections and building the concept.

Later in the lesson, the teacher presented three other graphs (Figure 7.5, 7.6 and 7.7) and asked for interpretations. In the first instance, the teacher asked, "What about that one? Who wants to go for that one? Who can describe this?" and Student I responded, "No it's not constant, it is actually getting faster". In the second instance, the teacher questioned, "What's going on there?" and Student I replied, "Maybe it is stuck in a traffic jam, or something like that". In both instances, Student I participated by raising her hand, nodding, and giving verbal responses. Student I's participation shows development that has been socially mediated by the teacher, illustrating the dynamic and active processes like "thinking, re-presenting, remember, and planning" (Rogoff, 2018, p.151).

The interpretations given by Student M and Student J at the beginning of the lesson which were uncertain and incomplete suggest that students in the class initially had a

limited understanding of distance/time graph. This inference is reasonable, given that the teacher had just introduced this new unit. However, as the lesson progressed, there was increased success in the way the students interpreted the distance/time graphs, indicating a growing conceptual understanding. In contrast to her previous response, Student J's comment on the second graph, "Ahem...like it goes and then it suddenly becomes faster…", demonstrates comprehension of a change in speed on a distance/time graph. Similarly, Student M's non-verbal reaction to the third distance/time graph (Figure 7.6), where she shook her head to indicate a lack of linear relationship, suggests an understanding of speed acceleration on a distance/time graph, which Student I later remarked, "No it's not constant, it is actually getting faster". Furthermore, Student I's interpretations of the final distance/time graph (Figure 7.7) included an extrapolation suggesting that the straight horizontal line on the graph might represent a traffic jam, demonstrating an application of the concept which shows deeper understanding. By the end of the lesson, there was a noticeable improvement in the level of conceptual understanding among these three students, as evidenced by the development of their responses and their increased success in engaging with similar graph interpretation activities.

7.4 LOPI in Online Classrooms

In the earlier sections, I delineated LOPI as individual but socially-mediated processes - apprenticeship, guided participation and participatory appropriation - occurring on the community, interpersonal and personal planes to illustrate the practices of participants in online classrooms. In this section, I will expound on LOPI as comprising these three

"inseparable, mutually constituting" (Rogoff, 2008, p.139) processes, and explain how learning unfolds on across community, interpersonal and community planes in online classrooms, using the conceptual model I developed below to illustrate the dynamic LOPI process in affinity spaces.

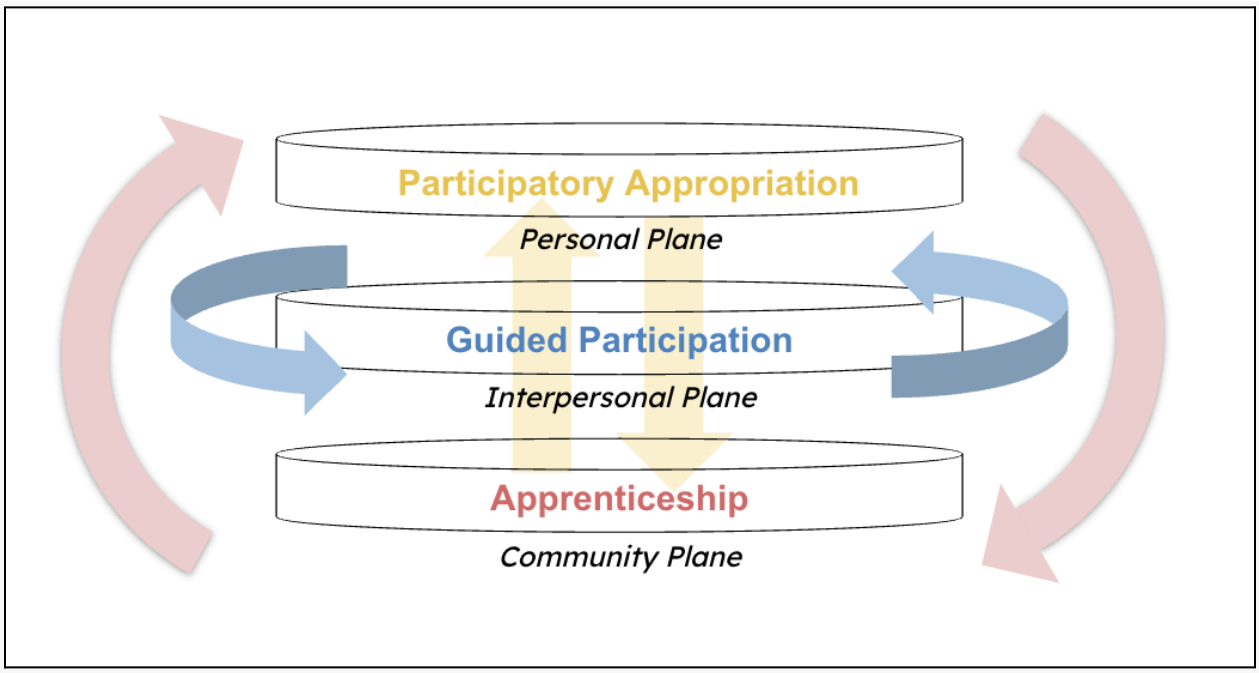


Figure 7.8: LOPI in Affinity Spaces

A conceptual model to show the synthesis of Rogoff's ideas on LOPI and the three planes of analysis framework. As discussed in Chapter II, rather than viewing participatory appropriation, guided participation and apprenticeship as different processes on the separate planes, I adapted the three planes of analysis framework to analyse how participants engage in LOPI on the personal, interpersonal and community planes.

This conceptual model illustrates the various processes of *Learning by Observing and Pitching In* (LOPI) that occur in affinity spaces, with each process operating on a

different plane: apprenticeship on the community plane, guided participation on the interpersonal plane, and participatory appropriation on the personal plane, highlighting the different forms of learning that take place in these learning spaces. Although apprenticeship, guided participation, and participatory appropriation are distinct processes, they are interconnected and mutually influential; changes in one plane will impact the others.

The arrows in the model illustrate the various routes of participation in these dynamic learning spaces. In these learning spaces, all participants are in one way or another involved in apprenticeship as they develop their own practices and that of others. contributing to the collective goal of literacy development. This is indicated by the red arrows that encircle the model. Guided participation emphasises the mutual communication and coordination among participants as they engage in these learning spaces. This process is represented by blue arrows that illustrate supportive, collaborative interactions. Finally participatory appropriation occurs when participants adapts practices and undergo changes through their engagement. These changes, in turn, influence the activity itself, which impacts the other processes. The yellow arrows illustrate this ongoing dynamic, permeating throughout the model.

I will now discuss this model in relation to a literacy event described below in Vignette 7.6. Vignette 7.6 shows a literacy event during an English Language and Literature class where the participants were critiquing two essays and learning about essay writing through LOPI. The vignette captures the dynamic processes of LOPI in an online

classroom as students engage in practices through active participation with others, and learn about essay writing in the process.

Vignette 7.6: LOPI in an English Language and Literature Class (Video 10: November 26)

The teacher shares the screen, and an essay is seen on the screen. The teacher invites Student E to read. As Student E reads, the teacher highlights a sentence in yellow. Student E then nominates a classmate, Student R, to read. Student R reads next. The teacher scrolls down the document as the students read. The teacher is seen highlighting a sentence in purple as Student R reads. Student R nominates Student T to read on. Student T reads the next paragraph. Thereafter, Student T nominates Student M to read. As Student M reads, the teacher is seen highlighting two sentence openers in red. When Student M is done, she nominates Student L to read. Student L reads. Finally, Student L nominates Student Q to read the last paragraph of the essay. The teacher is seen highlighting some sentence openers in purple.

After the reading, the teacher scrolls through the document to comment on the highlighted sentences. The teacher explains the use of the academic register and the incorporation of direct quotes in the essay. The cursor moves along and hovers over the relevant sections as the teacher speaks.

The teacher talks about the structure of the paragraph, inviting students to identify the

topic sentence and comment on the effectiveness of the paragraph. Together, they use those ideas to critique the paragraph.

Teacher: As we read on, the paragraphs get better. The organisation is clearer and more effective. [The teacher scrolls down the document] Can you see that? [Student N nods] Yes, Student N?

Student N: In some paragraphs, the student was able to communicate a key idea and expand on the idea.

Teacher: Yes, the student did it here. [The teacher selects a sentence and changes the colour of the font to red] This student manages to wrap up the discussion nicely here. In these few paragraphs, they kept going back to the main argument of the essay.

The teacher summarises some key learning points from the first essay and moves on to the next essay. The teacher changes the tab on the screen to show the next essay. The teacher invites Student S to read.

After Student S had read the introductory paragraph, the teacher invites other students to share their observations of that particular paragraph and to point out the elements of an effective paragraph. Students put up their hands and share.

The teacher invites Student E to read. Student E reads the next paragraph. After reading, the teacher invites Student E to evaluate the effectiveness of the paragraph. Student E explains the different components of the paragraph, pointing out specific sentences and explaining why they are effective. As Student E shares, the teacher

follows along with the cursor.

The teacher invites Student Q to read. As Student Q reads, the teacher is seen highlighting a quote in yellow. After reading, Student Q comments that the paragraph is organised well. The teacher is then seen editing the final sentence of the paragraph, adding the words “lexicon” and “diction”, explaining the terminology, and then checking the understanding of the students.

The teacher invites Student M to read the subsequent paragraph and Student L to read the last paragraph. After the reading, the teacher scrolls through the document and gives a quick evaluation of the essay, comparing it to the previous essay that the class studied earlier.

The teacher gives the students five minutes to annotate their own copies to consolidate key ideas on essay writing from their discussion. While they work on their own copies, the teacher is seen scrolling through the documents on the screen, removing the highlights that were made earlier.

The teacher checks in with different students to make sure that everyone is preparing their own notes.

Teacher: Can I just get one of you to share? Show us your notes, show us your essay, and just talk us through your annotations. What are some

important essay writing reminders for yourself, and for the class? Who would like to do that?

Student E puts up her hand. Student E shares her screen to show her copy of the essay. The essay shows the student's highlights and annotations. As Student E talks through her notes, her cursor follows along, highlighting the sections that she is commenting on, and recapping the main ideas that are covered earlier during the lesson.

Student R: In this paragraph, the student uses a topic sentence to state the main point of the paragraph, and then she gives an example… she gives like basically evidence...and she explains her evidence, and then she links back, in the last sentence, to the thesis of the essay. Here the student says what she is going to say in the paragraph. And here, the student links back to what she said in the thesis.

The teacher acknowledges Student E's response positively. Student M volunteers to share next. The essay shows Student M's highlights and annotations. Student M's notes are colour-coded. As Student M talks through her notes, her cursor follows along, highlighting the sections that she is commenting on, recapping some ideas that were discussed in the lesson earlier, and building upon Student R's sharing.

Student M: And I also wrote how the quotes are embedded into the sentences. I wrote how in the second and the rest of the paragraphs, she circles

back to the thesis. And also how the introduction gives context to the poem. The teacher acknowledges Student M's response positively.

The lesson began with students taking turns reading a sample essay, while the teacher highlighted important phrases in the essay, which were visible to all participants as the sample essay was shared on the screen. Students were actively engaging, observing the essay as it was being annotated, and pitching in by participating accordingly when they were asked to read. The English teacher, who has more experience and expertise in writing and critiquing essays provided direct instruction to support the literacy development of the "less experienced" (Rogoff, 2018, p.142) students. The teacher scrolled back up to the top of the document and commented on the highlighted sentences, explaining key components of essay writing, the use of the academic register, and the incorporation of textual evidence in the essay. As the teacher spoke, the cursor on the essay moved along to illustrate what she was commenting on. In this literacy event, the teacher modelled the practices and the process was heavily led by the teacher. This apprenticeship was observed on the community plane, where the interactions such as the teacher-led instructions and practice of modelling are represented by red arrows in the conceptual model.

The teacher then showed the second essay sample. In addition to inviting students to read, the teacher also invited students to share their observations and evaluate the paragraphs. Students put up their hands and were keen to contribute. Again students

were observing and pitching in, and this time, through guided participation. The students engaged in the practices as they volunteered to participate, identifying and explaining the elements of the paragraphs, while the teacher supported their participation by highlighting the ideas that they commented on. The teacher modified her participation according to what she observed and structured the activity to encourage more participation from the students as they were now ready to contribute more. Together, they critiqued the second essay through guided participation. The interactions and collaborations described here took place on the interpersonal plane. Whether solicited or voluntary, the interactions among the participants - both students and the teacher - were more spontaneous and responsive to the situation. These interactions, characteristic of guided participation, encouraged greater engagement among the participants and exemplified the supportive, collaborative dynamics depicted by the blue arrows in the conceptual model.

Later in the vignette, after the teacher had given the students time to take notes and consolidate ideas on their own documents, she invited students to share again, “Can I just get one of you to share? Show us your notes, show us your essay, and just talk us through your annotations. What are some important essay writing reminders for yourself, and for the class?” Student E volunteered to share. Like the teacher, Student E shared her screen to show her copy of the essay with her highlights and annotations. Like the teacher, Student E talked through her notes, her cursor followed along, highlighting the sections that she was commenting on, and recapping the main ideas that were covered earlier during the lesson. Student M volunteered to share next, and

exactly like Student I, she engaged in the same set of practices that her teacher used in the critique of the first essay sample. As seen in the vignette, both Student M and Student I engaged in the same practices as the teacher in critiquing the first essay sample. The process by which both students adapted and developed their practices occurred on the personal plane. This change in their practices will impact their future participation in similar activities and influence others' engagement in developing their own practices, as reflected by the yellow arrows that permeate the conceptual model.

Through LOPI which comprises apprenticeship, guided participation, and participatory appropriation, the practices demonstrated by the students have evolved to resemble those of their teacher by the end of the lesson. Through their participation, the students demonstrated their critical thinking abilities, which are essential for essay writing. The contributions indicate their readiness for similar tasks, such as self-evaluating their own essays and providing feedback to their peers on their writing.

The conceptual model shows not only the "inseparable, mutually constituting" (Rogoff, 2008, p.139) nature of the different planes of interactions, but also emphasises the multidirectional routes of participation that take place in these online classrooms conceptualised as affinity spaces. Depending on individual interest and motivation, some participants in these learning spaces will attain mastery of literacy while others might just develop enough to operate confidently. LOPI in online classrooms involves a dynamic interplay between personal, interpersonal, and community engagement, with each plane shaping and enriching the overall learning experience.

7.5 Conclusion

LOPI offers a perspective to understand learning as development that is socially mediated in these online classrooms. I will conclude this chapter with a utilisation (Figure 7.9) of Rogoff's LOPI Prism (2021) (Figure 2.1) as a way to summarise key ideas from this chapter. As explained In Chapter II, Rogoff's LOPI Prism explains learning in cultures that emphasises communal activities. The prism below details and explains what LOPI looks like an in online classroom.

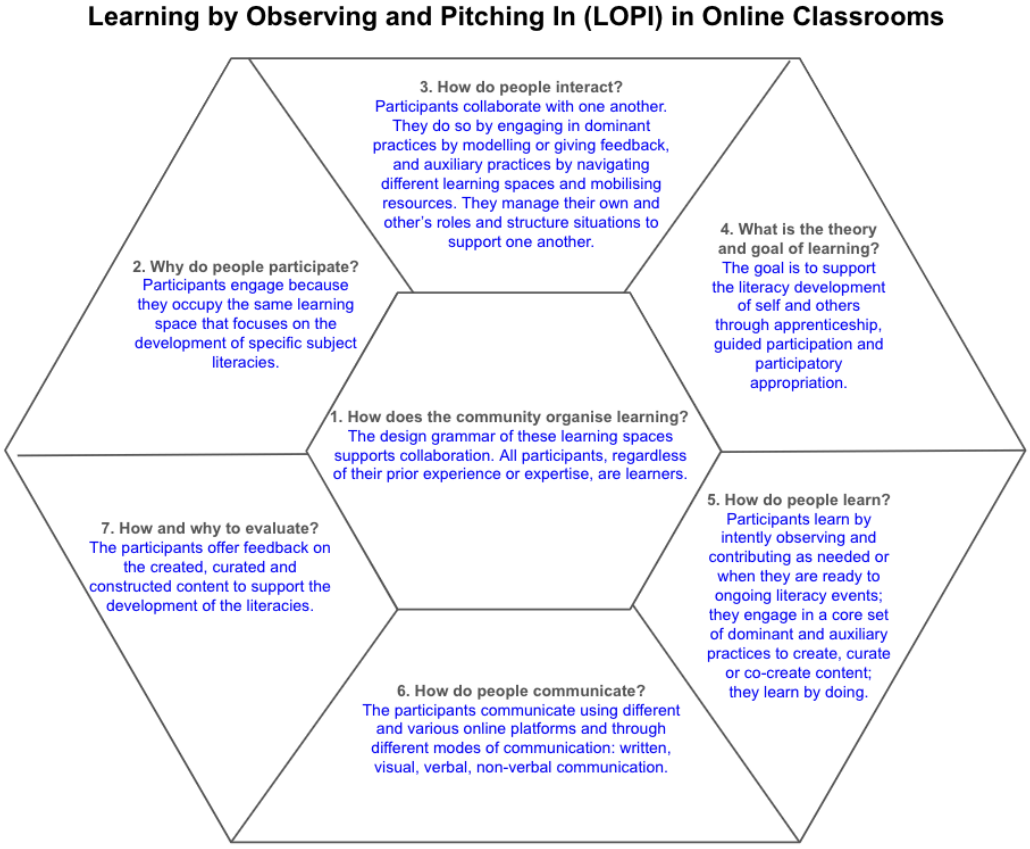


Figure 7.9: A utilisation of LOPI Rogoff's LOPI Prism (2021) *showing LOPI in Online Classrooms*

In these online classrooms, various forms of learning happen, and participants, regardless of their prior experience or expertise, contribute in various ways to the collective goal of literacy development. There is a dynamic process of appropriation, fostered by guided participation in an apprenticeship system. All participants, whether they are students, teachers, or anyone who joins these online classrooms, are considered learners, as they are in some ways or others involved in apprenticeship and developing their practices in these learning spaces. Even teachers learn as their practices develop through their interactions with their students. Once they are in these learning spaces, not only are their roles active, but they are dynamically changing. LOPI is the act of doing through interaction with others' development.

On the community level, the institutional structure of these online classrooms is deliberately designed to promote apprenticeship, emphasising the importance of external design grammar in fostering culturally organised activities. Intellectual activities that support literacy development are also observed on this community plane. Teachers take on an active role in teaching students how to read, talk, and interact with specific types of texts. This process of apprenticeship occurs through ongoing interactions, where less experienced individuals learn from those with greater expertise.

On the interpersonal level, the central focus is on communication and coordination among participants. Asymmetrical participation is acceptable, with individuals paying attention and observing ongoing activities to time their participation effectively, or to participate when ready. In these online classrooms, both teachers and students are

observed to manage roles and structure situations to encourage guided participation as needed. They adapt their roles and provide support to one another. This mutual support and participation contribute to the growth and readiness of individuals within these online classrooms.

On the personal level, participants show change and adapt practices through the appropriation of literacy practices and become better prepared for similar activities. Participation itself is a fundamental aspect of the learning process; through the act of participatory appropriation, there is a development of literacy practices. Depending on individual interest and motivation, some participants in these learning spaces will attain mastery of literacy while others might just develop enough to operate confidently in these learning spaces.

As demonstrated by LOPI, various forms of learning happen in these online classrooms and in affinity spaces, with participants contributing in different ways to the collective goal of literacy development. These online classrooms operate as an apprenticeship system, where activities and interactions are structured by guided participation. Through participatory appropriation, there is change and development in literacy practices, and therefore learning. This is what LOPI looks like in online classrooms and in affinity spaces - a dynamic process of participatory appropriation fostered by guided participation in an apprenticeship system. Through the process of LOPI, participants engage with texts and others in various ways to develop and evolve their literacy practices, resulting to meaningful learning.

Chapter VIII: Conclusion and Implications

In this thesis, I explored what learning looks like in online classrooms that I conceptualised as affinity spaces, pushing new literacies into formal learning environments. I have sought to answer the following research question: *What are the participation practices that emerge in these online classrooms conceptualised as affinity spaces?* As I began to iteratively collect and analyse data, I thought more about the collaboration among the participants and the outcomes of their co-construction efforts, which led me to question: *What do the literacy artefacts reveal about the design grammar of these online classrooms?* Finally, to understand how the practices I observed reflected learning, I connected my observation to the learning theory chosen for my study; I probed further: *What does Learning by Observing and Pitching In (LOPI) look like on the community, interpersonal, and personal plane in these spaces?*

This chapter will conclude my research by first summarising, and then presenting critical findings in relation to the three research questions. Following that, it will discuss the contributions in both theory and practice, as well as the real-world application of the research findings. Thereafter, the limitations of the research will be reviewed, followed by recommendations for future research and a conclusion.

8.1 Summary of Discussion

In exploring the first research question, *What participation practices emerge in these online classrooms conceptualised as affinity spaces?* Participants were observed to engage in many participation practices. Regardless of their roles - be they students or

teachers, novices or masters - the participation practices remain largely the same. However, the utilisation of these practices varies depending on individuals' expertise and experience. More importantly, everything that one does in these learning spaces influences collaboration, which I identified as the core practice in these online classrooms. I identified modelling and giving feedback as the two dominant practices that directly influence collaboration, while navigation of learning spaces and resource mobilisation serve as auxiliary practices that support collaboration.

The two dominant practices that directly influence collaboration are modelling and giving feedback. As leadership is porous and flexible in these online classrooms, everyone can be a resource and can step up to model and “show how things are done”. In these learning spaces, participants take on reciprocal roles and actively utilise feedback in their collaborative efforts with one another. The two auxiliary practices that support collaboration are the navigation of learning spaces and resource mobilisation. The affordances of the digital environment have given participants the ability and ease to navigate different learning spaces and mobilise distributed resources, contributing to collective intelligence in collaborative work. It is worth noting that these practices often overlap, enhancing the overall collaborative dynamic.

In investigating the second research question, *What do the literacy artefacts reveal about the design grammar of these online classrooms?* I gained insight into the ways organisational and compositional elements work together to enable collaboration in these learning spaces. First, my analysis of the external grammar of these online

classrooms reveals two salient features that concern their setup and configuration; these learning spaces are designed to accommodate both participants and resources, and their ability to generate content plays a critical role in promoting collaborative engagement among the participants. Next, my analysis of the internal design grammar of these online classrooms reveals that all content produced in these online classrooms - created, curated, or co-constructed - was designed to facilitate collaboration. Acting as content generators, the internal design grammar of these online classrooms shows extensive use of interactive and multimodal elements to promote collaborative participation. Importantly, the internal design grammar of these learning spaces is dynamic, evolving through continuous interactions and active engagement of the participants.

Furthermore, portals serve as pivotal elements in both the external and internal design grammar of these classrooms. Core portals are established externally to delineate these spaces, hosting resources and facilitating gatherings, while internally, they serve as entry points for participants to access and engage with content, either independently or collaboratively. Connecting to the earlier section on participation practices observed in these online classrooms, weak portals involve auxiliary practices where participants navigate learning spaces to access resources, while strong portals are essential for dominant feedback and modeling practices among participants. Collectively, these design features and participation practices promote collaboration among the participants in these learning spaces.

In inquiring into the third research question, *What does Learning by Observing and Pitching In (LOPI) look like on the community, interpersonal, and personal plane in these spaces?* I understood learning in these online classrooms as a process of development that is socially mediated. More specifically, learning is a dynamic process of appropriation, fostered by guided participation in an apprenticeship system. Within these online classrooms, various forms of learning happen, and participants, regardless of their prior experience or expertise, contribute in various ways through their interactions to the collective goal of literacy development.

On the community level, the institutional structure of these online classrooms is deliberately designed to promote apprenticeship, emphasising the importance of external design grammar in fostering culturally organised activities. This process of apprenticeship occurs through ongoing interactions, where less experienced individuals learn from those with greater expertise. On the interpersonal level, the central focus is on communication and coordination among participants. Participants manage their roles and structure situations to encourage participation as needed to support one another. This mutual support and participation contribute to the growth and readiness of individuals within these online classrooms. On the personal level, participants show change and adapt practices through the appropriation of literacy practices and become better prepared for similar activities. In these online classrooms, participation itself is a fundamental aspect of the learning process, leading to development that is socially mediated. These online classrooms operate as an apprenticeship system. The activities and interactions are structured by guided participation. Through the act of participatory

appropriation, there is a development of literacy practices. This is what LOPI looks like in an online classroom.

8.2 Critical Findings

Through my investigation, I observed LOPI across all subjects in all the online classrooms, highlighting that learning is inherently a socially-mediated process. When individuals gather in a common space designed for collaboration, learning happens. That being said, it is not just what participants do in these online classrooms that influences collaboration; these online classrooms are also inherently designed to facilitate collaboration. The online classrooms were set up so that participants could come together in these online classrooms to act on subject-specific content with other participants. These learning spaces evolve over time through ongoing interactions and feedback from participants to improve their collaborative efforts. The intuitive and evolving design and functionality of online classrooms as collaborative spaces aligns with the sociocultural perspective on literacy, emphasising learning as a social practice involving interactions with others (Gee, Hull & Lankshear, 1996, p.6).

It also became apparent in this investigation that despite variations in subject matter, lesson activities, and roles, participants in these online classrooms consistently employ a repertoire of practices to support literacy development: modeling, giving feedback, navigation of learning spaces, resource mobilisation, and collaboration. Collaboration emerges as a lynchpin practice essential to achieving their common endeavours within these learning spaces.

Interestingly, what were initially identified as auxiliary practices - navigation of learning spaces and resource mobilisation - supporting but not integral to collaboration, emerge as critical components in enhancing collaborative endeavours. These auxiliary practices play a pivotal role in leveraging distributed expertise and harnessing the collective intelligence of the group, which can significantly improve the quality of collaborative efforts. The digital environment of online classrooms uniquely affords participants the ability to navigate different learning spaces to promote interaction with content and other participants and mobilise resources to enrich collaborative efforts. However, weak portals primarily involve auxiliary practices, resulting in diminished opportunities for dominant practices such as modelling and giving feedback, consequently limiting the ability of participants to interact with contents and one another, thereby, impacting the overall effectiveness of collaboration. Online classrooms can therefore be designed more purposefully for better collaboration by engineering stronger portals.

In these online classrooms where learning is inherently a socially-mediated process, digital affordances enable auxiliary practices such as navigation of learning spaces and resource mobilisation to enhance collaborative endeavours, while strong portals facilitate dominant practices such as modelling and giving feedback, essential for effective collaboration.

8.3 Contributions

I will now discuss my theoretical and methodological contributions of the research findings. The integration of Gee's (2018) concept of affinity spaces with Rogoff's (2014, 2015) theory of *Learning by Observing and Pitching In* (LOPI) as a theoretical framework of my research is a significant theoretical contribution of this research. As a spatial theory, affinity spaces provide a framework for examining online classrooms as sites of literacy practices, emphasising the importance of participant interactions and the diverse range of participation trajectories in these learning spaces. However, as discussed in Chapter II, Gee's theory offers limited explanation of the learning process itself, merely positing that participation in affinity spaces is part of an enculturation process that naturally promotes deep learning. To address this gap, my research incorporates Rogoff's LOPI framework to gain a deeper understanding of the dynamics of learning in these online classrooms. LOPI offers a perspective to understand learning as development that is socially-mediated in these affinity spaces. Like Gee's concept of affinity spaces, the LOPI theory also recognises the flexibility of participant roles and the multi-directional nature of participation. It highlights a learning process where participants engage in practices that are participatory, collaborative and distributed in nature. In these online classrooms, all participants engage in learning even though they are at different stages of their practices, and alternate between being mentored and mentoring others; some achieving full mastery while others do not, but they all contribute to the collective intelligence in these learning spaces. By applying LOPI to the context of online classrooms, my research examines how learning occurs in these affinity spaces. This dynamic and multi-faceted learning process involves the

transformation of practices through participatory appropriation on a personal plane, supported by guided participation on an interpersonal plane, and situated within a system of apprenticeship established on a community plane.

The complementary application of these two theories is a significant theoretical contribution of this research, allowing for a deeper exploration of how learning could unfold in formal schooling environments. Gee's theory is grounded in *New Literacies Studies* (NLS), while Rogoff's work is rooted in cultural research on Indigenous-heritage communities. Neither theory is typically associated with formal schooling environments. The integration ot these theories, both being unconventional in the context of formal schooling, is a novel and valuable theoretical contribution.

As noted in Chapter III, Marsh (2018, 2021) is one of a small number of researchers who has pushed the boundaries of new literacies by reimagining the formal classroom as an affinity space. Researchers need to study how affinity spaces can be implemented in areas that matter, such as in classrooms where there are few cases (Gee & Hayes, 2011). Like Marsh, I contribute to this conversation by contextualising formal learning - learning in the classrooms - with an affinity space lens, highlighting the affordances of these spaces in developing new literacies, as well as understanding what learning looks like through LOPI in these learning spaces.

In her work, Marsh (2018) looked at participation practices, in particular, the use of peer feedback among students working on multimodal projects in a high school writing class,

Creative Writing. Marsh concluded that the role flexibility of the teacher and role reciprocation among students observed in these affinity spaces facilitated multidirectional participation and encouraged multimodal collaboration, challenging hierarchical relations in a traditional classroom. Marsh also noted a preference for peer feedback over teacher feedback among the participants who considered other peers as more authentic collaborators than their teacher. Marsh regarded peer feedback as a portal that promoted collaboration by providing access to more interactions with other content generated in these affinity spaces. Marsh's research centers around a high school writing class, much like the other researchers discussed in Chapter III who bridged out-of-school and in-school literacy practices in their work. Their studies also share the commonality of being based on a single course, often within the realm of English or writing **(**Alvermann & Hagood, 2002, Guzzetti & Gamboa, 2005, Curwood & Cowell, 2011, Bhatt's, 2012, Curwood, Lammers & Magnifico, 2017, Lammers & Van Alstyne, 2018, Smith's, 2019, and Toncic, 2020**).**

In contrast, my research is based on a network of online classrooms spanning seven different subjects where I examine the emergence and intersection of literacy practices across the different subjects taught at school. Beyond Marsh's concept of "teacher flexibility", my research examined the literacy practices of all learners, both students and teachers. In my research, teachers were regarded as participants in my study, just like their students, with no hierarchical difference in the space they embody. My research findings reveal a set of participation practices utilised by all participants in these affinity spaces. Collaboration emerges as the core practice, with modelling and giving feedback

taking precedence as dominant practices, while navigating learning spaces and mobilising resources serve as auxiliary practices. This broadens the discourse beyond Marsh's exploration of peer feedback.

Moreover, my research into the design grammar of these online classrooms expands Marsh's notion of peer feedback as a portal that promotes collaboration in these affinity spaces and emphasises the critical role of the design of these learning spaces in promoting collaborative work. My work has introduced concepts that explore how digital affordances enable auxiliary practices like navigation of learning spaces and resource mobilisation, thus enhancing collaborative endeavours, and how strong portals are essential for effective collaboration as they facilitate dominant practices such as modelling and giving feedback.

In terms of methodology, I also successfully conducted connective ethnography completely online, utilising video recordings and literary artefacts to generate rich data characterised by its thick description. Connective ethnography, an emerging methodological approach, is guided by meaningful practice and connections, which enables researchers to begin in one place or space, and follow the connections, whether online or offline. This methodology is particularly well-suited to my research sites: online classrooms that emerged due to the abrupt disruptions of the global pandemic and were inherently dynamic in nature. It allowed me to study the sudden phenomenon of schools moving online as a result of the global pandemic and it also

aligned with my ontological position that views the online and offline as “one social world” (Baker, 2013, p.132).

By taking advantage of the affordances of technology, I was able to conduct my fieldwork remotely as physical immersion into my research sites became otherwise impossible. The video recordings provided a comprehensive and enduring record of the interactions in these online classrooms; I could view and “observe” my participants as many times as I wanted to generate rich data. Additionally, the inclusion of artefacts helped illustrate the data and enhance its reliability, contributing to the thick description of the data. The methods that I employed for this connective ethnography allowed me to successfully observe practices among participants in these online classrooms.

My research successfully integrated Gee’s affinity theory and Rogoff’s LOPI theory, both traditionally associated with non-schooling contexts, to examine how learning unfolds in online classrooms. Additionally, I expanded Marsh’s work by illustrating the operation of a hierarchy of participation practices specific to online classrooms. Methodologically, my research demonstrated the feasibility of conducting connective ethnography entirely online, utilising video recordings and literary artifacts. These research findings offer significant theoretical and methodological contributions, advancing our understanding of participation practices in online classrooms.

8.4 Implications for Future Pedagogy

My initial focus as a researcher was on the practices of participants in online environments, rather than the platforms that support online learning. However, I now recognise the practical implications of my findings for both research and classroom practice, particularly in shaping the design of learning spaces and informing pedagogical approaches.

My research emphasises the importance of designing learning environments - whether online or physical - to promote effective collaboration. The most conducive learning spaces for collaboration connect participants, facilitate engagement, provide access to resources, and allow participants to generate and distribute content.

In online classrooms, the key aspect to promoting collaboration is ensuring strong portals to support dominant practices such as modelling and giving feedback. These portals enable participants to interact with the content and with one another in ways that promote meaningful collaboration. In physical classrooms, the quality of collaboration efforts can be enhanced by providing digital devices with Internet access for group work. These devices support auxiliary practices, allowing participants to navigate various learning spaces and mobilise different resources to enhance their collaborative efforts.

Pedagogically, my research findings advocate for a shift in focus beyond subject content. Participants learn by doing, and pedagogical practices should emphasise how participants engage with content - both individually and collaboratively - rather than

treating the content as the ultimate goal of learning. Instead, content should serve as a vehicle for developing dominant practices, such as modeling and giving feedback. These practices are foundational for effective collaboration and should be explicitly taught in the classrooms. Mastery of these dominant practices can significantly enhance participant engagement and the quality of collaboration.

While not a novel concept, the research highlights the potential of digital affordances in supporting differentiation. In online environments, participants can connect and engage in diverse ways, navigate different learning spaces, and mobilise resources that contribute to the collective intelligence of the learning spaces. This flexibility allows participants to engage with content in various ways according to their individual interests and specific needs, thus enriching the overall learning experience.

With the growing presence of artificial intelligence (AI), such as chatbots, the impact of these AI tools on the design of learning spaces should also be considered. These AI tools can serve as strong portals for dominant practices like modelling and giving feedback. As strong content generators, these AI tools could potentially enhance collaboration efforts. However, if not utilised effectively, these AI tools could inadvertently limit participants' opportunities to engage in practices, thereby hampering learning.

My research findings stress the importance of thoughtful pedagogical design that incorporates these elements. The external design grammar of online classrooms should

be structured to facilitate interactions and engagements, which are essential for collaborative learning. Physical classrooms can incorporate digital devices to ensure access to resources. In both contexts, the focus should be on creating learning environments where learners can mobilise resources and engage with content and with others in ways that promote and enhance collaboration.

Ultimately, the research emphasises learning by doing. By focusing on the development of dominant practices - modeling and giving feedback, educators can create learning environments that promote collaboration and learning in various subject areas. These practices should be explicitly taught and embedded in both online and physical classrooms to ensure effective learning.

8.5 Limitations

The key limitation of this research is the short-lived nature of the phenomenon studied which lasted for around two years, as discussed in Chapter IV**.** Even though it was a significant event that triggered massive institutional changes and transformed traditional schooling practices, schools have largely returned to the way they operated in the past, showing how entrenched and enduring traditional school systems and practices are. This research explored various aspects of learning that are important to the way we all learn contemporarily, but the interest and discourse on this subject might have come to a premature stop due to the temporariness of the phenomenon. Nevertheless, the event remains pivotal, providing a “time capsule” glimpse into what happened - and what

could happen - when the boundaries between physical and virtual spaces in schooling completely dissolve.

Another limitation of this research concerns the dynamic nature of the international school community which is in continuous flux with students and teachers moving in and out of the school community. Although my sample size of participants remained the same throughout the data collection period, it would have been difficult to follow up with interviews if I had wanted to due to the relocation of the participants and in this case, the researcher as well.

8.6 Recommendations for Future Work

Although my research is based on a certain type of international school and offers a localised “time capsule” perspective, the findings still provide valuable insights into what might happen if the boundaries between physical and virtual spaces in schooling completely dissolved. Moreover, it also presents an opportunity to examine this phenomenon through the combined lens of Gee and Rogoff's theories. While these theories are not typically applied in formal schooling contexts, they are not entirely incompatible, as reflected in this research. With imagination and effort, their application could uncover more similarities than NLS proponents might initially assume. Future research could explore innovative applications of such theories in the context of formal learning spaces.

The way we learn contemporarily will continue to evolve as our lives become increasingly intertwined with digital spaces and platforms. Future research could also explore the interplay between portals and participatory practices in the design of online learning spaces. Additionally, future research could include all participants in formal learning environments, not just students. It will be interesting to investigate further into professional development of teachers through LOPI in these learning spaces. Moreover, the emergence of online schools in the wake of the pandemic presents promising research sites deserving of thorough investigation.

8.7 Some Final Thoughts

As I reflect upon my six-year journey towards obtaining a PhD, one particular moment stands out as both frustrating and enlightening: the onset of the global pandemic. This unprecedented event disrupted my data collection process, which was well underway, focusing on observing learning spaces in an after-school gaming club. However, the interruption, though frustrating initially, turned out to be an interesting turn of events. It taught me invaluable lessons about the reflexive nature of research and the importance of honouring the research process, as painstaking as it was back then to adapt to the evolving landscape and to reassess my research for its relevance, value and even practicality. With physical immersion in ethnographic research no longer feasible, I pivoted to observe how students learn in online classrooms that are conceptualised as affinity spaces instead. As both a classroom teacher and researcher, investigating new literacies within a formal classroom proved far more engaging and enlightening.

Now, in 2024, I am finally writing up my research based on the phenomenon sparked by the 2019 pandemic. The unprecedented mass migration of schools online showcased our adaptive capacity and the potential of our technology-mediated learning environment. As a researcher, I am grateful for the opportunity to study a phenomenon previously unimaginable. Even though schools may have mostly reverted to our old ways of doing things, educators have experienced a paradigm shift and I hope the experience has impacted the way they imagine classroom learning. As educators and researchers, there is value in embracing the ethos of new literacies in formal learning environments, and prioritising participation practices over mere instructional content when it comes to learning.

Appendix A: Email Requesting Participation Consent

Research Study Invitation & Consent Form

1 message

Sou Leong <s[redacted]> 17 October 2020 at 13:06
To: Sou Leong[redacted]

[redacted]

Dear Parents of Year 11 Students,

I am writing to invite your child to take part in a research study titled "Multi-sited Ethnography of Learning in Affinity Spaces". This is my third and final year of data collection and I am interested in how school closure and online learning has and will transform formal schooling practices.

My field work will involve observing Zoom lessons during online learning and actual lessons when we return to the physical campus. By giving consent, it will allow me to involve your child directly in the collection and interpretation of the data. It will also allow me to report data that is directly related to your child, although s/he will be anonymous in the study.

Here is the consent form that I hope you and your child can complete. You will find a link to more information of the research study on the form.

Thank you for considering my request. I sincerely hope that you can support my research.

Warm regards,
Sou

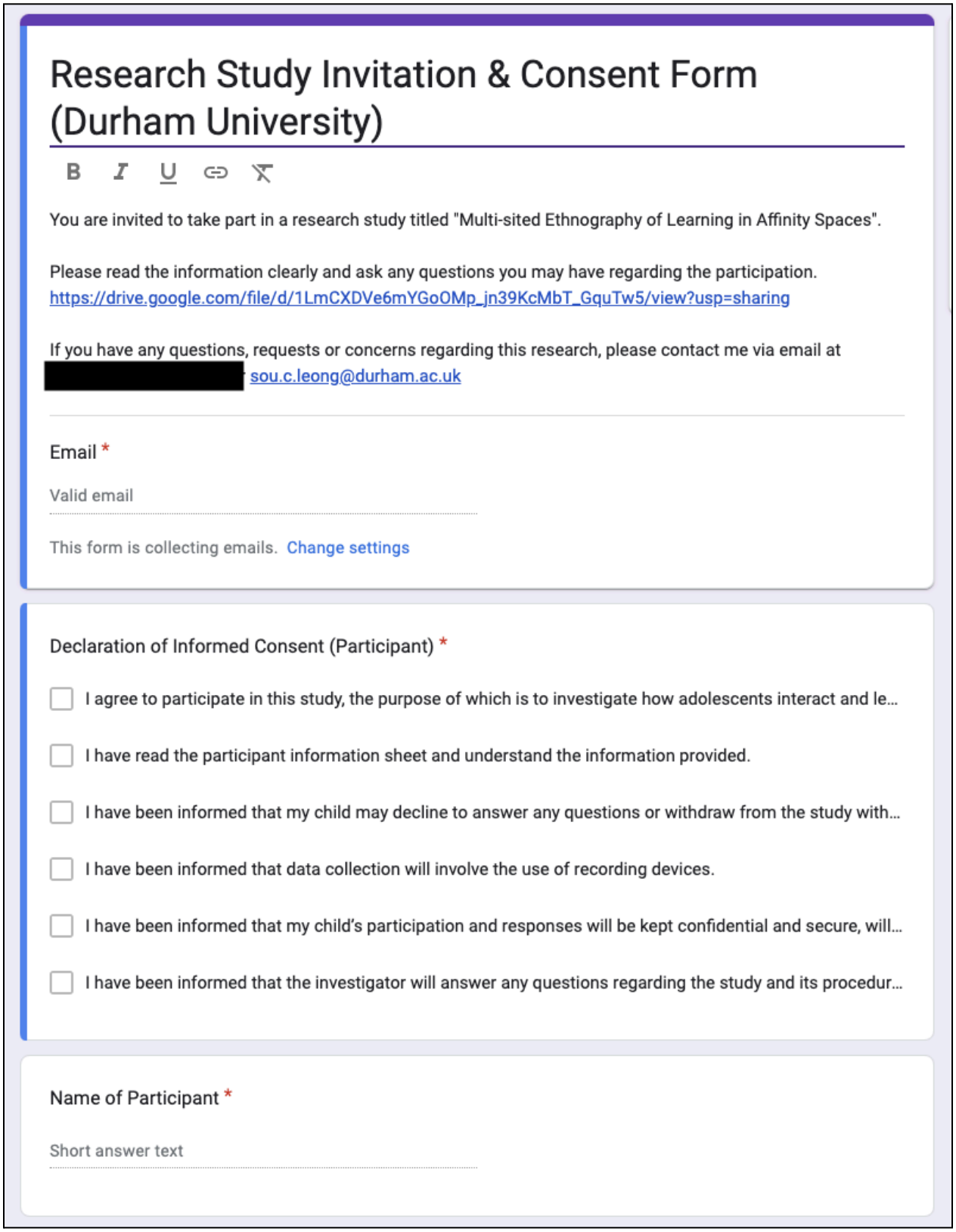
--

Sou Leong-Ellerker | Personal Project Coordinator | MYP/DP English Language & Literature

[redacted]

Our Mission: A diverse community of learners, committed to fostering compassionate, confident and socially responsible individuals who thrive in the world.

Appendix B: Consent Form



Research Study Invitation & Consent Form (Durham University)

You are invited to take part in a research study titled "Multi-sited Ethnography of Learning in Affinity Spaces".

Please read the information clearly and ask any questions you may have regarding the participation.
https://drive.google.com/file/d/1LmCXDVe6mYGoOMp_jn39KcMbT_GquTw5/view?usp=sharing

If you have any questions, requests or concerns regarding this research, please contact me via email at [redacted] sou.c.leong@durham.ac.uk

Email *

Valid email

This form is collecting emails. Change settings

Declaration of Informed Consent (Participant) *

- [ ] I agree to participate in this study, the purpose of which is to investigate how adolescents interact and le...
- [ ] I have read the participant information sheet and understand the information provided.
- [ ] I have been informed that my child may decline to answer any questions or withdraw from the study with...
- [ ] I have been informed that data collection will involve the use of recording devices.
- [ ] I have been informed that my child's participation and responses will be kept confidential and secure, will...
- [ ] I have been informed that the investigator will answer any questions regarding the study and its procedur...

Name of Participant *

Short answer text

Declaration of Informed Parental Consent *

- [ ] I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both.
- [ ] I have read the participant information sheet and understand the information provided.
- [ ] I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind.
- [ ] I have been informed that data collection will involve the use of recording devices.
- [ ] I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym.
- [ ] I have been informed that the investigator will answer any questions regarding the study and its procedures.

Name of Parent of Participant *

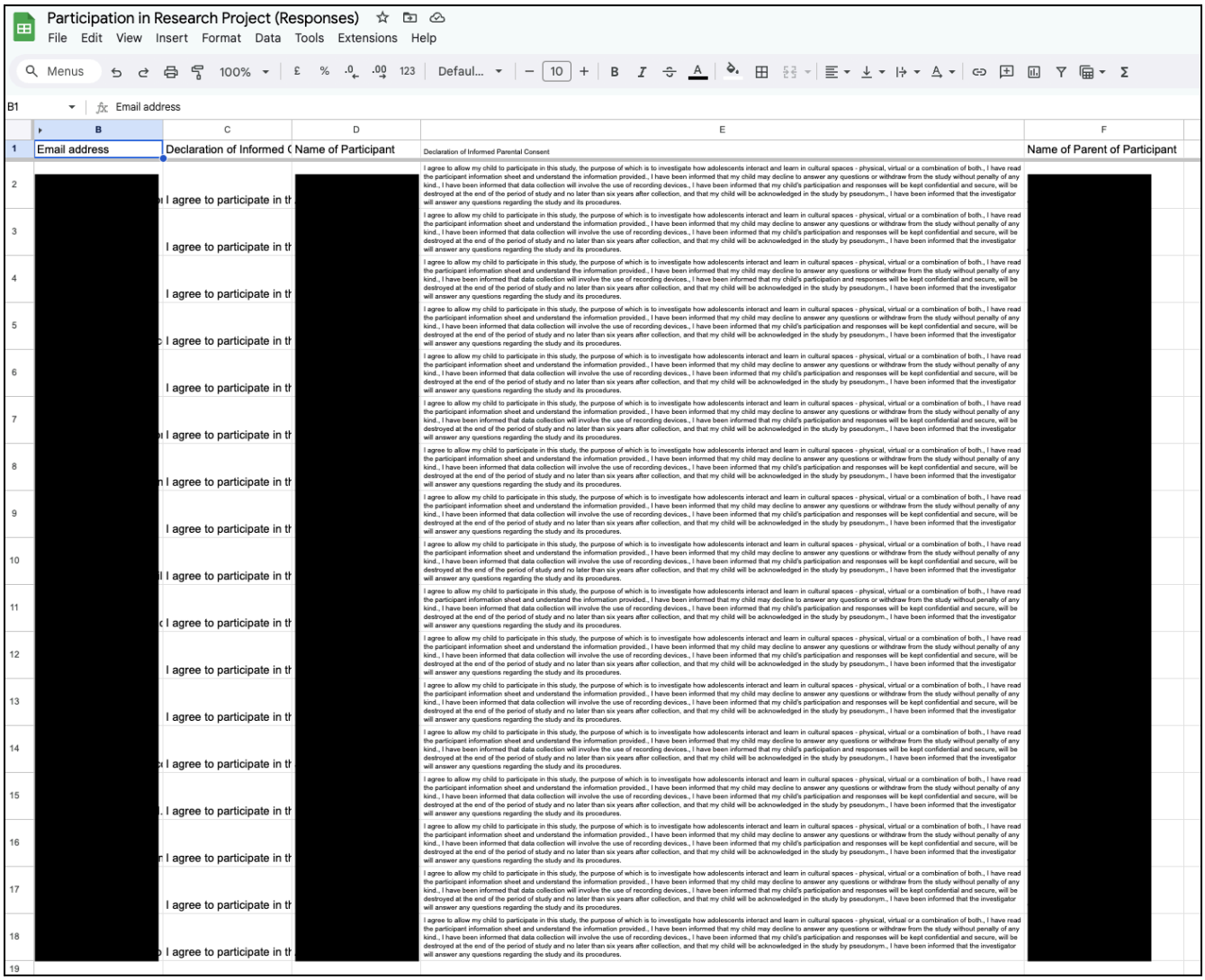
Your answer

A copy of your responses will be emailed to the address you provided.

Submit Clear form

Never submit passwords through Google Forms.

Appendix C: Consent of Participants' Parents



Participation in Research Project (Responses)

File Edit View Insert Format Data Tools Extensions Help

B1 Email address

	B	C	D	E	F
1	Email address	Declaration of Informed C	Name of Participant	Declaration of Informed Parental Consent	Name of Parent of Participant
2	[redacted]	I agree to participate in th	[redacted]	I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	[redacted]
3		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
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6		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
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8		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
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12		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
13		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
14		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
15		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
16		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
17		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
18		I agree to participate in th		I agree to allow my child to participate in this study, the purpose of which is to investigate how adolescents interact and learn in cultural spaces - physical, virtual or a combination of both., I have read the participant information sheet and understand the information provided., I have been informed that my child may decline to answer any questions or withdraw from the study without penalty of any kind., I have been informed that data collection will involve the use of recording devices., I have been informed that my child's participation and responses will be kept confidential and secure, will be destroyed at the end of the period of study and no later than six years after collection, and that my child will be acknowledged in the study by pseudonym., I have been informed that the investigator will answer any questions regarding the study and its procedures.	
19					

Appendix D: Email Requesting Teacher Consent

Online Learning Observation for Personal Studies

12 messages

Sou Leong [redacted] 1 October 2020 at 14:14

[redacted]

Dear Year 11 teachers,

I am writing to ask for a favour.

As many of you probably knew, I was organizing gaming clubs to observe how adolescents learn with others in different spaces. Schooling environments have become way more dynamic since COVID-19 and campus closure, and I would now like to observe how adolescents learn in our "formal schooling" systems (online at the moment).

Unlike the gaming clubs where I carried out my research as an observer, it is now impossible for me to do so since I am teaching at the same time. One way for me to gather the data I am interested in is through lesson observations. I would like to ask if I could observe your Zoom classes. Depending on how many classes I can get into, I will schedule the classes accordingly, probably from October till the end of the academic year. I will not be going into all your classes. I will be a quiet observer, just lurking in the background.

I am choosing to observe Y11s because of the PP as well. I have not started gathering data on this cohort as a whole because I still need to get consent from participating students and parents as well.

I would greatly appreciate your support in this.

Thank you very much for your consideration.
Sou

--

Sou Leong-Ellerker | Personal Project Coordinator | MYP/DP English Language & Literature

[redacted]

Our Mission: A diverse community of learners, committed to fostering compassionate, confident and socially responsible individuals who thrive in the world.

[redacted] 1 October 2020 at 14:27

Hi Sou,

No problem. I'll invite you to my Google Classroom so you can see when the Zooms are happening.

Cheers,

[redacted]

Sent from my iPhone

Appendix E: Observation Memo

See	Think	Wonder
Classroom management style in general seems authoritative, but more permissive than in a physical classroom: attendance, tardiness, engagement, completion of homelearning tasks	Unlike in a physical classroom, there is no "captive audience". Student have **the** choice to join Zoom, and to turn on their camera. They can choose not to if they find the teacher too authoritative. Teachers have a limited view of their students when teaching on Zoom, esp while sharing screens and navigating among different learning spaces. In a physical classroom, a lesson is easily disrupted if a student shows up late. On Zoom, unless there is a "waiting room" set up, latecomers just join the lesson without disrupting the lesson. Students could also leave during the lesson, unnoticed. Like an affinity space, participants can choose to come and go. There is greater autonomy.	Why would I consider a online lesson an "affinity space"? Students do have "a choice" whether to join the lesson and participate. They can choose to come and go, unnoticed. Classroom - top-down Affinity space - bottom-up LOPI - middleground?
If looking at the screen, the focus of the speaker, mainly the teacher, the "face-to-face" encounter feels more intense and immediate. Experience may feel more sensory than in the physical classroom.	In a physical classroom, there is more felt space. And depending on the location of the seat in the classroom, the proximity to the teacher differs. if a student were to fully focus on the teacher, the onscreen encounter feels closer, more immediate and intense. The sensory experience is even more pronounced if the student were to wear noise-cancelling headphones. If a student chooses not to participate, this does not matter.	Akin to a gaming experience? Learning experience more adapted to screen-based (viewing) audience?
Zoom classrooms are "quiet", and "sitting and listening" seems to be the de facto style of learning		
Lessons are mostly designed to be discussion-based, but teacher talk dominates most lessons	The nature of teacher talk here is worth noting. Even though teacher talk appears to dominate most lessons, it is not a content-heavy lecture. Teacher talk observed consists of oral feedback to student learning, giving and clarifying directions, describing context of learning engagements, posing questions. The most effective teacher talk is observed consistently is the math lessons, where he is seen modeling metacognitive talk in his initial demontraition and subsequent explanations of the math problems.	Mentor-mentee relationship? Zone of proximal development?
Unless there is an intentional effort by teachers, spoken participation seems limited to less than 50% of the class.	Thinking along the line of LOPI. The more outspoken students might have a higher level of readiness to participate. As observed in a group discussion, the idea shared by one student was quickly picked up and expanded upon by other students, with encouragement from the teacher. This order of participation could probably be observed on collaborative documents.	What artefacts/collaborative documents could be collected? Other than spoken participation, what are the other participation methods? (Chat function) Learning can be "quiet" and "internal". What evidence is there?
Both teachers and students appear relaxed and comfortable in their "own space". Interaction feels less like a performance/theatre, but more natural.	The delivery of the lessons feels like a conversation. In a physical classroom, teacher instructions seem more like a performance and students also seem to "act" as attentive students. In Zoom meetings, students appear more at ease, and free to do what they want as long as they are respectful of others.	
Learning in some classes is set up for pull learning/ learning "on-demand", teacher models use of resource	Learning in some classes is set up for pull learning/ learning "on-demand", teacher models use of resource	Why do students wait for things to happen in class?
Students appear to collaborate well, but pace of learning seems slower. Students appear to have the skills to collaborate, but do not only when instructed by teachers. De facto style of learning is still individual		What is the learning outcome? What artefacts will capture this learning/collaboration?
Fluid, spontaneous and collaborative use of different learning spaces: Zoom, Google Classroom, Youtube, FlipGrid, Lino, slideshow, digital notebook, learning engagement document	When remote schooling first started, the process was probably more haphazard because there was no system in place. Student predominantly utlize a single system of engagement, Google Classroom, like a game?	
High visible engagement is observed consistently in all five math lessons, even though the lessons are considerably longer and have less variety in terms of learning engagements	Most surprising! A set of lessons where students are observed to be actively engaged and focused (no listless expression or restless behaviour) almost the whole time, despite the long lessons. Except for the initial check-in, there is little peripheral conversation. The amount of thinking time is pronounced and felt. There was no group discussion. Teacher models metacognitive talk in his initial demontraition and subsequent explanations of the math problems. Each problem can take up around 20 minutes. Despite the length of the lesson, there is only sufficient time to discussion 2 - 3 questions. In this subject, students request for additional practices for homelearning.	Solving math problems. You know what you don't know. You know it whne you get to the answer.Which is not explicit in some subjects.
Lessons observed follow this structure: Induction | Development 1 - Instruction of Content | Development 2 - Interaction with Content (could be skill based) | Closure		
Zoom lessons are recorded, which allows students who are interested in rewatching to do so.		
Partipants from Pakistan - United States, 10-12 hours diff		

Appendix F: Ethnographic Vignette

The teacher turns her camera back on and waits for the students to return back to the main Zoom meeting. The teacher looks around. “Has Student J left halfway because of Internet connection?” she asks. Student I nods. “Okay. Now, let’s have a look here [the screen switches to show the sample essay]. Ummm. Can I ask, let’s see… Student I, in your group, what did you decide was the thesis statement? Or what conversations did you have about that?”

“We said that the thesis statement is usually at the end of the introduction paragraph, so I guess… I guess it would be the ‘The title, Diggin’ is carried… and so on....” As Student I reads, the teacher is seen selecting the sentence.

“You reckon this is the thesis statement?” The teacher clarifies.

“I..yes.. yes, good.” Student I says.

Following that, the teacher highlights the sentence in green, “Yup, ok. So, ‘The title, Digging is carried thematically throughout the poem by the speaker, both literally in the physical work of his father and grandfather and metaphorically as he digs into and reflects on the past and his own future. Ummm.” Student I is seen nodding. “Ahhh, Student A and Student J, what do you reckon?” Short pause. Student J signals

Student A to respond. “Hmmm, we had a different one. We both think the right one is the second one, ‘To do this…’”

The teacher interrupts and continues reading the rest of the sentence, “...’the poet vividly creates the setting with descriptive and engaging language, highlights the importance of his forefathers, adopts a reflective tone when depicting both past and present, and conveys a positive and proud attitude about the past accomplishments of his ancestors and the way that he will try to carry on that tradition in his own way’ [pretending to be catching her breath as she finishes reading aloud the sentence] Phew, ok, [the teacher highlights the sentence in blue] so we maybe have two contenders here. So Student A and Student J, why did you settle on this one?

Again, Student J nods to signal Student A to respond. “We chose this one because even though it is not at the end of the sentence, it is the one that includes the main ideas, like the other one don’t really talk about it; this one, the person that wrote it, states the main factors that help other people think about what the poem is about.” Student J is seen nodding along, supporting Student A’s response.

The teacher nods, “Hmmm ya ya, so it kind of highlight “descriptive and engaging language…importance of his forefathers… a reflective tone…a positive and proud attitude… so, where you would expect there would be body paragraphs about these ideas, about this and about that., yup ahhh, Student F, you were in the other

group…how does that sound to you? Was that convincing or were you still thinking that the green one is the thesis statement?

Student F furrows her eyebrows as she responds, “I think the blue one does make sense because usually the blue one has the topic and then the main things that are going to be in the essay. So I think the blue one makes sense.”

The teacher, looking thoughtful and resting her hand on her chin, prompts another student to respond, “Hmm yup, Student K, what are you thinking?”

“At first I thought it was the green statement, ah, the green line, but now that they have pointed out the blue one, and ya I guess it, I think the blue one makes more sense.” Student K replies confidently.

“Student C, what do you reckon?” The teacher asks.

“Ahhh, I still think green.”

“Why?

“I feel like, I don’t know, I feel like it summarises the main point better.”

The teacher adds, “Hmmmm, kind of summarizes the argument that the student will be making overall in the essay.” Student C nods. [Student I puts up her hand]. “Student I?”

“Yes, I agree with Student C. The thing is that the blue one is more of like, it talks about the essay, how the ideas are organised, but the green one talks about the actual poem. So, now that it is confusing, I still think green except for the structure, because it still talks about the poem.”

The teacher smiles as she responds, “To be honest, I have shifted a little on this. I was of the same opinion as Student A but I am not sure anymore, as I see what Student I and Student C are saying. [Student A raises her hand] The green one really carries the argument. This is the main point, ‘The title, Digging is carried thematically throughout the poem…both literally…and metaphorically’, the overall point the student is trying to make. And the blue stuff is how…Heaney achieves the green stuff. Student A, what are you thinking?”

Shifting in her seat, Student A retorts, “Hmm, I thought it was, I still think it is blue. Normally, the topic sentences are based on or about the ideas that are stated in the thesis statement. When you read the thesis statement, you will see that the topic sentences are derived from the blue sentence. I just think that he…or she just didn’t structure the paragraph very well. It would make sense if the green sentence is below

the blue sentence. [The teacher duplicates the paragraph, and reorder the sentences. There are now two versions of the introduction in the sample essay.]

“You would want to do something like…” The teacher seeks confirmation.

Student I interjects, “ I actually agree with Student A. The structure, changing a little bit. It sounds better. The green one is more general, and the blue one goes into more depth.”

“So that is often something we want to do in an introduction paragraph, like an upside down triangle, starting broad, then it gets narrower and narrower, until it states specifically what it wants to achieve in the essay. I like Student I’s comment. The green is rather general, looking at the thematic concern, and the blue gets pretty specific. Do we like this second version?” The teacher follows up with a quick comment on the structure of the new paragraph and a question.

Student A shows a thumbs up, but then quickly adds, “Wait Mister, I think it is not just one thesis statement, but two.”

Student J then adds, “I think it is just confusing the way the sentence is worded. The blue sentence is pretty problematic in itself; it reads like a run-on sentence, and that itself meant that it is not specific, which takes it back from being a good, clear thesis statement. It’s kind of hard to understand because there is just so much.

The teacher laughs, “Yes, like how I had to catch my breath at the end of that one sentence. I think we can all agree that yes it does work as a thesis statement, but it is not perfect. I want to move on from this because we only have ten minutes [chuckles] left to look at the rest of the essay, but this is awesome. I really really really like the conversation and the talk we had about this. In this discussion and on your own in your groups, you have thought about it really clearly and carefully.”

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