Dilution, corruption and redemption: authentic formative assessment in the subject classrooms of General Studies

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A thesis submitted for the degree of Doctor of Education

School of Education
University of Durham
2005

DECLARATION

This thesis results from my own work and has not been offered previously in candidature for any other degree in this or any other university.

STATEMENT OF COPYRIGHT

Acknowledgements

I would like to thank my co-researchers for their active participation in the study.

I must thank my supervisor, Professor J. Ridgway, for his valuable guidance and advice. Sincere thanks go to Professor M.S. Byram for supporting me to write a long thesis. I also thank my external examiner, Dr. A. Blake and my internal examiner, Dr. C. Bagley, for their comments and suggestions.

Lastly, I would like to thank my husband, Francis, and my children, Sophia and Wilson, for their words of encouragement, tolerance and support, to Sophia especially, for staying with me while I was in Durham for the viva.

Abstract

Dilution, corruption and redemption: Authentic formative assessment in the subject classrooms of General Studies

This thesis investigates the implementation of formative assessment by student teachers in the 'figured world' of General Studies classrooms in Hong Kong. It aims to make suggestions for the effective preparation of student teachers in providing formative assessments in classrooms, and to provide insight for practising teachers when they plan to implement formative assessment in their subject classrooms. Twenty-nine student teachers, taking General Studies as one of their electives in the Postgraduate Diploma of Education programme, were invited (and they all agreed) to be co-researchers during the first phase of the study. During their learning of the curriculum studies module, they learned and experienced the major characteristics of formative assessment. In the second phase of the study, fifteen of them were invited (and they all agreed) to continue to participate in the study to investigate their implementation of formative assessment during their student teaching in local primary schools.

The findings of the study show that after undergoing the intervention conducted by the researcher, most of the co-researchers grasped some basic concepts of formative assessment, though they did not have such learning and experiences in their previous education. During their student teaching, most of them claimed that they had implemented formative assessment in General Studies classrooms, and encountered different constraints and problems. A model of implementing formative assessment in the subject classrooms of General Studies is produced.

Each co-researcher submitted a videotape of one lesson, to allow verbal reports to be compared with actual classroom behaviour. These videotaped lessons showed

differences between the intended and the implemented curriculum in classrooms, brought about by various constraints and difficulties. The attained curriculum reflected the fact that authentic formative assessment was either diluted or corrupted. The results of the study suggest it may be easier to change the intentions of the co-researchers than their actions in classrooms. It is suggested that the teacher education institute should take a leading role in the education reform in Hong Kong to involve schools in the practice of assessment for learning. Furthermore, school teachers should be encouraged to take the initiative in launching the educational change of formative assessment in their subject classrooms, to seek approval from principals and school boards, as well as support from parents and students in order to institutionalize the change. They may also conduct action research to make improvements to practice during the change process.

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Chapter 1

Introduction

This thesis aims to study the implementation of formative assessment by student teachers in General Studies classrooms in Hong Kong. This chapter summarizes the background of the study, the research context, and the significance of the study. Finally, the last section of this chapter portrays an overview of the thesis.

1.1 Background of the Study

The quest for quality education in Hong Kong has become intensified since July 1997 when Hong Kong returned to the sovereignty of the People's Republic of China and became a special administrative region. Since October 2000, the Hong Kong Special Administrative Region Government has been implementing a series of education reform measures to prepare the young people to meet the ever-changing expectations and demands of the community in the face of globalization and the development of a knowledge-based society. The basic premise of the education reform is to enable every individual to purse all-round development through life-long learning. Consequently, the education system is to be reformed to provide the most favourable environment for teaching and learning so that it can fully realize the potentials of students. At the same time, teachers can have more room to help students learn more effectively (Education Commission, Sept. 2000). In order to support the education reform, it calls for reform in the assessment system. In various education reform documents, such as Learning to Learn - The Way Forward in Curriculum Development (Curriculum Development Council, June 2001), and Basic Education Curriculum Guide - Building on Strengths (Primary 1 – Secondary 3) (Curriculum Development council, 2002a), formative assessment is advocated in order to enhance learning and

promote teaching effectiveness. However, this is new to everyone, including teachers, parents and students who are the stakeholders of education and the education reform. To implement such a change in classrooms and the assessment practices, there should be changes in the beliefs of the teachers, the school culture, and the assessment system. Teacher education plays an important role in developing a highly qualified and committed teaching force to implement and comment on new policies in education. This study arises from the researcher's personal concern as a lecturer in the Hong Kong Institute of Education with the responsibility to provide quality preparation for student teachers as facilitators of student-centred learning, and assessors in General Studies classroom in order to promote students' learning. The following chapter describes the background of the research and why the research was undertaken.

1.2 Research Context

The following describes the recent education reform in Hong Kong and the General Studies curriculum.

1.2.1 Education reform in Hong Kong

In Hong Kong, examinations of different kinds have been developed to cater for long-term social and education needs. Selection and qualification for further education have been the focal points of concerns; therefore designs of examinations have been centred on fairness to individual candidates and predictive validity for receiving institutions or employers. As the new educational goals of Hong Kong schooling are to enhance student-centred learning and students' ability to learn how to learn (Curriculum Development Council, June 2001; Education Commission, Sept 2001), the assessment system should also be reformed. The education reform documents have introduced different concepts of assessment and their functions to the community. Assessment is proclaimed as an integral part of the education process. The importance

of formative assessments is also emphasized (Curriculum Development Council, June 2001; Education Commission, Sept 2001). Formative assessment, also called as assessment for learning is different from summative assessment, known as assessment of learning. Formative assessment takes place in mid-course. It identifies strengths and weaknesses of the students, and is intended to enhance students' final performance. Thus, it is used not only to support learning, but also teaching. Summative assessment takes place at the end of the course, and is designed to summarize performance and attainment at the time of testing (Ridgway, McCusker & Pead, 2005). The Assessment Reform Group defined assessment for learning as "... the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there" (http://arg.educ.cam.ac.uk/news.html). Thus, in Learning to learn: The way forward curriculum development (Curriculum Development Council, June 2001), assessment for learning is stressed as a way to improve teaching and the learning of students as well as an integral part of the learning, teaching and assessment cycle. The development of formative assessment implies changes in the roles for both teachers and students in the learning process. Ridgway (1998) commented that appropriate assessment schemes can be powerful levers to support reform; whereas assessment schemes that do no reflect new educational ambitions are barriers to progress. The Basic Education Curriculum Guide (Curriculum Development Council, 2002a) suggests that all schools should review their current assessment practices and place more emphasis on assessment for learning. Schools, therefore, should design and develop a whole-school policy on assessment in order to promote students' learning. Such policy should bring a balance between assessment for learning and assessment of learning, as well as link to the whole-school curriculum planning. Schools should devise strategies to support teachers to improve their assessment practices, and their

dialogue with parents on new changes in order to get their support. Finally, various measures and resources are to be provided by the Curriculum Development Council to support schools and teachers at the system or community level, the school level, the teacher level and the student level. Examples are curriculum guides for different subjects, learning and teaching resources, on-site school-based support, collaborative research and development projects, and professional development programmes, etc.

1.2.2 General Studies

General Studies, an integration of Science, Health Education and Social Studies, was introduced in Hong Kong in 1995. It was proclaimed in the Syllabus for Primary Schools: General Studies (Primary I-VI) (Curriculum Development Council, 1994 & 1997) that through meaningful activities, children can understand the inter-relationship and interdependence among people, things and the environment. They can also develop values and attitudes in order to become rational and responsible citizens. The curriculum consists of four strands, i.e. healthy living, living environment, natural world, and science and technology. This integrated approach claims to allow students to look at issues from different perspectives, hence make their learning experiences more holistic and less fragmented.

In the era of education reform, a new General Studies curriculum (Curriculum Development Council, 2002b) was introduced to the community and has been implemented in the six levels of all the primary schools in the academic year 2004-05. The new curriculum moves away from a content-focused approach to a learner-focused approach. It emphasizes the enhancement of students' inquiry and investigative skills for knowledge construction. Schools are encouraged to adapt the central curriculum in developing their school-based curriculum and promote life-wide learning. The central General Studies curriculum is composed of six strands, i.e. health and living, people and environment, science and technology in everyday life,

community and citizenship, national identity and Chinese culture, as well as global understanding and the information era.

1.2.3 General Studies and assessment for learning

In the General Studies Syllabus (Curriculum Development Council,1997) it was suggested that teachers should carry out follow-up work after the completion of each learning activity in order to enable students to consolidate what they have learned in terms of knowledge, skills and attitudes. The new curriculum (Curriculum Development Council, 2002b) stresses that it is the responsibility of teachers and students to identify the strengths and weaknesses of the students, and to bring about improvement in learning. Teachers should use different modes of assessment and provide quality feedback to the students. They should also develop students' skills in assessing their own work, as well as giving relevant and constructive feedback to other students. Thus students are empowered in their learning through self- and peer assessment. Different modes of formative assessments are suggested, such as portfolio, oral questioning, teacher observation, peer assessment, self-assessment, assessment by parents, and project learning.

1.3 The Significance of This Study

Since the introduction of the education reform, different forms of assessment and their functions in different subjects were introduced to practising teachers. It was found that project work, which can support a different form of assessment, became popular and was widely promoted in schools. However, teachers, students and parents complained about the over-emphasis of project work in every subject. Though assessment in classrooms was introduced in different education documents, it was not thoroughly discussed among practising teachers. 'Teacher talk' is the common practice in classrooms. It is not easy to change the mindset and practices of teachers without

open discussion and support from the stakeholders in the community. In other words, the focus of the community is not on formative assessment in classrooms. This may be explained by the fact that most of the teachers, students and parents do not have a clear concept of formative assessment, nor have the experiences of formative assessment in their previous education. Being a teacher educator, the researcher is interested in equipping student teachers with knowledge of formative assessment and providing them adequate experiences. It is also important to understand how student teachers implement formative assessment in General Studies lessons during their student teaching, as the implemented curriculum may not be the intended curriculum because of their personal experiences and teaching beliefs, as well as the different school ethos and classroom cultures. Furthermore, the research results may be used to advise schools which are partners in teacher education programmes, policies or practices to facilitate the implementation of formative assessment in classrooms in order to raise the standards of teaching and the learning of students.

1.4 An Overview of the Thesis

Having described the education reform in Hong Kong, the problem and aim of the study in this chapter, the second chapter is a literature review outlying studies and theories of formative assessment. The literature review forms a basis from which the study is analyzed. Chapter Three describes the method of the study which includes the intervention strategies, data collection and data analysis. Co-researchers' learning experiences during the intervention are portrayed in Chapter Four. Chapter Five reports the teaching experiences of the co-researchers during their student teaching. Professional development of the co-researchers is traced in Chapter Six. Discussion and implication of the findings of the study are illustrated in Chapter Seven. Chapter Eight concludes the study.

Chapter 2

Literature Review

2.1 Introduction

Black and Wiliam's review (1998a) which summarised the results from over 250 articles by researchers from different countries presented evidence that formative assessment practices can raise standards of students' learning. Data from the research project (Black, Harrison, Lee, Marshall, & Wiliam, 2003a; Wiliam, Lee, Harrison, & Black, 2004) showed that teachers can actually improve their students' results in national examinations and tests, and/or results of the school's own tests. As the concept of formative assessment is new to the Hong Kong education community, the researcher wanted to study the implementation of formative assessment by student teachers in General Studies classrooms during their teaching practice, so as to provide insight for the practising teachers for their professional development. This chapter draws on literature to identify eight key aspects to be taken into account when considering assessment:

- summative and formative assessments
- assessment process: planned and interactive formative assessments
- social-individual interaction - the 'figured world' of the subject classroom
- relationship between assessment practices and student motivation
- teacher education
- roles of co-researchers
- educational change
- action research

2.2 Summative and Formative Assessments

Assessment in education is the process of gathering, interpreting, recording and using information about students' responses to an educational task. At one end of the dimension of formality, a task may be an oral question asked in a normal classroom; whereas it may be a written, timed examination at the other end. The assessments involve interpretation of a student's response against some standard of expectation, either norm-referenced or criterion-referenced (Harlen, Gipps, Broadfoot, & Nuttall, 1992). There are three broad functions of assessment: direct assistance to learning, certification of individual students, and public accountability of institutions and the teachers within them (Black, 1990; Haney, 1991). Formative assessment provides direct assistance to learning in the learning process. However, emphasis has been placed on summative assessment which serves the certification and accountability functions. These latter two functions interact strongly and influence the first function (Black, 1993).

2.2.1 Summative assessment

Harlen et al. (1992) remarked that the summative role of assessment is to communicate the nature and level of students' achievements at various points in their schooling and when they leave schools. The information may be for the students themselves, receiving teachers, parents, employers or a combination of these. Summative information may be obtained by summing up and checking up the achievements of students (Harlen, 1991). The former is designed to provide a summary of information gained through recording formative assessment during a particular period of time, while the latter is to collect new information about what students can do at the end of a period of time, usually in the form of tests or examinations.

2.2.2 Formative assessment

Formative assessment is an essential element in the learning process as it provides

information on learners' strengths and weakness in relation to their progression. Thus, teachers can use it in planning what to do next in order to enhance learning as well as teaching. Therefore, formative assessment is also an important part in the teaching process. As the main purpose of formative assessment is to provide feedback from teachers and students, and to both of them in the learning process, information can be drawn for summative purposes (Black, 1993).

There are different types of formative assessment, e.g., project work and portfolio. Portfolios can also be used for summative purposes. The present study is about what happens all the time in classrooms, namely classroom assessment. A student needs to know where s/he is and understand not only where s/he wants to be, but also how to "fill the gap" between the current knowledge and the desired level. In order to fill the gap, the teacher and the student should be involved in a process of continual reflection and review about progress (The Qualifications and Curriculum Authority, http://www.qca.org.uk/296.html). Thus, formative assessment focuses on dialogue with students, collecting feedback from them and providing feedback to them; teachers should make good use of the data collected to improve the learning activities and to promote the learning of students. The Assessment Reform Group, University of Cambridge School of Education, (1999) summarized the major characteristics of assessment that promote learning as follows:

- It is embedded in and is an essential part of teaching and learning;
- It involves sharing learning goals with students;
- It aims to help students know and recognize the standards that they are aiming for;
- It involves students in self-assessment;
- It provides students feedback in order that students recognize their next steps and how to take them;

- It reinforces the idea that every student can improve; and
- It involves both teachers and students reviewing and reflecting on assessment data.

Research (Assessment Reform Group, University of Cambridge School of Education, 1999) indicated that to improve learning through assessment depends on: the provision of effective feedback to students; the adjustment of teaching to take account of assessments; a recognition of the influence of assessment on students' motivation and self-esteem; the active involvement of students in their own learning; and the need for students' capabilities to assess themselves and understand how to improve. Thus, assessment as a regular element in classroom practices enhances better learning. Successful learning occurs when learners have ownership of their learning, understand the goals they are aiming for, are motivated, and have the skills to achieve success. These are the essential features of effective day-to-day learning in classrooms and key ingredients of successful lifelong learning. Consequently, assessment for learning is the most powerful tool for learning, raising standards and empowering lifelong learners.

Finally, in order to help practitioners improve practice in assessment, the Assessment Reform Group (2002) produced ten research-based principles to guide classroom assessment for learning. They are:

- It is part of effective planning of teaching and learning. Opportunities should be provided for both learners and teachers to obtain and use information about learners' progress towards learning goals.
- It focuses on how learners learn when assessment is planned and when the evidence is interpreted.
- It is central to everyday classroom practice and involves both teachers and learners in reflection, dialogue and decision making.

- It is a key professional skill for teachers. Teachers should require the professional knowledge and skills to plan for assessment, observe learning, analyze and interpret evidence of learning, give learners feedback and support them in self-assessment.
- It has an emotional impact so feedback given by teachers should be sensitive and constructive.
- It affects learners' motivation. In order to foster motivation, assessment should emphasize learning process and achievement rather than failure.
- It promotes learners' commitment to learning goals and a shared understanding of assessment criteria by which they are assessed.
- It helps learners know how to improve. Learners need information and constructive guidance to plan the next steps in their learning.
- It helps to develop learners' capacity for self-assessment in order that they can engage in self-reflection and self-management in their learning.
- It recognises the full range of achievements of all learners. Thus, it enables all learners to achieve their best and have their effort recognised.

2.3 Assessment Processes: Planned and Interactive Formative Assessments

Stiggins (2001a) remarked that the artistry of classroom assessment involves teachers in orchestrating a careful alignment among purposes, achievement targets and methods. Teachers should align the assessment activities with the learning activities in order to help students achieve the learning objectives which include the acquisition of knowledge and skills, and a belief in the value of learning. Stiggins described four basic classroom assessment methods: selected response assessments, essay assessments, performance assessments and assessments that rely on direct personal communication with students. Each of these methods provides its own special form of

evidence of student proficiency, such as knowledge and understanding, reasoning proficiency, performance skills, ability to create products, and dispositions such as attitudes, values, interests, self-concepts and motivation. The first three belong to planned formative assessment while the latter one belongs to interactive formative assessment. The major characteristics of planned formative assessment and interactive formative assessment in the study of Bell and Cowie (2001, p.82-93) are summarised below.

2.3.1 Planned formative assessment

The main characteristic of planned formative assessment is that the teacher plans to elicit information on students' understanding and skills learning by providing students with specific assessment tasks. The purpose of assessment determines how the information is collected, interpreted and acted upon. Therefore, these four aspects are interrelated and mutually determining.

The main purpose of planned formative assessment is to obtain information from the whole class about the progress in learning as specified in the subject curriculum. The teacher plans a specified activity to obtain assessment information on which some action will be taken. It also provides feedback to inform her/his teaching.

There are different purposes for eliciting information during a unit of work. At the beginning of a unit, teachers plan to obtain information for their planning and teaching during the rest of the unit. During a unit, they use specified assessment activities to elicit information on the understandings of their students. The teachers also plan to elicit formative assessment information at the end of a unit so that they can adjust their teaching when they teach the unit again. Furthermore, they elicit information at the beginning of a lesson, and used the information during the lesson. Different strategies are used according to the nature of the information they want to obtain.

The planned formative information is usually obtained from either criterion-referenced or norm-referenced tests, which are prepared in the light of known expectations of student performance at a particular age or year of schooling. Teachers interpret the information by making use of their content knowledge, general and pedagogical content knowledge, curriculum knowledge of learners and their students in particular, knowledge of educational contexts, and knowledge of educational aims and goals.

Teachers act on the interpreted information in order to enhance the learning of students. They need to plan a flexible programme and allow for ways in which they can act in response to the information collected. Both students and teachers play an active part in the planned formative assessment and in a reciprocal way. When the teacher is taking action, the students are eliciting information, and when the students are responding, the teacher is eliciting information.

2.3.2 Interactive formative assessment

The second form of formative assessment is interactive formative assessment which takes place during student-teacher interactions and arises out of a learning activity. The teacher and the students interact in the whole class, small group, or one-to-one situations. The process involves the teacher's noticing, recognising and responding to students' thinking during the interactions in the classroom.

Teachers do interactive formative assessment to mediate the learning of individual students in order to assess various learning outcomes. Interactive formative assessment is embedded in and linked to learning and teaching activities. Through interactive formative assessment, teachers refine the short term goals for students' learning within the framework of their long term goals.

The information that the teachers notice in interactive formative assessment is ephemeral. Both verbal and non-verbal information is gathered about students'

thinking and actions in progress. It is true that through interaction with students, teachers are only able to notice information from some students; however, they notice different information from different students at different times.

When observing, talking or listening to students, teachers notice something and recognize its significance for the learning of the students. By making use of their prior knowledge of individual students, their pedagogical content knowledge, and their knowledge of the subject content, teachers respond to what they have noticed and recognized in interactive formative assessment. The response is similar to the action in planned formative assessment, except it is more immediate and about the different aspects of learning in classrooms. In some cases, teachers change from interacting with a student or group of students to interacting with the whole class. Teachers prepare to do interactive formative assessment in a lesson by planning to increase the number of interactions between them and their students, and to increase the opportunities for observing students interacting with each other.

In short, the above model of formative assessment consists of two kinds of formative assessment: planned and interactive assessments. The former is used mainly with the whole class, while the latter is mainly with individual students or small groups. Both kinds are conducted during students' learning to order to improve their learning and rely on the teachers' pedagogical content knowledge.

2.4. Social-Individual Interaction – the 'Figured World' of the Subject Classroom

According to Holland, Lachicotte, Skinner, and Cain (1998, p.52), the 'figured world' is a socially and culturally constructed realm of interpretation in which particular characters and actors are recognized. Significance is attached to certain acts, and particular outcomes are valued over others. Each figured world is a simplified world populated by a set of agents. They engage in a limited range of meaningful acts

or changes of state which are moved by a specific set of forces. The concept, 'figured world', is used to conceptualize the subject classroom (Black & Wiliam, 2001) and concentration is on what various actors involved take things to be. In the figured world of the subject classroom, actors' beliefs about the nature of the subject being taught, and their theories of learning affect the way things play out in the classroom. The interactions among teachers, students (both as individuals and as groups), subjects, and theories of learning are summarized below.

2.4.1 Relationship of teachers and students to the subject discipline

The relationships of teachers and students to the subject discipline affect the nature of the figured world of the subject classroom. The quality of the learning outcome depends on the relevance of questions that the teachers ask, the responses from the students, the teachers in relation to the conceptual structure of the subject matter, and their efficacy in relation to the learning capacities of students. In this way, there are different types of classroom interaction entailed in the learning contexts of different subject matter. Thus, there is a need to analyze the interplay between teachers' view of the nature of the subject matter, selection and articulation of learning goals, and their models of cognition and of learning. It is important to conceptualize the relationship between teachers and the subject matter as a two-way relationship, in that teachers' capacity to explore and re-interpret the subject matter is important for effective pedagogy. Furthermore, there should also be a change in the interaction from identifying a school subject with the subject teacher, to the interaction between students and the subject. Thus, it will enhance the students' capacity to interact directly with the products of their work, e.g., in the learning of performance subjects, such as physical education, music, drama or science investigation. Then there will be a gradual withdrawal of the teacher from the role of a mediator.

2.4.2 Relationship between teachers and theories of learning

This section is about the teacher's role and the regulation of learning. Perrenoud (1998) explained his concept of 'regulation' by stating that there are 'two levels of management of situations' which favour the interactive regulation of learning processes. The first is the setting up of situations through much larger mechanisms and classroom management. The second refers to the interactive regulation which takes place through didactic situations. Black and Wiliam (2001) emphasized that questioning is to be used to promote classroom dialogue and is important for assessment in classrooms. The importance of the formative potential of questions in formative assessment is stressed (Harrison, Lee, Marshall & Wiliam, 2003b). Therefore, teachers should spend more effort in framing questions to explore issues that are critical to students' development of understanding of the subject matter. Sufficient wait time should be provided so that all the students are involved in the learning process. Therefore, in the long run there will be no need for students to raise their hands because all of them are expected to be able to answer at any time. Wrong answers are used to help students explore their understanding. Furthermore, students are given time to explore answers together (Black & Wiliam, 2001). In Black and Wiliam's study, teachers include good questions in their lesson planning in order to improve formative assessment. They also set up situations for interactive regulation by transferring to students the responsibility for their learning, i.e., a shift from the regulation of activity to the regulation of learning. They equip students with cognitive strategies so as to achieve the transition to acquire the new understandings and skills, which are potentially accessible through the subject matter. Thus, the emphasis is placed on cognitive and meta-cognitive skills and strategies, e.g., shifts in questioning, the skilful use of comment on homework, and the use of tests as part of the learning process. In short, these imply changes in students' role and in the character of teacher-student relationships.

2.4.3 Feedback and the student-teacher interaction

The study of the student-teacher interaction leads to a detailed look at the concept of feedback. The interaction between the teacher and the students in Black and Wiliam's model (2001) is a central feature in their study of formative assessment. The main feature of formative assessment is that the learner's task is to close the gap between the present state of understanding and the learning goal (Sadler, 1989). Therefore, self assessment is essential if the learner is to be able to close the gap, and the teacher's role is to communicate appropriate goals and promote self assessment among the students. In this learning process, feedback should operate both from teacher to students and from students to teacher. The following is a more detailed discussion on feedback (Black & Wiliam, 2001, p.12-13).

2.4.3.1 Different levels of feedback and the regulation of learning

The enactment of a piece of teaching goes through a sequence of stages as follows:

a. a design with formative feedback opportunities built in;
b. implementation in which students' responses are invoked;
c. reception and interpretation of these responses by the teacher (or by peers);
d. further teaching action based on the interpretation of the responses;
e. reception and interpretation of these responses by the students; and
f. moving on to the next part of the design.

Both students and teachers are involved in feedback activities. Feedback involves different lengths of loop, e.g., the short term involves c to d to e and back to c, and the longer term loops around the whole sequence from a to e and back again when the whole sequence is re-designed. The concept of regulation (of learning) involves all of these activities.

In discussing feedback and the 'regulation potential' of any learning activity,

consideration shall be given to the context, i.e., what students bring into the class, the classroom culture and the way in which students invest themselves in the work.

2.4.3.2 The complexity involved in 'feedback': the fine-grain of feedback

The mere presence of feedback is insufficient for judging the guidance of learning (Deci & Ryan, 1994). Perrenoud (1988) stressed the complexity of what is involved in 'feedback'. Messages given in feedback are useless, unless students are able to do something with them. Therefore, the teacher needs to understand the way students think and the way they take in new messages, both at the general and the specific level. Perrenoud (1988) argued that in framing and guiding classroom dialogue, judgments have to be grounded in the activity. Focus has to be directed onto knowledge and the learning process. Teachers' intervention to regulate the learning activity has to involve an incursion into the representation and the thought processes of students so as to accelerate a breakthrough in understanding, a new point of view or the shaping of a notion which can be immediately become operative.

2.4.3.3 The Zone of Proximal Development and differentiation

Torrance (1993) saw formative assessment fitting into the constructivist approach to learning, with the student-teacher interaction supporting students in moving towards Vygotsky's (1978) zone of proximal development (ZPD). Sadler's model (1989) on which Black and Wiliam's model is based is also related to the ZPD. It emphasized the task of teachers in defining the gap between what learners can achieve without help and what may be achieved with suitable help. It also lays emphasis on the social and language aspects of learning (Vygotsky, 1986). Therefore, attention should also be paid to the concepts of scaffolding (Wood, Bruner, & Ross, 1976), and guided participation (Rogoff, 1990) by which the ZPD model is enhanced.

Allal and Pelgrims Ducrey (2000) advised teachers to accurately assess the potential of each student so that the ZPD 'horizon' can be adjusted to the potential of

each individual. The capacities of the teachers to adapt to the different ZPDs in a class, and to handle differentiation help foster, as well as promote the enhanced student-teacher interaction. If formative assessment is to enhance the learning of students, formative feedback should be interpretable by each individual student. This can be done by means of self-assessment, peer assessment, peer teaching and group learning.

2.4.4 Student's role in classroom

Not only does the role of teachers change, the role of students in classrooms also changes from being passive recipients to active learners who take responsibility for and manage their own learning. It is because of the development of meta-cognition which involves students in the reflection about own their learning (Hacker, Dunlosky, & Graesser, 1998) and the concept of self-regulated learning (Baird & Northfield, 1992; Schunk, 1996; Zimmerman & Schunk, 1989). Moreover, there are changes in the conative and affective aspects: students' perception of teacher's personal interest in them changes in the abandonment of giving marks or grades on written work (Bulter & Neuman, 1995). Furthermore, in the group work, peer assessment is a particularly valuable way of implementing formative assessment. Research (Black et al., 2003) showed that students care more about communicating with peers, work neater, and are less emotionally 'loaded'. They can assess their own learning, as well as the learning and performance of other students in their groups.

Black and Wiliam's (2001) approach treated the social-individual interaction as a central feature in classroom learning. Thus, feedback to individuals, self-assessment, peer assessment, peer support in learning, and class discussion about their learning are emphasized. Therefore, change in the student's role as a learner is a significant feature in reform of classroom learning.

2.5 Assessment/Student Motivation Relationship

Summative assessment has been considered by the general public as a key source of motivation for learning. It is believed that tests show students, teachers and schools the standards to be aimed for and monitored. Thus, standards can be raised. However, the systematic review of research evidence conducted by Harlen and Deakin (2002) showed the contrary results of summative assessment on students' motivation for learning. The details are as follows: after the introduction of the National Curriculum Tests in England, low-achieving students have lower self-esteem than higher-achieving students; repeated practice tests reinforce the low self-image of the low-achieving students. Furthermore, the review suggested that high-stakes assessment can become the rationale for all that is done in classrooms, and generate a classroom climate where teachers transmit knowledge and provide highly structured knowledge. This favours students whose learning dispositions are to learn in this way, but disadvantages and lowers the self-esteem of students who prefer more active and creative learning experiences. Finally, an education system which emphasizes evaluation produces students with strong extrinsic orientation towards grades and social status.

It is trusted that students will improve their performance and achieve more if they are provided with feedback on their strengths and weaknesses. However, Sadler (1989, p.119) remarked, 'even when teachers provide students with valid and reliable judgement about the quality of their work, improvement does not necessarily follow. Students often show little or no development despite regular and accurate feedback'. The study of Torrance and Pryor (1998) showed that teacher feedback might have negative as well as positive consequence for learning, despite the best intentions of teachers. This can be explained with respect to how 'reinforcement' is understood and applied. Researchers such as Ames (1984), Dweck (1989), and Weiner (1984) (citied

in Torrance & Pryor, 1998) illustrated that the 'positive reinforcement' provided by teachers to promote motivation may result in students avoiding intellectual tasks, or approaching them with limited confidence and without persistence because of the difficulties perceived.

Covington (1992) advocated a different relationship of assessment and motivation: the way to maximize achievement is to maximize each student's confidence in her/himself as a learner. Teachers should use assessment to build each student's confidence, each student's belief that s/he can learn, and each student's sense of academic optimism. Stiggins (2001a) remarked that the use of student-involved classroom assessment, record-keeping, and communication help promote motivation in students' study and build their confidence throughout the range of achievement. It is because by bringing students into the assessment development process early in the learning, students are shown a vision of excellence, where they are now in relation to that vision and the path to success.

Broadfoot (1979) suggested that the basic cause of the passive 'opting-out' or disruptive behaviour of the 'low-achievers' is assessment. Assessment in different forms translates to students how much the teacher who represents the school and ultimately the society values. This includes information about their performance, certain kinds of behaviour, and how the teacher values them as persons. Not seeing that they have a chance to succeed, these students suffer the fundamental alienation from a classroom experience which provides them only with a continually reinforced feeling of failure. Therefore, balance has to be made to minimize the alienative effects of such assessment and to encourage motivation by helping students find their learning more fulfilling in the assessment task. That is, the work has to be intrinsically satisfying to students. Furthermore, students undertake self-assessments to assess the value of the work in relation to their own standards.

2.5.1 Assessment and the classroom context

Zaklukiewicz (1976, as cited in Broadfoot, 1979) stated that a student acts as a worker in a social situation of work, and is influenced by the nature of work set, relations with other students and with teachers. Based on the orientations of each party to the other, there is continuing interpersonal state of affairs between students and teachers. Thus, a student who feels little sense of valuation or involvement in school and perceives that his learning in classrooms is not acknowledged as important will not industriously do the task that the teachers ask him to do nor evaluate his own work.

Broadfoot (1979) argued that involving students in assessment can help counteract these alienative influences in the following ways. First, mutual evaluation recognizes the dual responsibility of the teachers and the students in the learning process. They become aware that learning is essentially an interactive activity. In the learning process, teachers have to take into account students' perceptions and self-concepts. Secondly, self-assessment helps counteract student alienation by encouraging a good self-concept in the students. They are encouraged to think positively about their learning and to see progress in relation to their own previous achievements. Then, they come to have a better self-concept, since the progress they make is recognized by both the students themselves and the teachers. This reinforcement of success leads to increased motivation. Thirdly, self-assessment helps students see a value in what they are doing. Then they will take more responsibility for their own learning. Gagne (1969, as cited in Broadfoot, 1979) argued that in order to make use of the affective role of assessment in developing motivation, teachers have to enable students to develop their own standards in order to compare their achievement. Thus, it helps students ultimately be able to set their own learning objectives and take more responsibility for their own learning. Furthermore, a two-way assessment dialogue encourages students to think about their progress in relation to the teachers'

aims so that they may have a better understanding of the intrinsic importance of these aims.

2.6 Teacher Education - Teachers/Reflective Practitioners

Pultorak (1993) remarked that a major role of teacher education is to prepare reflective teachers. Teacher should be able to reflect about their behaviours and surroundings, and make valid decisions (Guyton & McLntyre, 1990; Murry, 1986; Smyth, 1992; Zeichner & Liston, 1987, as cited in Pultorak, 1993) so that they become autonomous models of intellectual independence for their students (Cook, 1993, as cited in Pultorak, 1993).

Dewey (1916) advocated that situations which initiate and provoke reflection should be provided to teachers so that they can have good habits of thought. Teachers can experience the situations, and are encouraged to give careful and thoughtful consideration in order to enhance their understanding of the phenomenon of teaching and themselves as teachers. Then they can reflect their actions with open-mindedness, wholeheartedness and intellectual responsibility (Cruickshank, 1987), and can direct their actions with foresight and planning according to their beliefs of education and decision made after reflection (Dewey, 1933).

Pang (1996) suggested that in order to help student teachers integrate theory and practice, reflective practice should be developed in student teachers and teachers. Reflective practice will require teachers to constantly review, examine and evaluate their practices with reference to their professional knowledge, then the use of theories in practice will be enhanced. Thus, student teachers are trained to be reflective practitioners (Schon, 1983). A professional teacher constantly reflects on her/his own practice and uses professional knowledge and theories to make professional judgments, take professional action and make improvements.

Cruickshank (1987) remarked that besides providing teaching experience, instructional alternatives such as journals, systems for analyzing classroom events, simulations, protocol materials and reflective teaching should be provided in teacher education programmes in order to promote reflection on teaching. The main purpose is to make teachers more thoughtful and wiser by examining and giving careful consideration to teaching.

2.6.1 Teachers - assessors

The teacher's job is to maximize the development of each individual student. Thus, the role of classroom assessment is to assist students in that process and to help maximize the learning of the students (Scates, 1943). Stiggins (2001b) stressed that sound classroom instruction is unattainable without accurate day-to-day assessment. Therefore, teachers should become assessment literate. They should be trained to create a healthier and more productive classroom assessment environment, and to align different modes of assessment appropriately with various achievement expectations which are valued in classrooms. They are also trained to use different classroom assessment activities for a wide variety of purposes, e.g., to detect the needs of individual students or groups of students continuously, to clarify achievement expectation for students, or to evaluate the effectiveness of instructional interventions.

Black and Wiliam's findings (1998a) suggested a strong link between effective formative assessment and an appropriate and supportive pedagogy. They stated that essential elements of any strategy to improve learning through the implementation of formative assessment will be the setting of clear goals, the choice of appropriate learning tasks, the framing and articulation of such tasks, the deployment of these with appropriate pedagogy to evoke feedback, and the appropriate interpretation and the use of that feedback to guide the learning trajectory of students.

In short, Stiggins (2001b) commended that assessment is woven deeply into the

teaching and learning processes. Essential classroom assessment competencies should be a critical component of teacher preparation programmes and professional development. New teachers should be provided with opportunities to gain these competences before they enter classrooms.

2.6.2. Preparing student teachers to teach

The Policy Task Group on Assessment of the British Educational Research Association (Harlen, Gipps, Broadfoot, & Nuttall, 1992) proposed to provide teachers with the training and materials so that formative assessment can be carried out with rigour and reliability in order to improve the learning of students. Teachers will be trained to be aware of and to use techniques for gaining access to students' present understanding and difficulties, advancing students' ideas and skills, discussing progress with students and involving students in keeping records of their learning.

In order to prepare student teachers to teach, teacher educators have to put into practice what they preach. Abd-El-Khalick and BouJaoude (1997) urged teacher educators to treat student teachers as active learners, and challenge their beliefs about teaching and learning in the teacher education programmes. By practising what they preach, teacher educators model the teaching approach which is taught to student teachers. This process also includes the communication of the approach made by teacher educators and the reflection among student teachers. Thus, the message of how to teach in classrooms is communicated through the teaching of teacher educators and the experience of learning to teach of the student teachers (Russell, 1997). Stiggins (2001b) also encouraged teacher educators to teach assessment practices by modelling them. Then, participants will become deeply involved in assessment activities and document their own preparedness to teach in a student-involved classroom assessment system.

2.7 Co-researchers

Oldfather (1997) invited the student participants of his study of student motivation (Oldfather, April 1993, as cited in Oldfather, 1997) to be engaged as co-researchers as he did not view his student participants as subjects. The study (interpretive study) was based on the interactions which took place between the students and the researcher in order to construct understanding about the research questions: students' reasons and purposes for being and not being in the learning activities, i.e., literacy activities. Godfather presented himself to his students as a learner interested in understanding their ideas. He told them that they were "all in this together, trying to figure things out". He hoped that the students' active participation in the research process would be personally valuable for them. It was reported that the explicitly collaborative relationship in the inquiry increased students' sense of ownership and involvement, therefore, led to greater depth of the findings. Furthermore, the students believed that their active roles as co-researchers facilitated their learning. One of the students stated his perception about his participation and how it affected the processes and outcomes of the research as follows:

> If I was not a co-researcher, I would not really understand what you are doing, so I would not take this so seriously. I might not be telling you much about how I really feel.

In this study, Oldfather's meaning of the phrase 'co-researcher' will be adopted. Furthermore, as the philosophy of adult education places learners in the centre and focuses on the learners' control over their learning process (Tandon, 1988), Simpson (1998) also involved his students in the research (participatory research) of the contemporary Aboriginal communities in Canada. Colorado (1988) emphasized that experiential knowledge is valid as people best know their own situations and can best

solve their own problems.

2.8 Educational Change

In theory, the purpose of educational change is to help schools accomplish their goals more effectively by replacing some structures, programmes and/or practices with better ones. The participants in education want to investigate whether, how and under what conductions educational change can improves schools (Fullan, 2001). Fullan emphasized that the implementation of educational change involves 'change in practice'. Change in practice occurs at many levels, such as the teacher, the school or the school district. Change is multidimensional. There are three dimensions in implementing any new policy or programme: the possible use of new or revised materials, the possible use of new teaching approaches, and the possible alternation of beliefs. All these three aspects of change represent the ways of achieving some educational goal(s). Changes in actual practice along the three dimensions are essential if the intended outcome is to be achieved. Furthermore, it is at the individual level, individual practitioners, that change occurs. Therefore, it is necessary to provide supportive or stimulating conditions to foster change in practice.

Fullan (2001) described three broad phases of the change process. Phase 1, initiation, consists of the process that leads up to a decision to adopt or proceed with a change. Phase 2, implementation, involves attempting to put a reform into practice. Phase 3, institutionalization or continuation, refers to getting the change built in as an ongoing part of the system These three phases are also related to outcome, especially about the learning of students and the subsequent increased organizational capacity to deal with future change. Fullan (2001) emphasized the moment that initiation begins is also the moment that the stage is being set for implementation and continuation. The sources affecting initiation are: the availability of innovation and the quality of

innovations, the accessibility of innovations to individuals and institutions, the advocacy and support from district administration and/or school principals, the advocacy and support from teachers, external change agents (i.e., at regional, state or national level), the community pressure for change/support/opposition/apathy to innovations, new policy and funds (accompanied by resources) mandating adoption at the local district level, and orientation that school districts take to external policy and funds.

The interactive factors affecting implementation and continuation are mainly the same, except that their roles become more sharply defined in the latter phase. They are grouped into three main categories relating to:

- Characteristics of the innovation or the change project: These include the need to change, the clarity about goals and means of implementation, the complexity of change required of the individuals responsible for implementation, and the quality and practicality of the programme;
- Local factors: These include the characteristics of the school district and the community, and the characteristics and roles played by principals and teachers; and
- External factors: These include the influence of the government and other agencies.

Finally, people in different positions at the school or district levels play significant roles in the change process. Teachers as implementers are central while principals play an essential role of as gatekeepers, facilitators of change, or inhibiting change. Students who are usually considered as the potential beneficiaries of change are also participants in the process of change (Fullan, 2001). School boards, district administrators, parents, and communities play different roles in initiating, rejecting, supporting or blocking changes in schools.

However, Fullan and Hargreaves (1992) described the following problems in education change:

- Overload: Teachers and principals are overloaded with the responsibilities to take care of more behavioural and social problems in the classrooms, greater accountability to parents and administrators, rising and widening expectations in their work, as well as innovations and reforms.
- Isolation: Teachers may suffer from the professional isolation, i.e. 'a lonely profession'. They may also suffer from the physical isolation, i.e. teaching in segregated classrooms.
- 'Groupthink': Though collegiality is one of the measures to solve the problem of isolation, 'contrived collegiality' may result as teachers collaborate for the sake of collaboration.
- Untapped competence (and the neglect of incompetence): The consequences of the isolation problem include the great things that individual teachers do or could do are unnoticed, and the bad things that they do are uncorrected.
- Narrowness in the teachers' role (and the problem of leadership): Teaching has been a 'flat' career; thus, some teachers may not be motivated to make educational change. Furthermore, the responsibility for improving the school has been left solely to the formal leaders, principals.
- Poor solutions and failed reform: Many attempts at educational reform failed.

They concluded that in order to make educational change successful, teachers need to adopt educational reform measures in their own classrooms, and translate them into effective classroom practices.

2.9 Action Research

Elliott (1991) stated that the fundamental aim of action research is to improve

educational practice. Improving practice involves considering the quality of the educational outcomes and the educational processes. Furthermore, improving practice, when viewed as the realization of values which defines its ends into concrete forms of action, involves a continuing process of reflection on the part of practitioners in particular circumstances. That is, the practitioners have to choose a course of action in a particular set of circumstances to realize their values. Elliott (1991) asserted that action research can improve educational practice by developing the practitioners' capacity for discrimination and judgement in complex human situations. They will feel that some aspect(s) of the practice need to be changed if the aims and values are to be realized. This felt need to initiate change is a necessary precondition of action research. In short, action research integrates teaching and teacher development, curriculum development and evaluation, research and philosophical reflection into a unified conception of reflective educational practice.

Elliott (1991) described the activities involved in the action-research cycle as the following:

- Identifying and clarifying the general ideas: 'General ideas' refers to a state of affairs or situation that teachers want to change or make improvement.
- Reconnaissance: It includes describing and explaining the facts of the situation.
- Constructing the general plan: The general plan should contain a revised statement of the general ideas. There should be statements of the factors to be changed or modified, and the actions to be undertaken. There should also be statements of negotiations to be conducted with others, and of the resources required before undertaking the proposed course of action. Lastly, the ethical framework that governs the access and release of the information collected should be stated.
- Developing the next action steps: Decision has to be made about which courses of

actions in the general plan are going to implement next, and how the process of implementation and its effects are being monitored.

- Implementing the next action step(s): During the implementation, the teachers may not only monitor the extent to which the action is undertaken; they also undertake some reconnaissance into the underlying cause of the difficulties encountered. Thus, the general ideas of what the problem is, and what needs to be done may be modified or changed.

Elliot (1991) stressed that the techniques and methods used to gather evidence in the reconnaissance and monitoring phases of action research include diaries, document analysis, photographic evidence, tape/video recording and transcripts, using an outside observer to collect information and convey it to the teachers, interviewing students, running commentary when observing students working at a task, the shadow studies, checklists, questionnaires and inventories, or analytic memos. When selecting techniques for gathering evidence, teachers have to consider when and how much time they can use for monitoring their next action step(s) and its effects. Case studies, ideally based on analytic memos, may be written to report the action research to date. A full report should be written at the point where the teachers decide to end the spiral of action research.

2.10 A Summary of the Literature Review

The review describes the learning that student teachers need in order to implement formative assessment, and provides a justification for the framework used here to study and analyze the teaching and learning in local General Studies classrooms. The research of Black et al. (2003b) provides teachers with details of how to practise formative assessment in their teaching. In Hong Kong, most of the practising teachers did not have knowledge nor experience of formative assessment,

though it was advocated as one of the educational reform measures to enhance students' learning and promote teaching effectiveness. The aim of the present study was to understand the processes whereby student teachers might or might not learn to implement formative assessment in General Studies classrooms. Suggestions might then be made to practising teachers on how to initiate, implement and institutionalize the change of assessment practice in local primary schools.

2.11 Research Questions

The following are the research questions that framed the present study:

1. How were the student teachers equipped to be assessors to implement formative assessment during their classroom teaching?
2. How did the co-researchers implement formative assessment in the 'figured world' of General Studies classrooms?
    - What was the relationship of the teachers and the students to the subject, General Studies?
    - What was the relationship between General Studies teachers and theories of learning?
    - What sorts of feedback were present in student-teacher interaction?
    - What was the student's role in General Studies classrooms?
3. What were the difficulties that the co-researchers encountered when they implemented formative assessment in General Studies lessons?
4. Did the co-researchers implement authentic formative assessment in General Studies lessons during their teaching practice in local primary schools?
5. How can teachers manage the change of assessment practice in General Studies classrooms?

The next chapter describes the two phases of the study, the co-researchers, the

intervention strategies, the research methods used, data collection and data analysis, and ethical considerations of the study.

Chapter 3

Methodology

This chapter describes the methods of the research and data collection employed in the study. The focus of the present research was to study how the student teachers implemented formative assessment in General Studies classrooms during their student teaching; therefore, data were collected from the student teachers and their students during and after the two teaching practice blocks. The following sections of this chapter describe the qualitative research method, the two phases of the study, the co-researchers, data collection, the pilot study, data analysis, the intervention strategies, and ethical considerations of the study.

3.1 Qualitative Research Methods

Qualitative analysis centres on the presentation of specific cases and thematic analysis across cases. Fieldwork can be organized around nested and layered case studies. A single case study is made up of many smaller cases, i.e., stories of specific individuals, families, organizational units, and other groups (Patton, 2002). The complexity of a single case is explored by studying details of interaction within its context. Thus, a case study is the study of the particularity and complexity of a single case in order to understand its activity within important circumstances (Stake, 1995). Data are collected by means of various methods such as interviews, participant observations, and field studies (Hamel, Dufour & Fortin, 1993).

A strategy of involving the insiders as co-researchers helps the researcher acquire the insider perspective as the researched are requested to actively participate in the research process. They are also trained to study and report on their own issues and concerns, and to be reflective on their own situations. Through such collaborative

research, there is connectedness and equality between the researcher and the researched (Patton, 2002). Thus, the researcher becomes a facilitator and a collaborator in support of the student teachers in their own inquiry: learning to teach and implement formative assessment practices as well as teaching and implementing formative assessment practices during their student teaching.

3.1.1 Data collection methods employed

Using multiple methods helps inquiry into a research question with different methods that have non-overlapping weakness in addition to their complementary strengths (Brewer & Hunter, 1989). Within the qualitative inquiry strategy, triangulation is attained by using interviews and observations, in which different types of data provide cross-data validity checks. On the other hand, different kinds of data may produce different results because the different types of inquiry are sensitive to different real-world nuances. The inconsistencies in findings provide researchers with opportunities for deeper insight into the relationship between the inquiry methods and the phenomenon under study (Patton, 2002).

Through direct observation of a setting, the researcher is better able to understand and capture the context, which is essential to the holistic perspective, within which people interact. Secondly, first hand experience allows the researcher to be open-minded, discovery oriented and inductive as s/he does not need to depend on prior conceptualizations of the setting from other written documents or verbal reports. Thirdly, the inquirer has the opportunity to see things which may routinely escape awareness among the people in the setting as they may take those things for granted. Fourthly, it provides chances to learn things about sensitive topics, that people would be unwilling to talk about in an interview. Fifthly, it provides opportunities to move beyond the selective perceptions of the interviewees. Finally, through her/his firsthand experience, the inquirer can draw on personal knowledge during the formal

interpretation stage of data analysis. The impressions and feelings of the observer which include reactions to the experiences, and reflections about the personal meaning and significance of what has been observed. Thus, all these are part of the data in the study and are used to understand the setting and the people in the setting (Patton, 2002).

Furthermore, Patton (1984) stated that videotape equipment can be used unobtrusively. Videotapes of activities or classrooms can substitute for the physical presence of an evaluator when that would be more intrusive than running a videotape machine. As people have become more familiar with videotape machines, teachers and students may be less discomforted during videotaping. Though the quality of field observation is increased and the researcher can refer to the videotaped lessons when necessary, negotiation must be made among the stakeholders to ensure that there is no ethical problem. Finally, if the teachers wish, they can put on an atypical performance, either during the researcher's direct observation or videotaped lessons. However, according to the researcher's experience, if they do so, the students may not know how to interact appropriately. Thus, the atypicality of the performance will be obvious

There are three types of qualitative approach to interviewing: the informal conversational interview, the interview guide approach and the standardized open-ended interview (Patton, 1984). Though there are variations in the extent to which the wording and sequencing of questions should be predetermined, the major characteristic of the three approaches is that the interviewees respond in their own words to express their own personal perspectives. Furthermore, the basic principle is that the response format should be open-ended. It is different from a closed interview, e.g., questionnaire, in which the interviewees are requested to fit their knowledge, experiences and feelings into the interviewer's categories. The researcher adopts the standard open-ended interview approach, thus the exact wording and sequence of

questions are determined in advance. The interviewees are asked the same basic questions in the same order. This increases the comparability of responses. Though there is less flexibility compared with the interview guide approach, the researcher may pursue issues that are not anticipated when the interview questions are written as she is the only interviewer and is in charge of the whole study.

3.2 The Two Phases of the Study

The present study consisted of two phases: the student teachers' study of the curriculum studies module, i.e., General Studies Teaching in Primary Schools, and their student teaching in local primary schools during the two teaching practice blocks. In order to help the student teachers be better equipped for the implementation of formative assessment in classrooms, the intervention strategy was firstly conducted during the researcher's teaching the curriculum studies module. The student teachers were trained not only to be competent General Studies teachers, but also assessors in classrooms. Different learning and assessment activities were provided in the lectures so as to familiarize them with the knowledge and experiences of formative assessment. Prior to the two teaching practice blocks, i.e., the second phase of the study, intervention took the form of workshops organized for the student teachers. Contact with the researcher through email was encouraged during the teaching practice blocks.

3.3 Co-researchers

Student teachers who took General Studies as their major subject in the Postgraduate Diploma of Education (Full-time) (Primary) Programme of the Hong Kong Institute of Education in which the researcher is serving had to study the

curriculum studies module, General Studies Teaching in Primary Schools. At the beginning of the curriculum studies module, the researcher introduced to the student teachers the education reform in Hong Kong, the major concepts of formative assessment and its function in promoting students' learning. She emphasized that she wanted to understand their learning and would like to work together with them to enhance their learning. Then, all the twenty-nine student teachers were invited to be co-researchers of and actively participate in the present study. Though no incentive was given, they all accepted the invitation. During the study of the curriculum studies module, the first phase of the study, they were reminded of the formative assessment practices that the researcher was conducting, and were asked to provide feedback on assessing their own learning and the learning of their classmates.

Prior to the two teaching practice blocks, only fifteen of the co-researchers, who were to be supervised by the researcher during their student teaching, were invited and they all took the offer to continue to be co-researchers of the study. They were to implement formative assessment in their teaching of General Studies during the teaching practice blocks in November-December 2002 and May-June 2003, the second phase of the study. In order not to overload the co-researchers, when they taught two General Studies classes, they were able to choose one class for the research work. They were to report and reflect on their teaching by writing weekly reflection reports, and videotaped a lesson. They interviewed four to six of their students in order to study their perceptions of their learning, as well as the teaching of the co-researchers. They were encouraged to make use of the data collected to prepare their portfolios, part of the assessment in the field experience of the programme. After the teaching practice blocks, each of the co-researchers was also interviewed by the researcher.

3.4 Data collection

The research was conducted to investigate how formative assessment was conducted in General Studies classrooms in local primary schools. The data were mainly collected by the researcher who taught the student teachers the curriculum studies module. This role of a teacher educator motivated the researcher to conduct the present study. The researcher was also the field experience supervisor of the student teachers. Throughout the period of the study, the researcher separated the data collection procedures from the assessment of the student teachers.

Qualitative data were collected to illustrate the learning and teaching of the student teachers, and the perceptions of the students towards the practice of formative assessment in General Studies lessons. Data were gathered by the researcher by in-depth interviews with the co-researchers (Appendix A.1, A.2), and collected through the submission of lesson plans (Appendix B), weekly reflection reports (Appendix C), videotaped lessons with explanations (Appendix D), and cassette tapes recording the interviews with their students by the co-researchers (Appendix E.1 & E.2).

3.4.1 Interview

There were two structured interviews during the course of the study. They were conducted in the campus of the Institute by the researcher after each of the two teaching practice blocks. Each co-researcher was interviewed. Perceptions of formative assessment, strategies in conducting learning and assessment activities, and difficulties encountered during the implementation were identified. The interviews were also focused on identifying themes for comparing the professional development of the researchers in the two teaching practice blocks. The interview questions after the first teaching practice block are illustrated in Appendix A.1. The questions for the second interview which was conducted after the second teaching practice were

revised (Appendix A.2) to help the co-researchers study the school context that they taught, their professional development during the teaching practice, their role and the role of their students in General Studies classrooms in which formative assessment was carried out.

3.4.2 Lesson plans

When the co-researchers planned their lessons, they first set the learning objectives of the lessons and fixed the major teaching points. Then they designed learning activities, and aligned them with various assessment activities. A new column 'Assessment Activities' was added to the form of a lesson plan (Appendix B). Thus, the co-researchers were the facilitators for students' learning, as well as assessors in the class in order to promote the learning of students.

3.4.3 Weekly reflection reports

Student teachers are trained to be reflective practitioners in order to improve their teaching and the learning of the students. Therefore, during their student teaching, the co-researchers wrote weekly reflection reports (Appendix C) to reflect on their experiences in implementing formative assessment when teaching General Studies. On the reflection reports they reported on the successful events, the difficulties encountered and the supports needed during their student teaching.

3.4.4 Videotaped lessons

In each of the two teaching practice blocks, each co-researcher videotaped a General Studies lesson. In the second teaching practice block, they supplied more information about the reason(s) for videotaping the lesson and conduct self-assessment about the assessment activities in the lesson (Appendix D).

Schoenfeld (2002) argues that one's epistemological world view should shape one's instructional practices. One of the methods to tease out the relationship is to look at one's practices. Consequently, from the videotaped lessons, the researcher

could observe how the co-researchers conducted formative assessment in General Studies lessons without interrupting the lessons. Furthermore, the videotaped lessons were used as a check on the validity of the self-reports of the co-researchers.

3.4.5 Co-researchers interviewing their students

By the end of the teaching practice blocks, each of the co-researchers interviewed four to six of her/his students in order to collect feedback on their learning and the teaching of General Studies in their classrooms. The interview questions (Appendix E.1 & E.2) aimed to study the perceptions of the students on different learning and assessment activities. The interview questions for the second teaching practice were revised as the co-researchers gained more knowledge and experiences in formative assessment. The co-researchers were encouraged to interview some quiet students so as to learn their different ideas. The interviews were conducted in Chinese, the mother tongue of the students, by the co-researchers and audio-taped. Transcriptions were made by the researcher and translated into English.

Interviews, lesson plans, videotaped lesson and weekly reflection reports provided the researcher with data about the teaching of the co-researchers during the teaching practice blocks, the second phase of the study. Data about the researcher's teaching the curriculum studies module, the first phase of the study, were also collected in the module lectures. After each lecture, the researcher wrote reflective diary in order to reflect on her teaching and the learning of the co-researchers. Summary of the learning and assessment activities, and feedback provided by the researcher to the co-researchers during the lectures and the workshops were also taken by the researcher as a source of data.

3.5 Pilot Study

Miles and Huberman (1994) commented that uninformed researchers ask partial

questions, take selective notes, make unreliable observations and distort information; therefore using validated instruments is the best guarantee of dependable and meaningful findings. A pilot study is thus conducted prior to the main study to assess the strengths and weakness of the research design, as well as methods of data collection and data analysis so that recommendation for conducting the main study can be made. It also helps provide an opportunity for the researcher to obtain insights of the respondents, and helps the researcher become more familiar with the phenomenon and the setting under study, in addition to the methods of data collection and data analysis.

3.5.1 Details of the pilot study

The pilot study was conducted from August 2001 to June 2002. All the thirty student teachers in the Postgraduate Diploma in Education (Primary) (Full-time) programme were invited to be co-researchers of the study, after they were introduced to the concepts of formative assessment and its functions in promoting students' learning. They all accepted the invitation, though no incentive was given. During the lectures of the curriculum studies module, the first phase of the study, the researcher modelled the formative assessment practices. The co-researchers also had to finish the assessment tasks in the lectures and submitted them to the researcher. Only nine of them, who were to be supervised by the researcher during their student teaching, were invited and they all agreed to continue to be co-researchers during the two teaching practice blocks, the second phase of the study. They were asked to write the schemes of work, lesson plans and weekly reflection reports during their student teaching in local primary schools. Furthermore, each of them also videotaped a lesson. At the end of each teaching practice block, each co-researcher interviewed four to six of her/his students to study their perceptions of the learning and teaching in General Studies classrooms. They were reminded that they could use the data collected to prepare their

portfolios, which was part of the assessment in the field experience of the programme. They were also interviewed by the researcher after the two teaching practice blocks. All the data obtained were studied and analyzed by the researcher in order to provide insight for the main study.

3.5.2 Contributions of the pilot study

The pilot study provided some insights into the perceptions of the co-researchers and the students on formative assessment activities. Difficulties identified in the data collection procedures, such as writing the schemes of work, and data analysis methods tried in the pilot study helped the researcher improve the implementation of the research methods in the main study. The data collected from the interviews with the co-researchers and the students in the pilot study showed that the interview questions helped the co-researchers and the students articulate their conceptions. Modifications of the interview questions were also made and extra questions were added for the interview after the second teaching practice block in order to trace the professional development of the co-researchers. The interview questions for the students were modified so as to help them reflect their roles in the self- and peer assessment activities.

The schemes of work and lesson plans demonstrated the planning of the co-researchers in designing the learning objectives and activities in General Studies lessons. In order to help the co-researchers focus on the alignment of learning and assessment activities, a new column, 'Assessment Activities' was added to the lesson plan. Furthermore, because of the difficulties in collecting the schemes of work and lesson plans from all the co-researchers in the pilot study, instead of writing the schemes of work, they were asked to prepare the 'progress of teaching' during the second teaching practice block in the main study. On the 'progress of teaching', the co-researchers just planned the numbers of lessons they had to spend in teaching a

chapter and wrote down the major teaching points of each lesson.

The pilot study provided opportunities for the researcher to study the assessment activities in General Studies classroom through viewing the lessons conducted and videotaped by the co-researchers. In order to obtain more information on the videotaped lessons in the main study, the researcher invited the co-researchers to filled in the form, 'Information about the videotaped lesson' to tell the reasons for videotaping the lesson and to reflect on their implementation of formative assessment activities.

3.6 Data Analysis

The data were to be content analyzed to identify the patterns of experiences the co-researchers brought to their teaching, and the patterns characterized their teaching, as well as the patterns of the professional change (Patton, 2002). This section describes how the data were analyzed and how the coding represented the sources of the data collected.

3.6.1 Analyzing the data

The aim of the data analysis was to identify the teaching experiences that the co-researchers had constructed in the setting of local primary General Studies classrooms. Neuman (1997) related Spradley's (1979, 1980) domain analysis and summarized the method of analysis as follows:

- rereading data notes;
- mentally repackaging details into organizing ideas;
- constructing new ideas from notes on subjective meanings or from the researcher's ideas;
- looking for relationships among ideas and putting them into sets on the basis of logical similarity;

- organizing them into larger groups by comparing and contrasting the sets of ideas; and
- reorganizing and linking the groups together with broader integrating themes.

Therefore, themes and categories were developed when the researcher read through the transcriptions and the weekly reflection reports. The data were coded by the researcher according to the themes or categories, and then a list of themes, analytical categorization of data emerged. Moreover, similarities and differences across individual cases were examined so that patterns were identified and conclusion was drawn on the study.

3.6.2 The coding of the transcriptions, weekly reflection reports, and videotaped lessons

The fifteen co-researchers were each represented by an alphabet letter from A to O. The coding of the data consisted of the first alphabet letter which represented the co-researcher, the second alphabet letter 'i' which represented the data obtained from interviews with the co-researchers, and then a number '1'or '2' which represented the interviews after the first or the second teaching practice block respectively. For example, 'Bi2' refers to co-researcher B in the interview after the second teaching practice block.

The videotaped lesson, weekly reflection reports were also coded in the same way. The second alphabet letters 'v' and 'w' represented videotaped lessons and weekly reflection reports respectively and then a number '1' or '2' represented the data collected during the first or the second teaching practice block respectively. For example, 'Ev2' was a piece of data from the videotaped lesson of co-researcher E during the second teaching practice block. The fourth number represented the week number during the teaching practice block. Thus, 'Aw24' represented the reflection

report written by co-researcher A during the fourth week of the second teaching practice block.

For the coding of the data from the co-researchers' interviews with their students, the first alphabet letter represented the co-researcher. The second alphabet letter 'i' represented the data obtained from interviews, and then a number '1' or '2' represented the interviews conducted during the first or the second teaching practice block respectively. The fourth alphabet letter 's' represented the student and then a number represented the number of the students interviewed. Hence, 'Ki2s4' was taken from the transcription of the co-researcher K who interviewed the fourth student during the second teaching practice block.

3.7 Intervention Strategies

In the Reform Proposal for the Education System in Hong Kong (Education Commission, Sept 2000), formative assessment is stressed as a way to improve teaching and learning of students. In the past, only summative assessment was stressed in all levels of education. Most teachers and students do not have any experiences of formative assessment. Therefore, the researcher had to train the co-researchers not only as teachers, but also as assessors in classrooms. Consequently, she had to provide them with opportunities to learn the major concepts of formative assessment and experiences the formative assessment practices in the lectures.

3.7.1 The teaching of the researcher

The researcher taught the module, General Studies Teaching in Primary Schools, which aimed to provide student teachers with opportunities to explore and familiarize themselves with the knowledge, skills, values and attitudes required to teach the subject of General Studies in local primary schools. Then the co-researchers could acquire an understanding of the subject, and major teaching strategies and approaches.

Table 3.1 shows the outline of the module. The module was offered in the first semester of the 1-year programme and each lecture lasted for three hours. There were twenty-nine student teachers in the class. This was a shared teaching module: the researcher taught the first five lectures while a colleague from the Science Department taught the other five lectures. The assessment of the module was to design a teaching kit, focused on child-centred learning, a selected level and a selected theme of General Studies. The researcher wrote reflective diary after each lecture in order to reflect on her teaching and the learning of the co-researchers.

Table. 3.1 The teaching schedule of the module, General Studies Teaching in Primary Schools.

Lecture	**Topic**
1	General Studies in the primary school curriculum: nature, aims and objectives, structure and rationale
2	Interdisciplinary approach in learning and teaching General Studies: concept learning
3	1 Interdisciplinary approach in learning and teaching General Studies: value learning, and social inquiry 2 Microteaching
4	1 Assessment of students' learning 2 Microteaching
5	1 Strategies for unit planning and lesson planning in General Studies 2 Microteaching
6	1 Major learning activities and resources for General Studies: investigation and experimental activities 2 Microteaching
7	1 Major learning activities and resources for General Studies: project work and computer-assisted learning 2 Microteaching
8	1 Theories underlying the activity approach and use of this approach in the teaching of General Studies 2 Microteaching
9	1 Developing a teaching syllabus for General Studies which reflects the notion of integration: thematic approach, and school-based learning 2 Microteaching
10	1 Presentation of individual assignments 2 Evaluation of the module

3.7.2 The content and the teaching of the lectures in the module

This section presents a detailed description of the five lectures and the researcher's teaching in the curriculum studies module, General Studies Teaching in Primary Schools.

Lecture 1

At the beginning of the lecture, the researcher explained to the student teachers her research thesis of the Doctor of Education and what she planned to do. She asked them to provide feedback on their learning and promised to respond to their feedback. It is through different learning and assessment activities, the researcher showed the student teachers how she collected feedback from them and fed forward to them so as to enhance their learning and her teaching. They were invited to be her co-researchers and they all accepted the invitation. Then they were asked to engage in self-reflection on the characteristics of a good student and a good teacher in the classroom, and their expectation of the module, themselves and the lecturer (Appendix F). The researcher promised to provide them feedback in the second lecture.

Then the co-researchers worked in groups to write on a piece of paper what should be learned about the topic, water, in General Studies lessons and at which level the students should learn this topic. After each group pasted the paper on the whiteboard, the whole class discussed the contents, and compared them with those on the existing and the new General Studies syllabuses. During the class discussion, the practice of 'wait time' was demonstrated and the concept was discussed. The researcher also briefly introduced the concept of formative assessment and its relationship with teaching and learning which would be learned in detail in the fourth lecture.

Finally, the co-researchers were asked to read the standard Teaching Practice Appraisal Form, so that in the second lecture they might fix the rubrics for microteaching which started from the third lecture. During the microteaching, the

co-researchers worked in groups to choose a teaching point to be delivered in the class. They prepared the teaching content, the activities, and the teaching materials, e.g., teaching aids, or worksheets. After the microteaching, the researcher and the other co-researchers shared their feedback about the try-out teaching. The whole process lasted for thirty minutes. The microteaching was not formally assessed as it only provided chances for the student teachers to gain some experience in teaching before the first teaching practice block which started in November 2002.

Lectures 2 to-5

In these lectures, various activities were conducted to help the co-researchers learn the different approaches in learning and teaching General Studies, assessment of student's learning, as well as strategies for unit planning and lesson planning in General Studies. The activities included group discussion, ranking the order of different kinds of values, and the study of different lesson plans. Planned formative assessment activities were provided to the co-researchers either during the lectures or by the end of the lectures.

During the second lecture, the co-researchers were asked to present their ideas of their group after group discussion. They were also asked to classify the types of food on the whiteboard. By the end of the second lecture, the co-researchers were asked to state what the muddiest point was in the lesson, and to comment on the expectation(s) they had but was/were not mentioned by the researcher (Appendix G).

By the end of the third lecture, the co-researchers were requested to paraphrase the role of a teacher and a student in the process of social inquiry and value learning (Appendix H), and then send the answer to the researcher by email.

When learning about the assessment of students' learning in the fourth lecture, the co-researchers were asked to fill in the assessment activities in the lesson plan, Good Neighbours, in order to align the assessment activities with the learning

activities in the lesson. By the end of the fifth lecture, the last lecture of the researcher's teaching, interim evaluation (Appendix I) was conducted to solicit the evaluation of the co-researchers on the teaching of these five lectures and their learning.

In general, the researcher provided feedback to the co-researchers on the planned formative assessment activities at the beginning of the following lecture. For example, at the start of the second lecture, she showed them the summary of their ideas of a good student or a good teacher in class. and their different expectations of the researcher. Then she clarified the roles of a student and the teacher in the formative assessment classroom. She also invited their further comments. With reference to the muddiest point in the lesson, she clarified the relationships among facts, concepts and generalizations, and the use of concept maps at the beginning of the third lecture. Feedback on the interim evaluation was provided through email.

The researcher also carried out interactive formative assessment activities, e.g., questioning or observation, in these five lectures and reminded the co-researchers about the practice of formative assessment throughout the lectures. She noticed and recognized the ideas of the co-researchers, and asked for clarification and explanation when needed. Wait time was demonstrated and its practicability was discussed.

After the discussion on the rubrics of peer assessment for the microteaching, the Peer Assessment form (Appendix J) was fixed by the researcher and the co-researchers in the second lecture. The co-researchers had to assess their fellow classmates according to the aims and objectives of the teaching; the matching of the content of the teaching with the standard of the students; the design of the teaching strategies according to the philosophy of General Studies; the appropriate selection and use of resources, the assessment activities to assess the learning of the students; the achievement of the teaching objective(s) and the performance of the teacher.

There were two blanks which allowed the student assessors to express their own ideas and concerns. Besides giving 'pass' or 'could have been improved' for each criterion, the assessor also provided the overall comment to their fellow classmates.

After the first microteaching, it was agreed to add a new item 'Appropriate sequencing of the learning activities' on the Peer Assessment Form since some of the co-researchers designed and implemented more than one activities. By the end of the last lecture, the co-researchers were invited to do the interim evaluation on peer assessment during microteaching (Appendix K). They reflected on what they had learned in assessing others and from the feedback provided by other co-researchers.

3.7.3 Support for the teaching practice

Workshops were organized before each of the two teaching practice blocks for the co-researchers so that they would be better equipped for the implementation of formative assessment in General Studies classrooms with special reference to their teaching practice schools. The co-researchers were encouraged to contact the researcher through telephone or email during the teaching practice blocks.

3.8 Ethical Considerations

Measures taken in the present study for ethical consideration included informed consent, privacy, anonymity and confidentiality. Approval was received from the Ethics Advisory Committee, the School of Education of the University of Durham before the commencement of the study. At different phases of the study, written consent was obtained from the co-researchers. Before the commencement of the module, all the twenty-nine student teachers were informed of the purpose of study and the confidentiality of the data gathered. They were invited to be the co-researchers and requested to fill in the consent forms. They were assured that they could withdraw

the consent forms.

The co-researchers were also assured of anonymity and non-traceability of the data they provided. All data were aggregated and all names were deleted. On the other hand, as a colleague of the Science Department and the researcher co-taught the module, the assessment load was equally allocated to them according to the topics that the student teachers chose for their assignments. The co-researchers were assured that the research work would not have any bearing on their assessment. Furthermore, there was the double marking system for quality assurance in the Institute. Concerning the assessment of the teaching practice, according to the statistics of the academic results of the student teachers in the previous years, only a few of them scored 'A' or 'C'; most of them got 'B'.

3.9 Summary

In order to study how the student teachers implemented formative assessment in the subject classrooms, General Studies, the present study included two phases, i.e., the researcher's teaching the curriculum studies module, and the co-researchers' teaching during the teaching practice blocks. The intervention strategies consisted of the support provided in the curriculum studies module in the first phase, and the workshops organized before the two teaching practice blocks. The study employed qualitative research methods for data collection. The following table (Table 3.8) summarizes the methods and the purposes of data collection.

Table 3.2 Methods and purposes of data collection

Phase	Data Collection	Purposes
1 Module on curriculum studies Sept. 2002 - Oct. 2002	Inviting the student teachers to be co-researchers of the study. Assessment tasks during/after the lectures.	1. To provide the student teachers with the knowledge and experience of formative assessment.
2 Teaching Practice Nov. 2002 - Dec. 2002 and May 2003 - June 2003	1. Lesson plans. 2. Weekly Reflection Reports. 3. Videotaped lessons. 4. Interviews conducted by the co-researchers with their students. 5. Interviews conducted by the researcher with the co-researchers after each of the teaching practice blocks.	1. To collect data about the perceptions of the co-researchers, the implementation of formative assessment in General Studies classrooms, e.g., the commonly employed formative assessment activities, the difficulties encountered during the implementation and the support needed for better implementation. 2. To provide triangulation with the data found in Weekly Reflection Reports and the videotaped lessons, and the data provided by the co-researchers during the interviews. 3. To understand the current practice of the teaching practice schools and student teachers' relationship with the principals and practising teachers in the teaching practice schools. 4. To understand the assessment practices from the perspective of the students.

Finally, the chapter concludes with measures taken by the researcher in order to ensure the study was carried out with ethical consideration, which included informed consent, privacy, anonymity and confidentiality.

The next chapter describes the learning experiences of the co-researchers during the invention strategy of the study, i.e., the study of the curriculum studies module, General Studies Teaching in Primary Schools, and the support received during the workshops before the teaching practice.

Chapter 4

Learning Experiences of the Co-researchers during Intervention

4.1 Introduction

This chapter reports the learning experiences of the co-researchers during the intervention conducted by the researcher in the two phases of the study, i.e. the learning of the curriculum studies module, General Studies Teaching in Primary Schools, and the workshops before the two teaching practice blocks. According to the experience of the researcher, most students in Hong Kong do not have any knowledge or experience of formative assessment. In order to enhance the learning of the students, the co-researchers should be trained to be competent facilitators of students' learning in General Studies. They should also have the experience of formative assessment and be trained to be assessors in the classrooms. Then they may well be able to implement formative assessment during their student teaching. The following depicts the learning experiences of the co-researchers during the intervention.

4.2 Learning Experiences of the curriculum studies module, General Studies Teaching in Primary Schools

This section describes the learning experiences of the co-researchers during the learning of the curriculum studies module, General Studies Teaching in Primary Schools. Before the teaching, the researcher invited all the twenty-nine co-researchers and they all agreed to be co-researchers in the present study. The curriculum studies module aimed to enable student teachers to acquire an understanding of the General Studies curriculum, as well as major teaching strategies and approaches. It provided student teachers with opportunities to explore and familiarize themselves with the knowledge, skills, values and attitudes required to teach the subject in local primary

schools. This was a shared teaching module in which the researcher only taught the first five lectures. During these lectures, the co-researchers learned the curriculum of General Studies, different teaching approaches and major teaching activities in order to help students learn. They also learned how to plan a lesson and design assessment activities, formative and summative (Chapter 3, Appendix B).

4.2.1 The role of a student/teacher in the classroom

At the beginning of the first lecture, the co-researchers were asked to reflect on their experience about the characteristics of being a good student and a good teacher in class. They were also requested to report their expectation of the module, of themselves during the learning of the module, and of the lecturer (Chapter 3, Appendix F) so that they could have a better understanding of the roles of teacher and students in formative assessment classrooms. Twenty-eight out of twenty-nine co-researchers handed in the reflection reports. In the second lecture the researcher demonstrated to the co-researchers how to deal with the feedback collected by showing them the major ideas of the characteristics of being a good student and a good teacher in the classroom (Table 4.1 to Table 4.5), and holding a class discussion with them. Seventeen out of twenty-eight co-researchers mentioned that a good student was attentive in class and listened to the teacher (Table 4.1). Ten remarked that s/he showed respect towards the teachers and was polite to them. Eight stated that s/he handed in homework on time. Only eight co-researchers mentioned that a good student was brave enough to ask questions. Six remarked that s/he took the initiative to learn while five stated s/he answered questions raised by the teachers or tried to answer. This confirmed the researcher's idea about the traditional belief of the role of a student in the classroom.

Table 4.1 Major ideas of the co-researchers' view on the role of a student in the classroom (N=28)

The role of a student in the classroom (With reference to your experience, tell the characteristics of being a good student in the classroom.)	**Occurrences in the reflection reports**
Being attentive and listening to the teacher	17
Showing respect towards/being polite to teachers	10
Handing in homework on time	8
Being brave enough to ask questions	8
Taking the initiative to learn	6
Answering questions raised by teachers/trying to answer questions	5
Observing discipline	5
Being co-operative with teacher and classmates/showing respect towards others	3 / 3
Helping classmates/loving and caring for classmates	3 / 3

Seven co-researchers mentioned that a good teacher knew the needs of the students and taught them accordingly. The other seven remarked that s/he knew how to motivate or motivated students to learn (Table 4.2). Seven co-researchers reported that a good teacher prepared lessons. Only three remarked that s/he encouraged students to take the initiative to learn. The relationship of learning, teaching and assessment was not mentioned by the co-researchers.

Table 4.2 Major ideas of the co-researchers' view on the role of a teacher in the classroom (N=28)

The role of a teacher in the classroom (With reference to your experience, tell the characteristics of being a good teacher in the classroom.)	**Occurrences in the reflection reports**
Having knowledge of the needs of the students (and teaching them accordingly)	**7**
Having knowledge of how to motivate/motivating students to learn (to have interest in the lesson and the subject)	7
Preparing lessons	7
Caring students/loving students	6 / 6
Being just and fair/being patient (to repeat her/his ideas)	5 / 3
Being punctual (to start and to end the lesson)/being responsible	5 / 5
Explaining clearly	4
Having knowledge of different problems of students, teaching them according to their abilities and encouraging them to take the	3

initiative in learning	

Co-researchers' view on their role in learning this module also indicated the traditional passive role of a student in the classroom. Eight of the twenty-eight co-researchers stated that they should grasp (more) the content knowledge of this module, while five reported that they had to grasp the General studies teaching skills for the teaching practice (Table 4.3). Only one co-researcher stated that s/he should actively participate in the lesson, though six co-researchers remarked that a good student should take the initiative to learn as stated in the previous paragraph. The data show that most of the co-researchers did not hold the perception of active learning though they were eager to learn how to teach.

Table 4.3 Major ideas of the co-researchers' view on their role in learning the curriculum studies module (N=28)

The co-researcher's role in learning the curriculum studies module (What are your expectations of yourself in learning this module?)	**Occurrences in the reflection reports**
Grasping (more) the content knowledge of this module	8
Grasping the General Studies teaching skills (for the teaching practice)	5
Having the capability to make use of what is learned to teach (so that students like my lessons/have more interest in General Studies lessons)	3
Having comprehensive knowledge of General Studies (aims, objectives etc.)	2
Making General Studies loved by every student	2
Actively participating in the lesson	1

Regarding the role of the lecturer, four of the co-researchers stated that she should share teaching experience with them (Table 4.4). Three remarked that the lecturer should teach them different teaching methods and knowledge; another three stated that she had to teach them some (more) teaching skills (and more examples). Only two co-researchers stated that the lecturer should have interaction with the co-researchers, while the other two mentioned that she should provide sufficient support and opinion

to facilitate their learning. Once again, most of the co-researcher showed their traditional view of learning - they wanted to receive knowledge from the researcher and listen to her experience. Only a few of them emphasized the interaction among the co-researchers and the researcher, and the feedback provided by the researcher.

Table 4.4 Major ideas of the co-researchers' view on the role of the lecturer in the classroom (N=28)

The lecturer's role in the classroom (What are your expectations of the lecturer?)	**Occurrences in reflection report**
Sharing teaching experience	4
Teaching using different teaching methods (and knowledge)	3
Teaching some (more) teaching skills (and more examples)	3
Explaining the curriculum in a lively way (so as to motivate the study of the student teachers)	2
Having interactions with student teachers	2
Providing sufficient support and opinion to facilitate the learning of student teachers(on teaching/microteaching/assignment)	2

During the second lecture, the researcher clarified the role of a student and the teacher in the formative assessment classroom, and concluded that they should provide students with a more interactive classroom learning environment with different learning activities and formative assessment tasks. Students might actively participate in different activities in the lesson to construct knowledge and learn values and skills, as well as provide feedback to and collect feedback from the teacher. Therefore, teachers are to be facilitators to provide activities to help students construct knowledge and learn values and skills, and assess students' learning in the classrooms.

4.2.2 Responsive and flexible teaching

In order to facilitate the learning of the co-researchers, different learning activities were provided to the co-researchers by the researcher. At the start of each lecture, the teaching schedule of the lecture was also provided so as to inform the co-researchers what the researcher planned to do in the lesson: what they were going to

learn, the learning activities, and the assessment tasks in the lecture. The purposes of planning those activities were also explained to them. All these were to help the co-researchers grasp the concept, and experience of the implementation of formative assessment in the classrooms. During the lectures, the co-researchers were shown that in order to collect feedback from and provide feedback to them, and to make adjustment or intervention when necessary, the researcher did not have full control of what was taught in the lecture. Therefore, there should be flexibility in the teaching process and in designing the lectures as well. For example, at the beginning of the first lecture the co-researchers were asked to state their expectation of the module in the activity, Goal Setting (See Chapter 3, Appendix F). The researcher planned to ask them to do the activity, Goal Matching, by the end of the lecture in order to check whether their expectations might be achieved during their learning of the curriculum studies module. As there was not enough time to do the activity, the researcher explained the situation to the co-researchers and told them that she would allow time for them to discuss their expectations (Table 4.5) at the beginning of the second lecture. Furthermore, the planned assessment task, i.e., paraphrasing the aims, objectives and syllabus of the General studies curriculum, would only be done orally in the next lecture. The whole issue was shown to the co-researchers that time constraint, slimming of the content and flexibility of the teaching schedule should be considered during the implementation of formative assessment in the classroom.

Table 4.5 Major ideas of the co-researchers' expectation of the curriculum studies module and the ranking of their expectations (N=28)

The co-researchers' expectation of the curriculum studies module (I expect to learn :)	**Rank 1**	**Rank 2**
Teaching methods (not indoctrination)(creative)(in order to teach effective and lively lessons) (to promote classroom environment)	13	4

Content knowledge of General Studies (how to link the different units) (especially about the science topics)	4	1
How to promote the interest of students	3	2
How to write a lesson plan/design teaching aids (and implement the lesson plan)	3	nil
How to make use of different resources/IT to help students learn	2	nil

At the beginning of the second lecture, the researcher showed the co-researchers the main ideas of their expectations of the module (Table 4.5) and explained to them that their various expectations, such as learning a variety of teaching methods, ways to promote the interest of students and writing a lesson plan, were to be catered in the module. However, helping the co-researchers learn the content knowledge of General Studies was not the objective of the module. Unfortunately, a few co-researchers still insisted on the learning of the content knowledge of General Studies in the interim evaluation. The above data show the dialogue among the researcher and the co-researchers in the lecture. In order to involve the co-researchers in the learning, teaching and assessment process, the researcher was not in full control of the pace and the teaching content of the lecture.

4.2.3 Creating space for co-researchers to improve their learning

By the end of the second lecture, the co-researchers were asked to provide feedback on the muddiest point in the lecture (Chapter 3, Appendix G). Nine of the co-researchers asked about constructivism (Table 4.6). Seven wanted to know how to effectively make use of games and activities to teach. Six co-researchers asked about the difference between generalization and concepts. Four were not sure about the use of concept maps and mind maps. Several of the co-researchers did not remark on the muddiest point in the lecture but asked about different techniques in teaching General Studies. At the beginning of the third lecture, the co-researchers were shown how the feedback was deal with by the researcher. Examples were provided to them and they

were invited to discuss on sub-concepts, concepts and generalization. After the lively discussion among themselves, they had better understanding of concepts and generalization and were happy about that. Brief explanation on the different techniques employed in General Studies classrooms was also introduced to the co-researchers in order to lessen their worries about the teaching practice. They were encouraged to reflect on their own learning and have more dialogue with the researcher in order to enhance their learning.

Table 4.6 Major ideas of the muddiest point in the lecture (N=28)

The muddiest point in the lecture (What was muddiest point in the lecture?)	**Occurrences in the feedback forms**
The major characteristics and the use of constructivism.	9
How to effectively make use of games and activities to teach, etc.	7
The difference between generalization and concepts (and facts)	6
The use of concept maps	4
How to find out the major concept in a paragraph (in order to teach)	2
How to teach primary students generalization	2
How to distinguish major concepts from sub-concepts	1

By the end of the lesson, the co-researchers were asked to paraphrase the role of a teacher and the students in the learning of values and the process of social inquiry (Chapter 3, Appendix H) and then submit the answer through email. It was encouraging that three co-researchers emailed the answers in the same afternoon; only two of them provided brief and correct answers. They stated that the role of the teacher was to be a facilitator to help students learn, while the role of the students was to actively participate in the activities in class. The other one submitted very detailed answers which were copied from the handouts. Altogether seventeen out of twenty-nine co-researchers submitted answers. Six of them provided similar detailed answers one or several days after the lecture. After communicating with the researcher, three co-researchers rewrote and re-sent their answers. At the beginning of the fourth

lecture, the researcher fed forward and discussed with the co-researchers the problem of doing the assessment after the lecture. Though altogether eleven co-researches provided good answers, the researcher was not sure whether they got the answers from the handouts or they learned them in the lecture.

4.2.4 Peer assessment enhanced self-evaluation capabilities of students

Starting from the third lecture, co-researchers in groups of about four to five persons undertook microteaching during the last thirty minutes of the lecture. In order to get everyone involved - watching and evaluating the microteaching of others and thus promoting their own learning, the co-researchers were invited to conduct peer assessment by filling in the peer assessment form and then giving it to the presenter. After the co-researchers had studied the teaching practice appraisal form of the Postgraduate Diploma of Education programme and held discussion in the class, the rubrics for microteaching were settled with the researcher (Chapter 3, Appendix I). The co-researchers had to assess their fellow classmates according to the aims and objectives of the teaching; the matching of the content of teaching with the standard of the students; the design of the teaching strategies according to the philosophy of General Studies; the appropriate selection and use of resources, the assessment activities to assess the learning of the students; the achievement of the teaching objective(s); and the performance of the teacher. The co-researchers and the researcher also provided oral feedback about the microteaching before the end of the lecture. After the first microteaching, a new item, 'Appropriate sequencing of the learning activities', was added to the form, since some co-researchers provided several activities during the microteaching.

During the interim evaluation (Appendix J), the co-researchers were asked to reflect on what s/he had learned in assessing others in microteaching, and from the feedback provided by others. They were also invited to make suggestions for

improvement in the implementation of peer assessment (Chapter 3, Appendix K). Concerning what they had learned in assessing others, five co-researchers remarked that they had learned how to observe the performance of others. Four claimed that they saw the problems of others and had engaged in critical thinking to make suggestions for improvement. Concerning what they had learned from the feedback provided by others, three co-researchers stated that they had learned to listen to the opinion of others, while the other three reflected that they had learned their strengths and weaknesses in teaching, and what they should pay attention to. Two co-researchers reported that from the others' assessment, they understood their weakness and areas for improvement and proclaimed the importance of self reflection (Table 4.7).

Table 4.7 Major ideas of the interim evaluation on peer assessment on microteaching (N=28)

What I have learned in assessing the classmates in microteaching:	**Occurrences in the interim evaluation**
How to observe the performance of other classmates (objectively) (so as to improve myself)	3 (1) (2)
To see the problems (I may also have the same problem) and to make suggestions – critical thinking	2 (2)
To comment comprehensively and be neutral	2
To grasp the major teaching points	2
To be aware the needs of the students and meet their needs	2
What I have learned from the feedback provided by other classmates:	**Occurrences in the interim evaluation**
To listen to the opinion of others	3
My strengths (and weaknesses) in teaching and what I should pay attention to	3
To understand my weaknesses and areas for improvement - the importance of self reflection	2

Concerning suggestions for improvement in the implementation of peer assessment, five co-researchers suggested that a five-point scale should be used instead of the two grades, 'pass' and 'could have been improved' (Table 4.8). Two

reflected that the assessors needed not provide their names so that they might be free to make comments. One co-researcher remarked that the standard of the peers were more or less the same with and hers/his. One claimed that it was difficult to make the assessment as there were many items on the assessment form, but another co-researcher reflected that more items should be added on the assessment form.

Table 4.8 Major ideas of the interim evaluation on 'Suggestions for improvement on peer assessment' (N=28)

Suggestion for improvement on peer assessment:	**Occurrences in interim evaluation**
Assessment scale: a five-point scale should be used instead of the two grades, pass/could have been improved.	5
Assessors should not provide names so that they might feel free to make comments.	2
The standard of the peers are more or less the same with mine	1
Detailed comments are needed.	1
There are many items on the assessment form. It is difficult for the classmates to assess all these different aspects so the assessment was superficial. It is better to simplify the assessment form.	1
More items should be added.	1

The low response rate shows that peer assessment was a new activity to most of the co-researchers. The co-researchers, like most of the Hong Kong students, did not have the culture to assess the work of their peers in order to promote their learning. Even though the researcher had explained to them why there were two columns, 'passed' and 'could have been improved', on the peer assessment form and encouraged them to write comments to support their classmates, most of them did not grasp the concept of formative assessment. Consequently, some preferred to use a five point scale to assess their classmates and reflected that it was difficult to write comments. Furthermore, they were not used to this activity so some were too 'courteous' in giving comments. Therefore, it is not surprising that during the interviews with the researcher,

not all the co-researchers reported that they had asked their students to do self- or peer assessment during their teaching practice.

4.2.5 Alignment of objectives, learning activities and assessment activities

At the beginning of each lecture, the co-researchers received the teaching schedule of the lecture so that they knew the objectives and the activities of each lecture. Different assessment tasks were also provided by the researcher to help the co-researchers assess their learning. These included planned and interactive formative assessment activities. When learning the topic, the Assessment of Students' Learning, in the fourth lecture, the co-researchers were given a lesson plan, Good Neighbours (primary three), in which the teaching/learning objectives and the learning activities were designed. The co-researchers were asked to design assessment tasks with reference to the learning objectives and the learning activities printed in the lesson plan. As the objectives of the lesson were to help students develop the attitudes of helping neighbours and being co-operative in the community affairs, different scenarios were designed and students were asked to hold group discussions to suggest the best resolutions to the problems illustrated in each scenario. The co-researchers had different ideas concerning the assessment task: some suggested that the group leaders should come in front of the class to present the ideas of their groups. Others doubted whether there was enough time to do so; therefore it was better to let the teacher lead the class discussion and manage the class discipline. In aligning the assessment task with the learning objectives and the learning activities, the co-researchers' main concern were time constraints and class discipline.

4.2.6 Formative assessment also helped promote teaching

At the end of the fifth lecture, the co-researchers were asked to fill in the interim evaluation form (Chapter 3, Appendix J) to assess the researcher's teaching and their learning of these five lectures. They were invited to voice their opinion on what

was/were the best aspect(s) of the module and the teaching, and to suggest improvements. After the lecture, the co-researchers were informed of their major ideas of the evaluation (Table 4.9) through email. Firstly, they were reminded that the interim evaluation was meant to provide information for improving the learning of the co-researchers and the teaching of the researcher. Major ideas included:

1. Concerning the best aspect(s) of the module and the teaching: Eleven out of twenty eight co-researchers welcomed the practice of microteaching. Eleven welcomed different activities in the lecture and eight stated that they had learned the teaching methods and strategies of General Studies. The researcher remarked that the teaching team would continue to design and provide different activities according to the content of the lecture and the needs of the student teachers.
2. Concerning ways for improvement: Eight co-researchers suggested having variety in teaching while three of them proposed to watch videotaped lessons during the lecture. The researcher replied that she wished to put a videotaped lesson on the web so that they might watch it during their free time and contact her for consultation when needed. However, approval must be sought from the teacher involved. She would inform the co-researchers when the approval was granted. Five co-researchers stated that it was difficult to grasp the rich content, and suggested that the researcher might either slim the content or provide more lectures. Five co-researchers suggested they undergo microteaching individually. The researcher remarked that their suggestions would be discussed during the module coordination meeting.

Table 4.9 Major ideas of the best aspect(s) of this module and the teaching and suggestions to make improvement (N=29)

What is/are the best aspect(s) of this module and the teaching	**Occurrences in the interim evaluation**
Good to have microteaching/peer learning/and to be assessed.	8/2/1
There were various activities/group activities/discussions/ use of multi-media in teaching/inquiry activity.	4 / 3 / 1 / 2 / 1
We have learned the teaching methods/new teaching methods/strategies of General Studies with instructions and examples.	6 / 1 / 1
Rich and practical content/clear content and teaching objectives.	4 / 2
Comprehensive/we have learned a lot about General Studies.	2 / 3
We have learned the existing General Studies curriculum/the teaching objectives of General Studies/how to design a General Studies curriculum.	2 / 1 / 1
Comprehensive handouts and examples.	2
We learned about the design of lesson plan.	2
We understood the foci of the current education reform.	2
Ways to improve the module and the teaching	**Occurrences in the interim evaluation**
More variety in teaching, e.g., broadcasting the videotaped lessons for analysis/more about the practical aspect in teaching as the course materials are not too difficult.	2 / 3/ 3
More lectures preferred/sliming the content as it was difficult to grasp the rich content.	4 / 1
Better to allow individual student teachers to undergo the microteaching instead of in groups of 4 to 5, then better result will be achieved/more time provided for microteaching.	3 / 2
The length of a lecture was too long, 3 hours – our concentration decreased.	4
(Let us) apply the knowledge to the reality/to provide activities in the lesson in order to learn how to prepare different teaching materials.	3 / 1
More discussion/on the activity approach in teaching so that we knew how to introduce variety into teaching.	2 / 1
The was little teaching on the content knowledge of General Studies.	2
The teaching was not in depth and in a hurry.	2
Too early to start microteaching	2

Additional comments:	Occurrences in the interim evaluation
To provide a 5-point scale for evaluation as it was difficult to write concrete ideas in the blanks provided.	2

* Multiple answers might be provided.

From the interim evaluation, some co-researchers appreciated the various activities provided by the researcher but nothing was written about the assessment, formative assessment. Two of them suggested having a 5-point scale on the peer assessment form because it was difficult to write concrete ideas. It shows that the concept of learning, teaching and assessment was not well received by all the co-researchers. However, during the module evaluation, a co-researcher stated that the concept of formative assessment also helped her/him in teaching the other subject, Art. It was only after the co-researchers managed to survive in the classrooms, they became aware of the importance of formative assessment and realized it helped them understand the learning of the students, and thus promoted their teaching effectiveness.

4.3 Support Received during the Workshops before the Teaching Practice

Before the teaching practice, fifteen co-researchers were invited and they all accepted to continue the study to implement formative assessment in their classrooms. Before each of the two teaching practice blocks, intervention which took the form of workshops was organized for the co-researchers. They were encouraged to contact the researcher through email or by phone when they needed support during their student teaching.

Before the first teaching practice block, the co-researchers were very anxious

about their survival in the classrooms. They were encouraged that good preparation helped them have more confidence in the classrooms. Furthermore, they were reminded of aligning assessment activities with teaching objectives and learning activities. 'Learning, teaching and assessment' is a process: in writing lesson plans, it is essential to estimate the previous knowledge that students have so that a teacher can help them construct knowledge through learning activities. By means of appropriate assessment methods, the teacher gets feedback from students. Then s/he may design follow up activities or re-design her/his teaching schedule if necessary. S/he may also give students their feedback and inform them about her/his plan. The co-researchers were asked to interview their students so that they could know their views about the implementation of formative assessment in General Studies classrooms.

Having the experience of being teachers and assessors in the classrooms, the co-researchers had more confidence in the second teaching practice. Before the second teaching practice block, another workshop was organized with the emphasis on self- and peer assessment, and the quality of questions, worksheets and feedback. The paper, Assessment for Learning: 10 Principles - Research-based principles to guide classroom practice (Assessment Reform Group, 2001), was introduced to the co-researchers to remind them of the major characteristics of formative assessment. Lastly, they were asked to observe the learning environment in their teaching practice schools so that they could assess their teaching in their own school context.

4.4 Summary

This chapter describes the learning experiences of the co-researchers during the intervention, which was to equip the co-researchers with the knowledge and experience for the implementation of formative assessment in General Studies classrooms. The data show that though some of the co-researchers expected students

to actively participate in the lesson, most of the twenty-nine co-researchers believed in passive learning and the traditional view of a good teacher. Formative assessment was alien to them, especially the practice of peer assessment. The workshops conducted before the teaching practice reminded the fifteen co-researchers of the importance of formative assessment in the learning, teaching and assessment process. By means of the intervention provided by the researcher, the co-researchers learned the major concepts of formative assessment and how to implement formative assessment in General Studies classrooms. However, it was only through their experiences that they realized that the implementation of formative assessment, if the situation allowed, helped them teach effectively and enhanced the learning of the students.

The next chapter portrays the implementation of formative assessment by the co-researchers in General Studies lessons during their student teaching. It includes aligning assessment activities with learning objectives and learning activities, and the teaching reported by the co-researchers and shown on the videotaped lessons.

Chapter 5

Teaching Experiences of the Co-researchers

5.1 Introduction

This chapter describes the teaching experiences of the co-researchers during the two teaching practice blocks in local primary schools. During the first teaching practice block, November to December 2002, the co-researchers taught the following units: People Who Serve Us, and Animal World (Primary 2), Light and Colour, Good Shopping Places, and Our Community (P.3), Food and Nutrition, Our Society, and Air (P.4) (Table 5.1). During the second teaching practice block, March to June, 2003, they taught: Parks, and Introduction to Science (Magnets, Light & Shadows, Sound) (Primary 1), Heat (P.2), Our Basic Needs, and Common Diseases (P.3), the Earth, the Geographical Setting and History of Hong Kong, Electricity and Living, and Wonders of the Human Body (Respiratory Organs, Heart and Blood Vessels, Bones and Muscles) (P.4), and Environmental Protection (Sewage and Noise), and Developing a Global Perspective (Population) (P. 6) (Table 5.2).

Table 5.1 Topics taught by the co-researchers during the first teaching practice block (N=15)

Level	Topic	Number of co-researchers[1]
P.2	People Who Serve Us/Animal World	4 / 1
P.3	Light and Colour/Good Shopping Places/Our Community	4 / 4 / 6
P.4	Food and Nutrition/Our Society/Air	2 / 1 / 1

[1] Some co-researchers taught two levels.

Table 5.2 Topics taught by the co-researchers during the second teaching practice block (N=15)

Level	Topic	Number of co-researchers*
P.1	Parks/Introduction to Science	1 / 2
P.2	Heat	2
P.3	Our Basic Needs/Common Diseases	3 / 2
P.4	The Earth/the Geographical Setting and History of Hong Kong/Electricity and Living/Wonders of the Human Body	2 / 2 / 1 / 2
P.5	Puberty	1
P.6	Environmental Protection/Developing a Global Perspective	3 / 1

The data reported in the following sections come from the interviews with the co-researchers after the two teaching practice blocks (Appendix A.1 & A.2; Chapter 3, Section 3.4.1) and their weekly reflection reports written during their student teaching (Appendix C; Chapter 3, Section 3.4.3).

5.2 Alignment of Assessment Activities with Learning Objectives and Learning Activities

Before writing a lesson plan, the co-researchers first read the textbooks to check what should be taught. Then they read other textbooks and references in order to set the learning objectives, and then designed the learning activities and the assessment activities accordingly. (Appendix B; Chapter 3, Section 3.4.2). Two co-researchers reflected:

> To assess the learning of students, we had to consider the objectives of the learning. (Di2) [2]

> For every activity, there was a teaching aim, a learning procedure and an assessment activity. Usually I made use of questioning as the assessment activity. (Ai1)

The follow-up of this session reveals the co-researchers' alignment of assessment activities with learning activities, the learning activities and formative assessment activities commonly employed by the co-researchers, factors affecting the design of learning activities, and difficulties encountered by the co-researchers when planning formative assessment in General Studies lessons during the two teaching practice blocks in local primary schools.

5.2.1 Alignment of assessment activities with learning activities

During the two interviews when the co-researchers were asked how they aligned assessment activities with learning activities, seven co-researchers stated that in planning learning activities, they also "thought of assessment activities" (Ii1) in order to assess whether the students had learned the major concepts or not. Some co-researchers reflected the following:

> I had to plan in detail. After designing an activity, I had to design methods to assess whether the students had learned or not. My job was not finished after teaching. (Ci2)

> ...When designing a learning activity, I checked whether the assessment activity could assess the learning of the students. If it could not, I made use of another activity. (Di1)

> When I prepared the lesson plan, I also considered assessment. It might be questioning, doing worksheets or checking answers of the matching activity.

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[2] See Chapter 3, Section 3.6.2 for a description of the coding.

> That is, there was assessment for each activity. … I made use of formative assessment. I planned the assessment tasks with my teaching strategy. (Bi1)

Co-researcher B emphasized, "assessment should be part of the teaching strategy" (Bi2) during the second interview.

However, four co-researchers had different ideas. They claimed to integrate assessment with learning activities. For example,

> I considered questioning as a learning and assessment activity. Usually I provided students with pictures and then asked them questions. … Questioning was the assessment method that I used most often. (Ci1)

> I also used questioning to teach. (Ei1)

> I did not think of any alignment. For example, I asked the students to do the worksheets either in the lessons or at home. When they knew how to do it, that means they understood the lesson. That is, I designed the activities without particularly thinking of assessment. They were integrated. (Fi1)

> I would not provide anything for the mere purpose of assessment. Usually it was questioning and observation. After doing the group activity, e.g., role-play, I asked questions and made supplements. (Ji1)

The following table (Table 5.3) shows the different assessment activities that the co-researchers aligned with various learning activities, according to the learning objectives of the lessons and the level of the students they taught.

Table 5.3 Alignment of learning activities and assessment activities (N=15)

Learning Activities	**Assessment Activities**	**Occurrences in the two interviews**
Group discussion	Presentation/role-play	8 / 1
	Doing worksheets (discussion sheets)/group assessment	5 / 1

	forms	
Role-play	Answering questions Commenting on the performance of the other groups Doing worksheets	2 1 1
Doing experimental activities/watching teacher's demonstration	Doing worksheets/answering questions	2 / 1
Observing pictures or real objects	Answering questions Matching on the blackboard Doing worksheets Doing worksheets and answering questions	3 1 1 1
Group work, e.g., classification /design work	Doing the classification on the blackboard/presentation	1 / 1

5.2.2 Commonly employed learning activities

In order to help students inquire and construct knowledge, different learning activities were provided by the co-researchers. They emphasized their reading of textbooks or reference books (3)[3] and compared the activities illustrated in the reference books (2). A co-researcher remarked, "If the activities were good and illustrated in detail, I made some changes for my presentation in order to cater for the needs of my students." (Ki1)

A co-researcher reported that usually there were two activities in a lesson (Ci1). The co-researchers usually provided students with pictures, photos or real objects to observe (11), followed by students' answering questions (2), holding discussion (1), doing worksheets (1), or some pasting (1) or classification work on the blackboard (5).

Besides whole class activities, the co-researchers also provided students with group activities such as role-play (7) or group discussion (9). They allowed students to do experimental activities (6) when learning topics such as light, sound, magnetism and

electricity. However, a co-researcher reported her inadequate knowledge of doing experimental activities in primary school classroom and the lack of teaching resources in the teaching practice school. She stated the following:

> I allowed the students to watch Educational Television programmes when the experimental activity was too dangerous to be conducted in the classroom. For example, in teaching electricity, there was no equipment and it was dangerous - when the temperature was high, the brass would glow. (Di2)

There were other learning activities provided by the co-researchers, e.g., students' listening to music (1), matching activities (2), designing a new town (1), and doing some interviews (1).

Though the researcher emphasized the importance of alignment of learning and assessment activities during the intervention, during the two interviews conducted after the teaching practice blocks, only seven co-researchers claimed that they designed assessment activities from the outset. After they had designed the learning objectives and the learning activities, they aligned them with different assessment tasks in order to understand the learning of the students. Four co-researchers stated they integrated learning activities with assessment activities.

5.2.3 Factors affecting the design of learning activities

When the co-researchers designed learning activities, they were affected by the following factors: school ethos, time constraints (preparation time, the use of time), the use of the textbook, needs and abilities of the students, discipline problems, availability of teaching resources and support in the school, as well as personal feelings and

[3] The number in the brackets refers to the number of co-researchers mentioning this in the two interviews.

experiences of the co-researchers.

5.2.3.1 School ethos

The design of learning activities was affected by the school ethos. Four co-researchers reported that the principals of their teaching practice schools told them they could implement what they had learned in the Institute. However, seven had different experiences. They mentioned the following:

> The principal said that there should be discipline when the students participated in activities. ...I had to hurry up and the school did not like us doing so many things ...there was a support problem, eventually they held the group activity and had role-play. (Mi1)

> I spent great efforts in preparing for the teaching of the primary two students ...the supporting teacher told me that if I could finish the teaching schedule, it did not matter how I taught ... The regular teacher of primary four told me not to do so many things. She did not do a lot of preparation, e.g., photocopying, finding the film, and grouping the students. She was afraid that she had to follow our way. She also told me not to provide students with so many worksheets (the parents would ask her why the student teachers did so but she did not). ... I used the traditional methods to teach the primary four students, so there was nothing special. I had great pressure in teaching them. Eventually I finished the teaching schedule; I did not teach the enhancement stuff or provide other activities. They learned slowly. (Ai1) ...I was told that I had to ask the students to do the workbooks. When the students did the workbooks, the parents knew that the teacher had taught the chapter. (Ai1)

> We had a different philosophy of education. Though there was curriculum tailoring, teachers still had to rush to finish the teaching syllabus. I accepted the practice to finish a chapter within two periods and then I made curriculum tailoring accordingly. However, they should not make me follow the text to teach. (Ai2) ...I should read the difficult words to the students, explain the meaning and teach them how to write the words. The regular teacher told me

to teach the students how to do the exercises in the workbooks so that I could mark them easily. I had to teach every picture and diagram, and explained in detail what was in the textbook. The teachers set examination questions according to the text. (Ai2)

The regular teachers told me to finish all the chapters, mainly the texts. I wanted the students to learn more, which was at the back of the chapter (some additional information). As I had to catch up with the teaching syllabus, I just told them this additional information. My teaching was confined by the text (I had to cover all the texts). ... There were eight General Studies periods in a week. I only taught four periods; the regular teacher had another four. Therefore, in a week, two General Studies teachers taught different topics. The students might have too much homework to do. This kind of arrangement was not good at all. (Ci1)

I had to teach the text content and ask the students to underline the text, to finish all the exercises in the workbook and worksheets prepared by the school. I had to go through the answers of the long questions with the students before they did the work at home. (Hi2)

I had to ask the students to read the books before the end of the lesson. The regular teacher told me that if the students did not read the textbooks, the parents might think that the teacher had not taught the chapter. (Di1; Oi2)

The supporting teacher told me that the worksheets prepared by the school should be finished in the lesson. If the students could not, I had to talk to them first before they brought the worksheets home. (Li2)

In short, in some schools, the ethos supported the co-researchers' design of different learning activities. However, some illustrated the traditional ways of teaching and learning held by the school principals and the school teachers. There was a clash of views of teaching with those of the co-researchers. The co-researchers were expected to

copy the existing methods in the schools: the teaching and learning were text- and workbook-oriented, and there was an over-emphasis of class discipline. The efforts of the co-researchers were also considered as a personal threat to some regular teachers. Furthermore, the school ethos had direct relationship with the problems of time constraint (4) and the lack of support in the school (2) that the co-researchers faced when they designed learning activities. A few co-researchers also stated their concerns about preparation time, students' workload and her resentment when designing learning activities.

5.2.3.2 Use of time

A co-researcher also emphasized the use of time in planning the lesson, "It took about 10 minutes to ask them to do the worksheets, including distribution and collection of the worksheets. Therefore I did not provide too many worksheets." (Ji1)

5.2.3.3 Use of the textbook

Two co-researchers reflected their different ideas of the use of the textbook:

> In preparing lessons, I did tailoring. I did not use the text in the textbook. I told the students to read the text before the lesson. I taught them the major knowledge and tried to teach them from the perspectives other than that in the textbook. I asked them to do activities and the synthesis to check their understanding. Therefore, it was not difficult to write such a lesson. (Bi1)

> In preparing the lessons, a great difficulty was that I followed the textbook to teach unconsciously. There were some suggestions for activities. Some were quite good. I felt sorry when I followed the suggestions. It seemed that I had no thinking, but they were really good and I wanted to use them. For example, the survey on the eating habits of the children, I found it useful and related to the life of the children. (Ji1)

5.2.3.4 Needs and abilities of the students

Some co-researchers also considered the needs and abilities of the students in designing the learning activities (4). They reported the following:

> When I planned the learning activities, I thought of the assessment activities. Maybe I focused more on 'pleasurable learning' as I found the students were quite dull during the lesson that I observed. At the start of the teaching practice block, I had to observe a lesson which was taught by the supporting teacher. (Ii1)

> I provided them with role-play; they liked it. (Ai1, Ki1) ... They were weak in organization, but they were active and very happy. I only did elaboration or consolidation afterwards. I let them try as they were so happy. (Ai1) ... they were happy when I provided them with the microphone and asked them to share their ideas with the class. ...I liked to make use of pictures (and photos). During the SARS holidays, the school installed a computer and a projector in every classroom. I found that they facilitated my teaching. It was better than using the A4-size pictures because students at the back could see easily and think accordingly. (Ai2)

> In teaching digestion (the functions of different organs), I planned to ask the students to have role-play, to act out how the stomach moved, etc. Then I thought even the students acted it out, the whole class might not know what it meant, so I changed my plan - I asked them to have group discussion on what was inside the stomach, its functions and how it worked. Then they finished the worksheet. (Di1)

However, co-researcher D and other two co-researchers did not the have the right concept of the needs and abilities of the students. They reported the following:

> During most of the activities, students were asked to come out to paste something on the blackboard, so that they did not just sit all the time or just

answer questions. I wanted them to come out and had some movement. (Di1)

I did not provide them group activities as they were young, primary two students. (Ni1)

I did not design the assessment forms for the students. They might be too difficult, and not suitable for the primary three and four students. When they asked about the words that they did not know how to write, it might affect the others as they could have heard the answers. (Oi1)

5.2.3.5 Discipline problems

In planning the lesson, discipline problems (3) were also considered by the co-researchers. They mentioned:

At first, I planned to provide more activities, e.g., role-play and group activities. As a student teacher, I had to consider the discipline problem. When I was teaching at the teaching practice school, I found it not workable to provide those activities. I then designed some worksheets and pair discussion as they sat in single rows. (Fi1)

I provided pictures for the whole class to observe, and then I asked them questions or classified the pictures,...when the class environment allowed. (Ci1)

I was afraid they would be too excited and become mad. (Ki1)

5.2.3.6 Insufficient teaching resources and lack of support

The consideration of insufficient teaching resources (2) and the lack of support (1) was also reported by the co-researchers.

I did not have so many musical instruments available, so I did the demonstration to show how sound was produced. (Fi2)

When the primary one students learned about magnetism, there was no individual experimental activity because of SARS. I demonstrated to them and they recorded the result on the record sheet. Then they did clarification and conclusion. They had to discover what they had to learn. They did not do the experimental activity by themselves. When I taught the topic, light and shadow, I used a torch to show them the shadow. (Oi2)

There was a support problem. ... When teaching the topic, shopping places, I planned to take the students out to the nearby supermarket. Finally the plan was cancelled because there was no support provided by the school. (Mi1)

5.2.3.7 Personal feelings and experiences of the co-researchers

The co-researchers also considered their personal feelings (1) and experiences (1) in providing students with different activities. For example,

When teaching about the medical services, I considered it meaningless if I told them everything. I presented them pictures. They could distinguish the different kinds of work provided by doctors and nurses in the casualty, in the clinic, and even in the ambulance. (Ai1)

I did not provide them with role-play. I did not know this activity well. Once I invited students to do so when I was a supply teacher, there was confusion. The effect was not good. I did not know how to make the arrangement. (Oi1)

The following table (Table 5.4) summarizes the factors affecting the design of learning activities.

Table 5.4 Factors affecting the design of learning activities (N=15)

Factors positively affecting the design of learning activities	**Occurrences in the interviews**
Consideration of the needs and abilities of the students	3
School ethos	4
Proper use of the textbook	2
Personal feeling of the co-researcher	1
Factors negatively affecting the design of learning activities	**Occurrences in the interviews**
Time constraints (including use of time and preparation time)	8
School ethos	7
Insufficient teaching resources and lack of support	4
Discipline problems	3
Misconception of the needs and abilities of the students	3
Workload of the students	1
Unsuccessful experience of the co-researcher	1

5.2.4 Commonly employed formative assessment activities

As stated in the previous section, when the co-researchers prepared lessons, they designed planned formative assessment activities and also made use of interactive formative assessment to assess the learning of the students in the classrooms. The following explains the activities commonly used by the co-researchers when implementing formative assessment in General Studies lessons.

5.2.4.1 Planned formative assessment

Planned formative assessment included selected response assessments and performance assessment. Essay assessment, one common form of selected response assessments, was not employed by the co-researchers. It was because the new General Studies curriculum (Curriculum Development Council, 2002b) emphasized that General Studies provides students with opportunities to integrate skills, knowledge and values

across the Key Learning Areas of Personal, Social and Humanities Education, Science Education and Technology Education. It promotes creativity through hands-on and minds-on learning experiences and problem-solving process. It also emphasises student inquiry and the development of skills for learning to learn.

5.2.4.1.1 Selected response assessments

Selected response assessment was employed by the co-researchers in the form of worksheets. Eleven co-researchers reflected that they asked students to do worksheets in the lessons, though a co-researcher emphasized she wanted the students to do some homework after she taught them a lesson (Ei1). According to their experiences, all the co-researchers stated that homework could not reflect students' learning in the class as they were helped either by their private tutors or their family members. For example, two co-researchers reported:

> The class teacher of P.2C told me that the parents were anxious about the academic results and the performance in homework. Every day the parents inspected the homework very carefully. In this way, worksheets or workbooks to be finished at home could not reflect the learning of the students. (Aw12)

> Workbooks to be finished at home might be checked by the private tutors or the parents. In this way, it was difficult to assess students' learning. (Kw23)

The co-researchers emphasized the importance of using worksheets to assess the learning of the students in the lessons (3). They mentioned the following:

> After I had finished a teaching point and before I continued to teach, I provided them with worksheets to be finished in the lesson. (Ki2)... After finishing a topic, I used the worksheet to check their overall learning. (Ki1)

> I thought that it was very important. After I had finished a chapter, I allowed time to finish the worksheets in the class. (Ni1)

Three co-researchers also reported their consideration of the abilities and the needs of the students when preparing worksheets:

> When the topic was difficult, I asked them to do the worksheets to check whether they had learned what I taught them ... I asked them to do the worksheets in the class. (Ei1)

> When I wanted the students to spend more time to think because they could not provide the answer immediately, I prepared them worksheets. For example, in the training of attitude, I provided them with some pictures and asked them what they would do when they faced those situations. I allowed them more time to do more thinking. (Bi1)

> When the answers could not be found in the text ... e.g., about attitude training, I provided them with worksheets. (Fi1)

Some co-researchers provided worksheets after different activities (3). Some usually provided students with worksheets for group discussion (4). A co-researcher related, "The students were accustomed to write down their ideas. They preferred this to just having oral presentations." (Ki2)

Worksheets were also provided for experimental activities, e.g., in learning magnetism and electricity (5), so that students could record the results. A co-researcher emphasized, "I wanted students to write down what they had grasped. They were also

asked to draw in the worksheets." (Fi1)

A co-researcher reported her consideration of time in designing assessment activities, "When I had enough time, I asked them to do the worksheets. The advantage was that they wrote the words." (Ki1) Her remark also illustrated the traditional view of learning, i.e., the emphasis of writing vocabularies.

5.2.4.1.2 Performance assessments

Eight of the co-researchers remarked that after group discussion they invited students to present their ideas to the whole class. A co-researcher remarked that after their presentations, she also asked them questions (Ji2). Another co-researcher reported, "After group discussion, they reported their ideas. I invited students of high, medium, and low levels to report. They took turns." (Mi2)

A co-researcher remarked she observed the students during their presentations. "After group activities or design work, there were 4-5 group presentations. I wrote the major points on the blackboard. Then I asked the opinion of other groups."(Oi2) Another co-researcher invited students to have role-play after group discussion (Ei1), while co-researcher L asked students to do matching or classification on the blackboard after the group work (Li2).

5.2.4.2 Interactive formative assessment - Direct personal communication with students

The following section describes the interactive formative assessment activities designed by the co-researchers in the form of direct personal communication with students. It includes questioning and observation in the classrooms.

5.2.4.2.1 Questioning

During the two interviews, six co-researchers admitted that questioning was the assessment method that they used most often in order to know immediately whether the

students had understood or not (2). They asked questions at the beginning of the lesson (4), to assess the previous knowledge of the students (3), or to draw their attention and help them concentrate (1). At the beginning of an activity, the co-researchers also raised questions (2). A co-researcher reported:

> Before the activity, I asked them questions to link with the topic and to see how much they had learned. For example, when doing classification of the goods sold in the market, I asked whether they had been to the market and what they had seen. Then they observed the pictures. (Li1)

When students were doing various learning activities, such as observing pictures of the animals (1) and photos of pollution problems (1), doing experimental activities (1), or sharing their experience with the classmates (1), the co-researchers asked them questions. A co-researcher stated:

> When teaching 'Natural Resources', I made use of what was in the classroom so I just asked them questions. (Di1)

After an activity (2) or at the end of the lesson (1), the co-researchers asked students questions to sum up the major teaching points and check students' understanding.

A co-researcher claimed that she "asked students questions in detail when they were learning concepts. Then they could understand more". (Bi1) However, other co-researchers (3) reported that they made use of questioning for something simple (3) and did not spend a lot of time in it. For example, they mentioned:

> When I taught students 'Digestion', I wanted them to learn more. I asked them questions on the stuff which would not be tested nor remembered by

heart ... I also asked them to provide explanations. I asked them questions about the daily life and they were not set according to the textbook. (Ei1)

I asked them questions when I did not want to spend a lot of time, compared with another part in which I preferred to spend more time. (Ii1)

When I did not have enough time to prepare worksheets, I asked them questions. (Mi1)

Three co-researchers remarked that they asked questions in order to make students be more attentive in the lessons. For example, one of them reported:

Sometimes I asked them what my question was in order to remind them to pay attention. (The primary four students did not like to study) (Ai1)

5.2.4.2.2 Observation

Two co-researchers remarked that they observed students all the time while the other seven co-researchers reported that they observed all the students in the lessons. The co-researchers also claimed that they observed students during group discussion (8), group work (4), doing worksheets (2), matching activity (1), classification task (1), role-play (1) and making the periscope (1). Three co-researchers stated that they observed students when they asked them questions.

5.2.5 Difficulties encountered when aligning formative assessment in General Studies lessons

During the two interviews, all the co-researchers were asked the following question: 'In aligning assessment and learning activities, did you encounter any difficulties? If yes, please explain.' The difficulties reported included their lack of

experiences and insufficient knowledge of formative assessment, different agendas of the schools and the co-researchers, time constraint or short time span in a lesson, no teaching aids or teaching materials or not enough equipment for doing experimental activities.

5.2.5.1 Lack of experiences and insufficient knowledge of formative assessment

Four co-researchers remarked on their difficulties in organizing learning and assessment activities, and they were not sure whether the assessment activities could reflect students' learning. They reflected the following:

> This was the first teaching practice. I had no experience. I did not know what to start with and how I knew that students had learned. I did discuss with my classmates in preparing worksheets. (Mi1)

> There was confusion in organizing a lesson when aligning learning and assessment activities. In a lesson, how can one do the two in a better way? (Li1) ... I did not know how to teach and assess the relationship between the shopping places and daily life. ... There was close relationship between our lives and these shopping places, but should we guide students to consider window-shopping as part of our lives? (Lw14)

> Sometimes after designing some activities, I was not sure whether students could learn through these activities or whether the teaching objectives could be achieved. (Hi1)

> Furthermore, I did not how to bring out what they had to learn. (Oi1)

5.2.5.2 Different agendas of the schools/the supporting teachers and the co-researchers

Two co-researcher stated the greatest problem they encountered in designing

lessons was that the philosophy of the school was different from theirs:

> There was little group work in my lessons. The regular teachers told us the students were not accustomed to group work. They told us not to do so many things but just teach. Otherwise there would be confusion and noise. The philosophy of the school was different from ours; I wanted the students to learn through activities. Therefore, there was problem in designing the lessons. (Ci1)

> I had to hurry up to finish the teaching syllabus and the school did not prefer our doing so many things. (Mi1)

Another co-researcher reported her unhappy experience with the regular teacher:

> I talked to their class teacher who told me not to divide the students into small groups, as half of the lesson would be spent in grouping them. ... I considered it was O.K. when they learned concepts. But some teachers thought it was important for the students to learn the words ... some teachers corrected grammar in General Studies exercises but I thought it was not important for General Studies. (Ai1)

5.2.5.3 Time constraint or short time span in a lesson

Four co-researchers reported their worries about time constraints. They were anxious to keep up with the tight teaching schedule. They also found it difficult to carry out different student-centred activities and assessment in a lesson with a short time span, 30-35 minutes. They reflected the following:

> I had to finish a chapter within one or two lessons. ... Plenty of time was needed in doing the large scale activities such as role-play. Because of time constraint, I dared not design too many activities. (Fi1)

> More time was needed. If I had more time, I might do more assessment: do assessment for each chapter. Then I might understand how much the students had learned. This time I did not have enough time; I did not provide self-assessment for every chapter. It was done after I had finished two chapters. I had to be in a hurry. (Ii2)

5.2.5.4 Not enough preparation time

A co-researcher remarked that she did not have enough time for the preparation of lessons. (Mi1) Another co-researcher had different ideas, she remarked,

> It should not be labelled as difficulties. It really took time to prepare the teaching aids, e.g., pictures, but it was worthwhile. The students would not listen to you if you just asked them to open the book and study the pictures in the textbook in learning the topic, 'Introduction to Science'. Thus, they learned better when they did the experimental activity. (Ai1)

5.2.5.5 No teaching aids or teaching materials/not enough equipment for doing the experimental activities

Three more co-researchers reported that either because there were no teaching aids or other teaching materials in the schools, or there was not enough equipment for doing the experimental activities, they had to spend a lot of time in preparation. For example,

> I only got textbooks and workbooks. My friend and I had to search for more materials. Just reading the textbooks was not enough, so we searched on the web. We spent a lot of time in preparing the materials. (Bi1)

The following table (Table 5.5) summarizes the difficulties the co-researchers encountered in aligning formative assessment activities with learning activities when

preparing General Studies lessons.

Table 5.5 Difficulties encountered when aligning formative assessment activities with learning activities in General Studies lessons (N=15)

Difficulties encountered when aligning formative assessment activities with learning activities in General Studies lessons	**Occurrence in the interviews**
Lack of experiences and insufficient knowledge of formative assessment	4
Time constraints/short time span in a lesson	4
No teaching aids or teaching materials/not enough equipment for doing experimental activities	3
Different agendas of the schools/the regular teachers and the co-researchers	3
Not enough preparation time	1

This section reports that some co-researchers aligned various assessment activities with learning objectives and learning activities from the outset. A few reported that they integrated assessment activities with learning activities. Some co-researchers considered the needs and abilities of the students when they designed the learning activities. Among the factors that affected the co-researchers' design of the learning activities, school ethos played a positive role in supporting their work but also a negative role which imposed constraints on the approach of teaching. It was the source of a tight teaching schedule, insufficient teaching resources, lack of support in school, as well as the co-researchers' worry of discipline problems in their classrooms.

The co-researchers provided students with planned and interactive formative assessment activities. The former included selected response assessments, i.e., worksheets and performance assessment. All the co-researchers reflected that as students were helped either by their family members or private tutors, worksheets finished at home could not reflect students' learning in the lessons. Therefore, they asked students to finish worksheets after different activities in the lessons if time allowed. Concerning

performance assessments, some co-researchers invited students to present their ideas to the whole class after group discussion and some asked students to do experimental activities.

Interactive formative assessment included questioning and observation in the classrooms. Some co-researchers admitted that questioning was the assessment method that they used most often to assess students' learning. During questioning, they provided students with different teaching resources. Some used questioning to help students learn concepts in detail, but some used it for something simple. However, some used it to regulate the activity in the lessons. Most of the co-researchers reported that they observed students during questioning, various class activities and group activities.

When the co-researchers were asked to report the difficulties that they had encountered when aligning formative assessment in General Studies lessons, some of them also reported the different agendas of the schools and the supporting/regular teachers, time constraint as they had to catch up with the tight teaching schedule, and lack of teaching aids or not enough equipment for doing experimental activities. A few co-researchers admitted their lack of experiences and insufficient knowledge of formative assessment in assessing the learning of the students.

5.3 Teaching in General Studies Lessons

After aligning different assessment activities with the learning objectives and the learning activities while planning lessons, the co-researchers implemented their lesson plans (Appendix B; Chapter 3, Section 3.4.2,) in General Studies lessons. The following section analyzes the assessment activities in General Studies lessons. The analysis was based on the interviews of the co-researchers after the two teaching practice blocks and

the videotaped lessons that the co-researchers recorded during their teaching practice (Appendix D; Chapter 3, Section 3.4.4). As being trained to be reflective practitioners and co-researchers in this research, the co-researchers were requested to write weekly reflection reports (Appendix C; Chapter 3, Section 3.4.3,) during the two teaching practice blocks. They reflected on the following:

1. A successful event in implementing 'Teaching, Learning and Assessment':
   How did I know that my students had learned? Or
   When I found that they had not learned, what intervention did I take to help them?
2. Difficulties that I encountered in implementing 'Teaching, Learning and Assessment' and support needed in schools in order to facilitate the implementation.

5.3.1. Assessment activities in General Studies classrooms

During the interviews after the two teaching practice blocks, eleven of the co-researchers stated that they were satisfied with their General Studies teaching. Some of them mentioned the following:

> The experimental activities were successful. The students succeeded: they could do what I expected them to do. The classroom management was O.K.: they were well-behaved and were attracted by my teaching. They learned. I knew that they had learned from their responses when I asked questions (even though only from the few students I just mentioned). (Di2)

> There must be room for improvement. There were some topics that I was not very familiar with, e.g., the current issue of the topic, 'pollution'. The good thing was that I wrote them a 'thesis'[4]. (Hi1)

The following reports the different assessment activities that the co-researchers

[4] Students called the long comments written by the co-researcher in the worksheets a thesis.

implemented in General Studies lessons.

5.3.1.1 Interactive formative assessment activities

In General Studies lessons, the co-researchers interacted with the students, they made use of questioning and observation, the two major types of interactive formative assessment activities, to assess their learning.

5.3.1.1.1 Questioning

In order to understand the co-researchers' practice of questioning, the co-researchers were asked the following questions:

- When did you use questioning to access the learning of the students?
- How long was your wait time? Did the wait time help the students?
- Did you ask those who raised their hands or those who did not? What were the responses of the latter?
- When did you ask probing questions?
- If you found that an individual student/most students had not learned, what did you do?

When the co-researchers were asked about their use of questioning, two co-researchers reported their different uses of questioning in the lessons:

> When I wanted to know the idea of the students, I asked them questions. I found it important and useful because I could see the responses of the students immediately. If the whole class had not learned, I changed the lesson plan. I tried to use another simple method to help the students. (Bi1)

> When I demonstrated the experimental activities, I asked students to guess the results and reached a conclusion. Then they showed hands to show their ideas. (Oi2)

However, two other co-researchers remarked that they did not use questioning very

often in consideration of the whole class. They stated:

> When doing the activities, I asked students questions. ... I thought that by means of questioning, I was not sure whether all the students could achieve all the learning objectives. (Hi1)

> I seldom used this method as I thought only a few students could participate in this activity. (Mi1)

When the co-researchers were asked about the wait time, eleven of them reported that they did provide wait time during questioning. It ranged from about five seconds to a minute. They mentioned the following:

> I counted from one to seven in my heart. Usually they could provide answers after the wait time. Actually as they were so young, they were thinking when they were answering. I did not push them; I did not ask them to hurry up. (Ai1)

> Usually one minute. Anyhow, I did wait for their answers. (Gi1)

> ... I usually provided five to ten seconds as wait time. When the student really could not provide the answer, I asked her/him to sit down first and invited her/him to answer later. The wait time could not be too long; otherwise, it affected the whole class and my teaching. (Bi1)

Two co-researchers remarked the responses of the students as their reasons for not providing wait time to the students,

> They were quick in their responses. (Ii1)

> I needed not allow them too much time. They raised their hands immediately

to answer. (Ei1)

Five co-researchers reported the misbehaviour of the students while s/he was waiting for an answer. For example, a co-researcher stated, "The other students did not wait. They shouted the answers out." (Ki1)

Three of them reported their responses in this kind of situation,

> I asked them not to do so the next time. They should provide time for others to think. (Ni1)

> Sometimes I told them not to do so. I told them only the naughty students shouted the answer out. It was unfair to the others and they had to respect each other. It was better afterwards. (Oi1)

> ... When I asked a question, I also provided wait time. If a student shouted the answers out, I did not invite her/him to speak. They had to observe the discipline, and then they knew that they had to raise their hands to answer questions. (Mi2)

When the co-researchers were asked about the responses of the students to questioning, a co-researcher reflected on the quality of her questions and the strange behaviour of her students. She stated,

> Usually after I asked a question and had a pause, they raised all their hands immediately. Was my question too easy? My questions were about themselves. For example, I asked whether they raised pets. They were keen to give their opinions. ... Even the questions demanded some thinking, they also raised their hands no matter they knew the answers or not. They were willing to try. They were active. (Ci1)

When the co-researchers were asked whether they invited those who raised hands or those who did not to answer the questions, two co-researchers stated that mostly they invited those raising hands. One of them remarked her calling upon those not raising hands as a means to warn against their not being engaged in the lessons. She reported the following:

> Mostly I invited those who raised their hands to answer. Some who did not raise their hands were chatting; I asked them to answer. When they did not know the answer or what to do, they were scared. I told them that I would ask them again. ... I let him stand and told him to answer me when he could think of the answer. Usually he did not stand for a long time as he raised his hand very soon. It was because he wanted to sit down. Otherwise he would be boycotted by the others. Then I told him to be attentive. (Ei1)

Ten co-researchers invited both those raising and those not raising hands to answer. Seven of them made the same observations as co-researcher E. Those who did not raise their hands were not attentive, therefore the co-researchers wanted to regulate the activity in the class and "wanted the whole class to participate and learn in the lessons." (Mi2) On the other hand, other three co-researchers reported that students who did not put up their hands did provide an answer. One of them stated the following,

> Most of the students raised their hands. I noticed that most of the students who did not raise their hands knew the answers, but they dared not do so. Consequently when the question was simple and most students raised their hands, I asked those who did not put up their hands to answer. When the question was difficult and only a few raised their hands, I invited them to answer. When they provided the correct answers, it would stimulate the others to answer. ... Even though they had not raised their hands, they would not be surprised when I invited them. It was because they knew that I would

also ask those not raising hands. I usually glanced at the whole class to see who raised their hands and who did not, and I gave them some signal showing that I wanted to invite them to answer. Therefore, they were not surprised and usually provided the correct answers. ... (Bi1)

Two other co-researchers gave different reasons why they invited those who did not put up their hands to answer. They reported the following:

... I asked those not raising hands. When I was a student, I did not raise my hand to answer. The teacher only asked those raising hands. I did not say that they were partial but it seemed that the other students were overlooked. (Ki1)

I called names to ask them to answer questions in order to wake them up. They did not know how to answer but they knew that they were noticed by the teacher who would call their names. They were happy. Maybe they had never been called by any teacher. (Ji2)

Two co-researchers reported their experiences of inviting those raising hands at the beginning of their student teaching. They remarked as follows:

At the beginning of the teaching practice block, I invited those raising hands to answer. They were quick in answering. Nevertheless, after some time, I found that it was always those students raising their hands. I started to invite those not raising hands, not being attentive, and chatting with their heads down. Usually they could not provide the correct answers. ... (Fi1)

At the beginning of the teaching practice block, I asked those who raised their hands to answer questions. After the first supervision, I tried to ask those who did not raise their hands. They also provided the answers; they did not have any special responses for not raising hands. I found that not raising hands did not imply that those students did not understand. It was their own

character. I did not have the experience that they did not know the answer. The students usually could say something in General Studies lessons. The problem was whether it was what I wanted. When it was not, I asked some more students. ... Those not raising hands before now put up their hands. I asked them to check whether they really knew the answers. (Ci1)

Four co-researchers gave these reasons for inviting those raising hands in the lessons,

I invited both of them. At the beginning of the lesson, I invited those who raised their hands to answer in order to encourage them. After that, I asked those who did not raise their hands to answer. ... (Di1)

At the beginning of the lesson, I asked those raising hands. In the middle, I asked those not raising hands (maybe they did not understand or they were passive). ... If I asked those not raising hands at the beginning of the lesson, other students would feel that they raised hands but the teacher did not invite them. I was afraid that they would not raise hands in the next lesson or other lessons. They might think that the teacher did not pay attention to them or expect them to answer questions. At the latter stage, most students answered questions in the lessons. ... (Mi1)

Sometimes I invited those raising hands; sometimes those not. I invited those raising hands as they really wanted me to invite them and they observed the classroom regulation. I also invited those not raising hands so that they would not think that they could be inattentive ... (Gi1)

I knew all the names of the students. It all depended on the situations. Some students raised hands in all lessons; and I invited them to answer. I also asked those who did not raise hands... When the student did not say anything, I provided them with the answers and the question tags (whether they agreed with the answers). Usually they provided the correct answers. That is, I provided them with hints but I did not scold them. (Ai1)

Three co-researchers reported that they seldom asked (1) or did not ask (2) those who did not raise hands to answer. They provided different ideas:

> I asked those raising hands. I did not ask those not raising hands. Those not raising hands should not know the answer. I let them listen to the others, the answers of the others. (Oi1)

> It was always those students who raised their hands (sitting at the front). I did want those not raising hands to answer (they were not listening). Consequently, I drew lots. Sometimes I would draw those not raising hands to answer. They felt excited and liked it very much. ... I did not ask those not raising hand as I thought they might be frightened or ask me why I called upon them. (Ii1)

A co-researcher stated her invitation of students of different levels of ability to answer questions in the lessons,

> All students answered my questions during the whole teaching practice block. I asked students who were of the middle level and quiet less, but they answered 3-4 times in the month, i.e., the whole teaching practice block. I asked the high and the low more. I asked the students of high level more, because I told the students if they kept quiet and raised their hands, I would invite them to answer. The high ones were usually the good students. As I knew who were of the low level, I also asked them to warn them to be more attentive and learn the teaching points. ... From time to time, I also invited those who did not raise their hands to answer because I wanted to know whether they were listening. I wanted the whole class to participate and learn in my lessons. ... By the end of the teaching practice block, student took the initiative to raise their hands because they knew that I would ask them. ... (Mi2)

When the co-researchers were asked about the use of probing questions in order to

provide feedback to the students, they remarked that they asked probing questions when the answers were: not clear (7), not the correct answers (2), too simple (2), not what the teacher expected (2), or related to what the co-researchers wanted to teach (2), or just part of the answer (1). Sometimes it was because the answers could be elaborated (3), or did not match with the question (1). Sometimes the students did not know the answers (1) or the co-researcher did not know what the student was saying (1). Six co-researchers probed that particular student and invited the other students to answer if s/he still could not answer. The other six invited other students to answer. For example, they mentioned the following:

> When the student did not provide the correct answer or what I expected, I asked probing questions. (Ei1)

> Or the answers were not clear enough. It all depended on whether the answer was what I expected. When it was close to the answer, I asked probing questions until what I expected was given. When it was far, far away, I talked to the student to guide her/him. I called upon the other student to answer when the answer was still far away. (Ci1)

> Sometimes, I thought the students should know the answers (it seemed to be simple), but individual students did not provide clear answers. Sometimes, I wanted to dig some more out, e.g., to ask them why they had such ideas. ... I asked that particular student and the whole class probing questions. It was because I wanted to know the ideas of the whole class. (Bi1)

> The answers were not clear, or I did not know what s/he was talking about or s/he did not know what I asked. I used another method to guide her/him to think from a different perspective, as students usually thought in a direct way. ... When the student found it difficult, I would ask other students. Usually they could provide the correct answers. (Fi1)

A co-researcher remarked her concern about the student who could not answer her question. She mentioned,

> The answers were not clear enough, or only part of the answers. I asked the whole class. I did not ask that particular student because I was afraid that s/he would be embarrassed. This was rare as they were very smart. (Ii1)

Moreover, one co-researcher reflected on the quality of her questions. She stated,

> Maybe it was because of my inexperience, I found that the answers from the students did not match with my questions. Maybe my questions were not clear as I had jumped steps. I noticed this in the class when they answered my questions. Then I raised probing questions to guide them. (Fi2)

When the co-researchers were asked about their responses when they found most of the students had not learned, four of them said that they had no such experiences. Nine co-researchers reported the different ways they dealt with the students, which included teaching them again in the next lesson (4), or talking to them afterwards and telling them the answers (3), asking them a simple question (2), providing them with hints (2), using another method to guide them to think (1), or using another example to teach them (1). For example, they mentioned the following:

> ... When they could not, I provided them with some more chances or some hints. If they could not, I invited other students. Then I emphasized the answers. In this way, the students learned the answers. ... Once, they could not provide the correct answer, I had to answer my question. After the lesson, I reflected that it was me who did not ask the question well. They did not know what I was asking and did not tell me. ...The whole class, primary

three students, did not learn the reflection of light. The concept was difficult. I did not have time to do the revision before the end of the lesson. In the next lesson, I spent half of the lesson to do the revision. I had to be sure that they understood before I proceeded to the next step. (Ki1)

When I found most students had not learned, I had to tell them the answers. It would be meaningless to spend a lot of much time if I continued to ask. Then I asked them to think more. ... I had not amended the lesson plan of the next period or prepared another activity in the next period. Usually after two or three students could not provide the correct answers, I provided them with hints. Afterwards, they grasped the ideas; then I provided them with supplements. (Ai1)

... In teaching 'Education in Hong Kong', I spent three lessons on this topic. There were a few activities in learning about the secondary and the tertiary education. I provided them with some incidents and asked them questions. When there were fewer activities, I found the students had not learned well. Therefore, in the fourth lesson, I provided them with more activities. I talked less, asked them questions and provided explanation when necessary. I changed the teaching methods but not the contents. (Bi1)

The above data show that most of the co-researchers understood the learning of the students whilst they were learning, by means of questioning. When they asked questions, they provided students with different teaching resources, which was different from the practice of the regular teachers. However, a few co-researchers admitted that they did not use questioning very often because the whole class did not participate in the process of questioning. Consequently, they were not sure whether the whole class had learned or not.

Concerning wait time, most of the co-researchers reported that they provided students with wait time. It ranged from five seconds, as proposed by the researcher, to a minute. It seems that the unusual practice of dead silence made the co-researchers think

that they had provided a long period of wait time. The practice of wait time was also a new thing to the students and some shouted the answers out when the wait time was provided. Unfortunately some co-researchers treated it as a discipline problem. Some co-researchers explained that they did not provide wait time because the students were quick in providing answers, but only one co-researcher doubted whether her question was too easy.

Most of the co-researchers invited students who raised hands as well as those not raising hands to answer questions. They reported that because of the short time span of a lesson, they invited those raising hands more. Some of them admitted that they invited those not raising hands in order to engage them in the learning process or to regulate the activity. Some co-researchers reported that those students could answer the questions. However, some said that only a few could provide an answer, while most of them could not. A few co-researchers reflected that students who did not raise hands, would be happy and feel they were not being overlooked if they were invited. A co-researcher did not grasp the concept of active learning by saying that he did not ask those not raising hands because he wanted them listen to others' answers. Another co-researcher was afraid that students would ask her why they were chosen.

Most of the co-researchers asked probing questions for different purposes, e.g., the answer was not clear or not in detail. Some probed that particular student but some probed the whole class in order to involve all the students in the learning process. A few co-researchers did not ask the particular student probing questions because they were afraid that the student would be embarrassed. Two co-researchers reflected on the quality of their questions when they had to provide probing questions.

Concerning the use of feedback collected from the students, most of the co-

researchers reported that when they found most students had not learned, they asked them simple questions, provided them with hints or used other methods to guide them to think. Unfortunately, some co-researchers just told students the answers or taught them, i.e., teacher talk, in the lesson or the next lesson. It was because they did not want to spend too much time on a topic, as the time constraints were considered.

5.3.1.1.2 Observation

When the co-researchers were asked about their use of observation and their responses when they observed the students had or had not learned, four co-researchers stated that by means of observation, they could assess the learning of the students during class and group discussion. They reported the following:

> When I was talking, I observed their eyesight and expressions. When they frowned, I knew that they had not learned. When they had no special response or were happy, I knew that they had learned. (Ki1)

> When I asked them questions, I observed them. I could see their facial expressions. Their responses were different when they had not learned. (Mi1)

> I observed their responses. If they were not attentive, that means I did not teach well or they had already learned. (Ai1)

> During group discussion, I moved among them and listened to them. I noticed that when they discussed, they learned from each other. (Ii2)

A co-researcher remarked on her observation of individual differences of the students in the lessons,

> The primary six students were older so I could recognize their faces and observed their individual differences. I noticed that there were individual

differences. From their facial expression, I knew whether they knew the answers. I encouraged those who had not learned well, or those who were introvert and had not raised hands, to try to answer. Later they did raise hands to answer questions, though not in every lesson. (Bi2)

Five co-researchers remarked that they could observe all the students. The reasons included the co-researcher knew the students well (1), and the students were well-behaved (2). A co-researcher reported,

This class was well-behaved. I could observe all the students. Nevertheless, I paid more attention to those at the front. I noticed that most of the students were very attentive but those at the back were not. (Ci2)

On the other hand, three co-researchers were more anxious about the discipline of the students in the lessons. A co-researcher reflected:

During this teaching practice block, I could observe all students in the lessons because they were small and I could have a quick glance at them. Furthermore, I was quite concerned with the discipline in the class. I might not notice whether they had learned or not during questioning. (Fi2)

Most of the co-researchers reported that they not only observed the learning of the students, they also circulated in the classrooms during group discussion (3) or group work (4) to listen to their discussion (2), or to see whether they were on task (1). They also observed the process (1), the communication in the group (1), the attitudes of the students which included participation (2), sharing (1), willingness to try and learn (1), as well as co-operation (1). For example, they mentioned the following:

In the group discussion, I observed them. I observed the process. I had a checklist in my mind. I observed their attitudes of learning: eagerness, positiveness, and willingness to try and learn. (Mi1)

The students should not only learn knowledge; I observed their cooperation during their group discussion. I found that they quarrelled, accused each other and pushed each other. I also observed their communication in the group. (Ji1)

... I observed a student who dominated the whole discussion and did not allow others to speak. Then in the next discussion, when he did the same, I talked to him and told him to allow others to talk. Observation was useful in this way. I had to consider their performance. Other students should also have the chance to learn. (Bi1)

During group discussion, I asked them to share with their neighbours. I found that they did not hold the discussion. Each student just wrote the answers on the discussion card. After their presentations, I told them it was group discussion and they should not just write their own answers. ... During role-play, I observed their interpretation, their abilities, how they dealt with the others and discussed with each other. I observed many things during role-play. (Ii1)

During group work, I also observed the students. When I found that they had not learned, I explained the question to them. I circulated in the classroom. When they did the work well, I praised them. (Ci1) ... I noticed that they were very attentive in the group work. (Ci2)

A co-researcher reported her observation of a quiet girl and tried to involve her in the class review session. She reported,

A girl was quiet but the homework was good. I noticed that she never presented in the class but she talked in the group. Therefore, during the last

week I invited her to present. The whole class clapped hands to welcome her. She was a little bit frightened and spoke softly. I encouraged her, and then she spoke a bit louder. Later, I also invited her to be my interviewee. (Bi1)

Six co-researchers remarked that they praised the students when they observed the students had learned, e.g., "You are doing very well", or "Quite good." However, two co-researchers provided different feedback:

I did not have any response. I just said that was correct. I did not spend more time there. I moved to another group. (Gi1)

When I found that they knew how to do the task, I nodded and said nothing. (Fi1)

Three co-researchers reported that when they observed that the students had not learned during group work, they either explained the question to them (1), approached the group and then they immediately told her their problem (1), or asked them what problem they had encountered (1). A co-researcher stated that when the students did not make it in the group discussion, she explained to the class because she thought that other students might have the same problem (Ii2).

On the whole, most of co-researchers reported that they observed students during class and group discussion and could assess their learning. Some claimed that they could observe all the students during class discussion because they behaved well, but only one co-researcher reflected that she could observe students' individual differences. Most of the co-researchers claimed that during group work, they circulated among the groups and observed the learning process. Some reported that they also observed the behaviours and attitudes of the students. Furthermore, they provided feedback to individual groups

or to the whole class to facilitate their learning.

5.3.1.2 Planned formative assessment activities

When teaching in General Studies lessons, the co-researchers not only made use of interactive formative assessment activities to assess the learning of the students, they also implemented planned formative assessment activities to assess students' learning and help develop their understanding.

5.3.1.2.1 Performance assessments

When the co-researchers were asked about the use of different assessment activities, one reported that she asked the students to do matching or classification on the blackboard after the group work. She remarked,

> There was group work in doing classification. Then I invited students from each group to do it on the blackboard. The others had to observe and made corrections, if needed. I watched whether they could do it or not. (Li1) ... when there was a wrong answer, I invited other students to help. (Li2)

In contrast, another co-researcher asked the class to vote for the correct answers (Ji2).

Five co-researchers reported different ways in handling the group oral presentation during the class review sessions. For example, they mentioned:

> Most of the time, I used worksheets and group discussion to assess the learning of the students. I gave each group a piece of paper to let them write down the major points. Then they presented their ideas. Though not all the students could participate in the presentation, more students participated in the group discussion. I collected the paper, read them after the lesson to see how much they wrote. Some ideas were not presented to the class. (Mi1)

During group presentation, when the answer was not complete, I asked other students whether they wanted to make some corrections. I provided them with hints to help them place the pictures in the correct column. There were always some who could do the task correctly. (Li1)

After presentation, I asked the class whether they agreed or not. (Fi2)

I ... designed some worksheets and asked them to hold discussion in pairs (they sat in single rows because of SARS). During presentation, sometimes it became a whole class discussion as they, the primary four and five students, were quick in figuring out the answers. (Fi1)

Concerning role-play, three co-researchers reported the following:

I provided them with scenarios for role-play. There were questions on the role-play cards and they had to show how they had solved the problem. I assessed their learning by their performance. (Bi2)

Concerning role-play, I did not like to ask them to do what I told them. For example, when the primary two students learned the direction of wind, they did not learn well. I provided situations to let them show the direction of wind. When they did not understand and had no response (to wave the handkerchief in the correction direction), I helped them. There was discussion after role-play. (Ai2)

I tried different activities. They liked role-play. Usually I made use of worksheets to assess whether they were really on task; whether they were serious in doing the work. (Ii1)

The data show that usually after group activities or group discussion, some co-researchers invited students to do matching or classification on the blackboard, to present their ideas or perform role-play in front of the whole class in order to

assess their learning. Some co-researchers invited students to assess the work or the presentation of their classmates.

5.3.1.2.2 Worksheets/workbooks

As mentioned in the previous section in this chapter (Section 5.2, 5.2.4.1.1), eleven co-researchers emphasized that worksheets were to be finished in the lessons, otherwise, they could not reflect the learning of the students. They were either finished at the end of the lesson or with other activities, such as group work, group discussion, role-play or classification. For example, they reported the following:

> Most of the worksheets were completed in the lessons. I collected them and provided them with comments. After returning the worksheets to them and their reading the comments, I collected them back. It was the school policy ... I did not provide them with grades, but only comments such as 'Good!', 'Creative!' Or I provided them with stamps ... At the beginning of the teaching practice block, I told them the whole story and they did not say anything. (Ai1)

Co-researcher A also remarked that students should keep their worksheets so that they could have a record of their learning and could refer to the worksheets when necessary (Ai1).

During the two teaching practice blocks, ten co-researchers provided grades and comments in the worksheets; three of them said that it was the school policy that they had to provide grades in the worksheets which were prepared by the teaching practice schools. Six co-researchers also provided the students with stamps or stickers for their good work. Concerning writing comments, some co-researchers remarked what they wrote as comments in the worksheets and the students' responses:

> When they made mistakes, I wrote to draw their attention to the right concepts. (Gi1)
>
> When they did the work particularly well, I wrote some comments to praise them. I praised their good drawing or their tidy work. I reminded the student that he should draw as he wrote me the answer. (Ci1)
>
> When it was very good, I wrote comments, e.g., 'Good! 'or 'Good! Very creative!'(Li1)
>
> They told me they read the comments and found it interesting. I preferred providing comments as it was difficult to provide marks for the creative work. I was also afraid that they would argue with me about the marks. (Ii1)
>
> I provided them with comments when they did the work seriously, or wrote the words beautifully. When the words were ugly, I asked them to pay attention to their writing or their attitudes to their work. (Oi1)

Two co-researchers reported their reasons for not writing comments. One said that because she did not know what was to be written in the worksheets (Di2). Co-researcher J also proclaimed that she did not know how to comment on some performances. However, she did provide comments to tell students how to make improvements. The longer time needed to spend in writing comments was also taken into consideration. She reported the following:

> It took more time to write comments for each student. On the other hand, for some performances, I did not know what should be written. When I wrote them comments, I provided them with words of encouragement: asking them to continue to work hard or telling them how to improve. (Ji2)

Another co-researcher professed she only provided feedback to the whole class. She reported,

> After reading the worksheets, I returned them to the students, I provided them with neither grades, marks nor comments. I talked to the class about their performance and the wrong answers. I provided them with the statistics of their performance and let them tell their ideas. After reading some books, I knew that marks were not provided in overseas countries as it would hinder the learning of the students, and make them mark-oriented. (Fi1)

Four co-researchers reported that they usually asked the monitors to help distribute the worksheets after the lesson (the practice of the regular teachers), so they did not know the responses of the students when they read the comments.

When the co-researchers were asked about the use of workbooks, as mentioned in the previous section in this chapter (Section 2, 5.2.4.1.1), all the co-researchers reported that the performance in the workbooks could not reflect the students' learning, as they were helped either by their private tutors or by their family members. Five of them stated that in the workbooks, they found answers written in some large words (2) or some trace of words written by the private tutors (3). Furthermore, nine co-researchers reported that in doing the fill-in blanks or long questions in the workbooks, students usually just copied from the textbooks (In some workbooks, it was clearly written that students should provide answers according to the text). Five of them stated that students only had to figure out the answers when there were pictures for observation or situations to consider (2), open-ended questions (2), and true/false questions (1). According to the school policy, some co-researchers had to provide grades in the workbooks according to the number of correct answers, tidiness of the work and proper writing of the words,

though the grades were not to be counted in the final assessment.

On the whole, all the co-researchers claimed that worksheets or workbooks finished at home could not reflect students' learning in the class as they were helped by private tutors or family members. Most of the co-researchers provided worksheets to students either by the end of a lesson or together with other activities, such as group discussion, matching or classification, and role-play in the lessons to assess their learning. However, a few of them made use of worksheets to regulate the activity. Some schools demanded that teachers provide grades on the school-made worksheets or workbooks. Some co-researchers provided grades, stickers and/or comments on their own worksheets, and found it was easier to write comments for the creative tasks. Most of them found that it was difficult to write comments; it is true when students just copied answers from the text or provided short answers. One co-researcher reflected on the long time she had to spend in writing comments. This was understandable as the co-researchers did not have any experience of receiving or writing comments.

5.3.1.2.3 Self- and peer assessments

Nine of the co-researchers provided students with peer assessment forms once or twice during the whole teaching practice block, so that the students assessed the performance of their own group members during the group work and the performance of other groups. For example, a co-researcher asked the students to conduct peer assessment on other groups' presentations according to the following criteria: organization of the presentation, clear content, time management, ways of presentation (creative, interesting), and relevance to the theme (Hv2). Another two co-researchers asked the students to do self-assessment and peer assessment after group work.

Eleven of the co-researchers provided self-assessment forms to the students to

invite them to assess their own learning once or twice during the two teaching practice blocks. The students did the assessment either after the group work (5), after finishing a chapter (3) or a unit (1), or at the end of a lesson (2). As mentioned in the previous paragraph, two co-researchers asked the students to conduct self- and peer assessment after the group work. On the self-assessment forms, the students had to assess their own learning, either by writing down what they had learned or had not learned, or whether they had achieved the learning objectives (1). They also assessed whether they were attentive in the lessons (2) and their participation in the activities (1). A co-researcher told the students that the assessment was to see whether they had learned or not and her teaching effectiveness (Mi2).

In short, only a few of the co-researchers asked students to fill in the self- or peer assessment forms during the first teaching practice block. Most of the co-researchers invited students to do so once or twice during the second teaching practice blocks, after they had managed to teach in the classrooms and had sufficient time to catch up with the teaching schedule. They reflected that students' self-assessment helped them understand students' learning when it was done after a chapter or a unit was taught. A co-researcher reported that she would continue to use it when she became a regular teacher.

A co-researcher reported the acceptance of the practice of self- and peer assessment by her supporting teacher,

> During the staff meeting of the teaching practice school on the last day of the teaching practice block, my supporting teacher told her colleagues that she noticed that I invited students to do self- and peer assessment. She thought that it was good for teaching and students' learning. (Hi2)

5.3.2 Factors affecting the implementation of formative assessment in General Studies lessons

The following session describes the factors which affected the co-researchers' implementation of formative assessment activities in General Studies classrooms. It included school ethos and learning styles of the students, support from supporting teachers or regular teachers, high degree of freedom, availability of resources, attitudes and perceptions of the co-researchers on self- and peer assessment, and doubts about the abilities of the students.

5.3.2.1 School ethos and learning styles of the students

A co-researcher reported the learning style of the students helped the implementation of formative assessment in the classroom. She stated:

> The learning style of the students was important. Students in this school were used to discussion so they actively participated in the activities in the class. I did not know how to teach and assess their learning if the students just sat there and listened, and provided no responses. (Li1)

On the other hand, another co-researcher reported a different school ethos and learning attitudes of the students:

> All the worksheets should be given to the students to be taken home so that they could have a record of their learning. (The school informed us, the student teachers, that whenever we provided students with our own worksheets, we should not allow them to take the worksheets home). The students knew which were prepared by the school and which were prepared by me. They did the tasks well in the former and we had to provide grades, but they did not take it seriously in doing the latter. (Ji1)

5.3.2.2 Support from supporting teachers/regular teachers

Four co-researchers remarked that the support they got from the supporting or regular teachers was in the form of observing their lessons, or providing them advice about the students and their teaching. They reported the following:

> In general, the primary five students liked to present their ideas so I knew them well. Especially when I observed the lesson of the supporting teacher, I had some ideas of the students. For those who liked to present, I thanked them for raising their hands, and asked others to answer. Their answers were simple. Anyway, it was better than nothing. (Ii2)

> I had only three periods per week so I did not know the students well. I could only know their standards from the regular teacher. (Aw24)

> The text was about the shadow. I had to spend a lot of time to teach the correct position of the desk light for those using right hands or left hands. I consulted the regular teacher on how to teach the students. (Fw22)

> I provided a worksheet to the primary two students. When I marked their work, unexpectedly I found that most of the students did not know how to answer the question: To write three criteria for choosing a good TV programme to watch. The regular teacher told me that the students did not know the word, criteria. She reminded me to pay more attention to the words that I used. Otherwise, the students would be misled and I could not assess their learning. (Kw22)

5.3.2.3 High degree of freedom

Three co-researchers reported that they enjoyed a high degree of freedom which facilitated their teaching. A co-researcher stated,

> I enjoyed high degree of freedom. I had to teach the major teaching points. There was no restriction on the activities - the way of teaching. This was good for formative assessment. (Bi1)

Furthermore, a co-researcher reported, "I needed not print my worksheets and the assessment forms and for all classes in the same level. ... It helped my assessment work." (Mi2)

5.3.2.4 Resources available

Two co-researchers reported they could make use of the photocopier to make copies of assessment forms and worksheets. Another co-researcher reported that the LCD projector and the teaching kits helped her a lot (Li2). The availability of reference books and teaching kits (not found in the first teaching practice school) was reported by a co-researcher (Ji2).

5.3.2.5 Attitudes and perceptions of the co-researchers on self- and peer assessments and doubts about the abilities of the students

Only eleven co-researchers, out of fifteen, invited students to fill in self-assessment forms during the two teaching practice blocks. However, four of them did it during the last lesson. Furthermore, only nine co-researchers invited students to fill in peer assessment forms during their student teaching, while one of them did it during the last lesson. Three co-researchers remarked that they had no time to do the peer assessment while the other three claimed that they had not thought of it. One of them stated,

> I had not thought of it. Furthermore, I did not know peer assessment well and how it helped the learning of the students. (Li1)

Two co-researchers reported that they had not provided any follow-up because they did not have to time to do so. Thus, it shows that the practice of self- and peer assessment was given a low priority.

A co-researcher gave the reason why she did not invite the students to do self- or peer assessment. She reported her doubts about the abilities of the students:

> The primary two students did not know themselves too well (what they understood and what they did not). They had to depend on the teacher to inform them by giving them grades. I felt that even if I asked them to do so, they would be surprised. (Fi1)

During the second interview, co-researcher F repeatedly remarked that the primary one students did not understand themselves, though she had asked them to conduct self assessment during the last lesson (Fi2). Another co-researcher also remarked her perception of the students' abilities,

> The exercise of self-assessment was conducted after I taught a chapter, as I wanted to know how much the students had learned and understood. I wondered whether they knew how to grade themselves: some scored very high grades but some scored very low grades. Most of them scored the passing grade. I thought they were O.K. They were of high standards. (Ii2)

A co-researcher reported that she had thought of self- and peer assessment. Eventually she did not ask the students to so, because:

> ... The students always laughed at and blamed each other during the lesson. I was afraid that the practice of peer assessment would reinforce their negative attitudes. (Ai1)

A co-researcher reported that she did not provide students with any group activities; therefore, she did not provide them with any forms for peer assessment. Table 5.6 summarizes the factors affecting the co-researchers' implementation of formative assessment in General Studies lessons.

Table 5.6 Factors affecting the implementation of formative assessment in General Studies lessons (N=15)

Factors positively affecting the implementation of formative assessment in General Studies lessons	**Occurrences in the interviews**
Support from supporting teachers/regular teachers	4
Resources available	4
High degree of freedom	3
School ethos and learning styles of the students	1
Factors negatively affecting the implementation of formative assessment in General Studies lessons	**Occurrences in the interviews**
Attitudes and perceptions of the co-researchers on ● peer assessment ● Self-assessment	 7 4
Doubts about the abilities of the students	3
School ethos and learning styles of the students	1

This section illustrates the factors affecting the implementation of formative assessment in General Studies lessons. Some co-researchers claimed that they were supported by the supporting or regular teachers' advice on the standard or abilities of the students, and teaching methods. Some reported that they enjoyed a high degree of freedom in designing learning and assessment activities, and in using various teaching resources and equipment in school. The active learning style of the students in a school helped the implementation, whilst some school policy negatively affected the learning style of the students, which hindered the implementation of formative assessment in the

classrooms.

Concerning the attitudes and perceptions of the co-researchers on self- and peer assessment, most of the co-researchers invited students to reflect on the matching or classification work on the blackboard or group presentation in order to provide feedback to their classmates, because they wanted to involve the whole class in the learning process. However, most of the co-researchers invited students to fill in the self- and peer assessment forms only once or twice during the teaching practice blocks. Some of them just did it during the last lesson and did not provide feedback to the students. They gave the practice of self- and peer assessment a low priority among other kinds of learning and assessment activities. They just wanted to know the effectiveness of their teaching by collecting feedback in those assessment forms. A co-researcher claimed that she did not understand peer assessment very well, and doubted the value of peer assessment in enhancing the learning of the students. Another co-researcher also showed her insufficient knowledge of peer assessment. It was because she was afraid the practice of peer assessment would reinforce students' improper behaviour in the class, i.e., they laughed at each other. A few co-researchers doubted the abilities of the lower primary students in assess their own learning and the learning of their peers.

5.3.3 Difficulties encountered when implementing formative assessment in General Studies lessons

The co-researchers were asked to report the difficulties they had encountered when they carried out formative assessment activities in the lessons in the reflection reports, which were written during their student teaching, and during the interviews after the two teaching practice blocks. The difficulties encountered included: difficulties in questioning, in observation and in taking care of individual students, short time span in a

lesson, and problem with the design of activities.

5.3.3.1 Difficulties in questioning

Three co-researchers professed the difficulty of using questioning to assess all the students in the class, and their inadequate questioning technique. For example:

> During questioning, only some of the students always raised their hands. On the contrary, during group activities, all the students became active. Therefore, it was not comprehensive to use questioning to assess the learning of the students. ... Furthermore, some were not willing to answer during questioning. (Cw11)

> Usually just the few answered my questions. I invited the quiet ones to answer but they stood up slowly and answered a few words only. Therefore, I had to ask the others to answer, as I was in a hurry to finish the lesson before the bell rang. This method could not assess the learning of all the students even though I got the correct answers. (Di2)

> I had to improve my questioning technique. I trusted that I would have improvement when I taught for a longer period of time. (Ai2)

5.3.3.2 Difficulties in observation

Four of them remarked that they could not observe all the students during the different class activities. They could only observe those at the front (2). Two co-researchers compared their observation during class activities with that during group activities:

> I might not observe all of them during whole class activities as there were so many students in the class. I could observe them and observe more during group activities as I circulated among them. (Gi2) (Ii2)

Co-researcher M agreed with the difficulty of observation during class activities with reference to the individual differences. She emphasized:

> It was difficult to observe all the students and take care of individual differences during class activities. (Mi2)

5.3.3.3 Difficulties in taking care of individual students

A co-researcher also explained the difficulty in handling students who had not learned in the lessons. She stated:

> The most difficult issue was what to do when some students had not learned. Some were very smart and some were left behind. If I took care of the latter, the former would feel bored and did their own work. If I took care of the smart, those left behind would give up, though not many students left behind. For example, only one student did not notice the north direction on the compass. I taught him during the recess in the Common Room. I wondered whether I could continue to do so as a regular teacher, since I had less teaching periods as a student teacher. (Fi2)

Another co-researcher related the difficulty of individual care with the progress of teaching,

> There were too many students in the class, 32, though I knew that the normal class size was 35. When I noticed some students had not learned, I could not do too much to help them; otherwise, the progress of teaching would be slowed down. Some came to ask me questions during recess (not only about the text). (Ei2)

5.3.3.4 Short time span in a lesson

Nine co-researchers also mentioned they found difficulties in providing assessment

activities because of the short time span in a lesson. Some of them made the following remarks:

> I found that it was not easy or comprehensive to conduct formative assessment in ordinary primary schools. It was because of the limited time in the lessons; we could not do the assessment form in every lesson. Most of the time, I made use of questioning and observation to assess whether the students had learned or not. (Aw13)

> The greatest problem was about 'time', the time allocated in each lesson. More time was needed so that I could provide students with more chances to talk. Then I could know whether they had learned or not. (Ci2) ... Furthermore, there was not enough time for probing questions during questioning. (Cw22)

> It was all about the time - I had to be in a hurry to finish the teaching syllabus. I had to teach continuously and had no time for assessment. Therefore, it was the time management problem. (Oi2)

Two of them stated that there was insufficient time to do worksheets in the lessons:

> Because of the limited time, worksheets could not be finished in the class. However, doing worksheets at home could not reflect their learning progress in the class. It would be better if the lessons were longer. (Nw22)

> After doing group activities, e.g., role-play, they should do worksheets. Because there was not enough time, I asked questions and made supplements. The ideal was to do worksheets to let them remember it well but there was not enough time. (Ji1) ... We had to hurry up in the lessons. There were only 5 to 10 minutes for discussion. The students could not discuss in more detail. Furthermore, there was not enough time for me to provide feedback to them after assessment. (Jw13)

Besides co-researcher J, two co-researchers also reported there was not enough time in providing feedback to students. They stated:

> When we found students had not grasped the concept, we had to make adjustment to our teaching, but there was not enough time to do the adjustment. (Gi1) ... I had to be in a hurry. There was not enough time to do more worksheets to assess their learning. I could only ask a few students questions as assessment. (Gw11) ... I had to be in a hurry in teaching. The students who were not very attentive did not catch up, and provided wrong answers in the worksheets. (Gw12)

> We needed more time in the lessons. It was because when the whole class had learned except one or two, we could not explain in the next lesson to help the student(s). (Di2) ... The learning effects would be much better if the teacher could immediately check and correct the answers after students had finished the worksheets. In this way, the students could immediately understand their own learning progress. (Dw24)

Two of nine co-researchers stated their concern about attitude training. They reported the following:

> It was difficult to assess the affective domain as the time span of a lesson was short. (Li1)

> Sometimes I did not have enough time to provide students with activities and assessment ... It was difficult to train and assess the attitudes of the students in a lesson. (Hi1)

5.3.3.5 Problem of the design of activities

A co-researcher reported the problem of the design of class activities:

When the whole class was doing classification work on the blackboard, I found that it was not good as not everyone was involved. Not everyone had the chance to come out to do the work on the blackboard. (Ci1)

The following table (Table 5.7) summarizes the difficulties that the co-researchers encountered when they implemented formative assessment in General Studies classrooms.

Table 5.7 Difficulties encountered when implementing formative assessment in General Studies lessons (N=15)

Difficulties encountered when implementing formative assessment in General Studies lessons	**Occurrences in the interviews and in the reflection reports[5]**
Short time span in a lesson/difficulties in training and assessing the attitudes of the students	9 / 2
Not being able to observe all students in class activities	4
Difficulties in questioning	3
Difficulties in handling individual differences	3
Problem of the design of activities	1

The data above show the difficulties encountered when the co-researchers implemented formative assessment in General Studies lessons during their teaching practice. After the co-researchers had managed to survive in the classrooms, they reflected on the class atmosphere and the learning process. The main difficulty they faced was the short time span in a lesson. As they had to finish the teaching syllabus, they did not have enough time to carry out various assessment activities, such as asking probing questions, inviting students to do worksheets, taking care of individual students who had not learned, providing feedback to students and assessing the affective domain

of learning. Some just asked a few students questions or conducted observation to assess students' learning. On the other hand, a few co-researchers showed their traditional view of learning in asking student to do worksheets.

Some co-researchers reported that they could not observe all the students during class activities; they could only observe those at the front. Some of them reflected that it was always those few student who raised their hands and answered questions. Even when the teacher invited those not raising hands, they were not willing to answer the questions. A co-researcher reported her inadequate questioning techniques. A few co-researchers reflected that they could not take care of individual differences in the class because of the large class size and the tight teaching schedule. A co-researcher reported her difficulty in designing learning and assessment activities.

5.3.4 Support needed

In the reflection report and during the interviews, the co-researchers were asked to report what support a teaching practice school might provide in order to help their implementation of formative assessment. They reported various kinds of support they expected to have: a higher degree of freedom, flexible teaching syllabus, availability of more resources, support from supporting or regulars teachers, and a smaller class size.

5.3.4.1 Higher degree of freedom

A co-researcher remarked that she had more freedom in teaching the class of primary two but not the class of primary four. She reported:

> The regular teacher of primary four should not be so 'traditional', just considering the results on students' report cards. I preferred to have more freedom, just as what was provided by the regular teacher of primary two.

[5] Only thirteen researchers submitted the reflection reports after the second teaching practice block

(Ai2)

Two co-researchers also requested to have more freedom to print the worksheets (before printing the worksheets, the co-researchers had to submit them to their vice principal for approval) and not to follow the teaching schedule so rigidly when the students had not learned (Ki2). The other two co-researchers requested to have freedom in designing their teaching methods, and returning the students the worksheets that they designed. For example, one co-researcher stated the following,

> If the school could allow the student teachers to return the worksheets or distribute the notes to the students for their retention, and make adjustment to original assessment activities, the assessment would be more effective. (Jw12) ... It would be better if I could design the teaching contents and major teaching points, but not just designed the lesson according to the textbook. (Jw13)

5.3.4.2 Flexible teaching syllabus and curriculum tailoring/reform

Seven co-researchers reported that a great issue was that they were in a hurry to finish the teaching syllabus. For example, they mentioned the following:

> Not to be in a hurry to finish the syllabus. Otherwise, it was difficult to implement formative assessment. Most of the time, what I could only do was observation; I even did not have time to ask questions. (Ki1)

> Not to make us always in a hurry. Otherwise, we were confined to provide certain activities. (Fi1) ... the school did not have curriculum tailoring; therefore, it was difficult to conduct formative assessment. (Fi2)

A co-researcher suggested:

> There should be school-based curriculum (curriculum slimming) and discussion of the use of the textbooks (teachers there taught the students according to the textbooks) as assessment was closely correlated with what you taught. If we are to implement formative assessment, there should be reform in the curriculum. (Hi2)

5.3.4.3 Availability of more resources

Various kinds of resources were requested by five co-researchers, e.g., materials and equipment for doing experimental activities (4), teaching aids (2), IT facilities (2), updated network service (2), reference materials (1), teaching kits (1) and photocopy services (1).

5.3.4.4. Support from supporting or regulars teachers

Four co-researchers expected more communication and collaboration with the supporting or regular teachers. They mentioned the following:

> There should be more communication between supporting teachers (they were too busy) and student teachers. We should sit next to each other. (Ii1) ... There should be some collaboration. As the regular teachers were experienced, they might advise me on what should be added in the assessment forms, or what other aspects could be assessed. (Ii2)

> Teachers should work together to design worksheets, and prepare lessons. ... The supporting teacher and the student teachers could design worksheets together, do the reflection and make suggestions for improvement. It would be better if the school could provide us with their worksheets for our reference. (Jw21)

> The school prepared a set of worksheets. My activities were not the same as theirs. The teachers there had meetings for every subject to discuss how to

> teach, but General Studies had to make way for the major subjects. Thus, General Studies teachers did not meet together to design learning activities. If we could hold the meeting, we might jointly prepare teaching aids and design worksheets. ... When designing activities, sometimes I used their worksheets as assessment if I considered them appropriate. I also designed some worksheets. (Gi2)

A co-researcher expected advice from the regular teacher about teaching, students' learning difficulties and the school activities. She wrote:

> I hoped that the original teacher could tell me the learning difficulties of the students, so that I could know more about them and have some preparation. (Mw11) ... They should inform me earlier when there was no lesson, as the students had to participate in other activities, e.g., visit. Then, I might teach less and planned some assessment. I could prepare a better lesson plan. (Mw12; Mw13) ... I had to finish a chapter within two periods, which was difficult for me. I was at a loss because the regular teachers told me to follow the schedule. I hoped that she could advise me and be considerate, as I was only a student teacher. Finally, she provided me with some advice ... (Mw14)

A co-researcher wished the supporting teacher could help her have more knowledge about class management and techniques to handle discipline problems. She considered discipline as the basic element in the classroom. (Kw11)

Another co-researcher expected support from other teachers. She reported the following:

> When the teacher in the previous lesson did not finish the lesson on time, I had to spend less time in doing an activity. Sometimes I had to cancel or make some changes in some activities. (Iw12; Iw13)

5.3.4.5. Smaller class size

A co-researcher suggested having "fewer students in a class, then there might be more group activities. We could go to the laboratory, i.e., General Studies Room, more often." (Ei1)

The following table (Table 5.8) summarizes the support that the co-researchers expected to have when they implemented formative assessment in General Studies lessons.

Table 5.8 Support needed when implementing formative assessment in General Studies lessons (N=15)

Support needed when implementing formative assessment in General Studies lessons	**Occurrence in the interviews and in the reflection reports[6]**
Flexible teaching syllabus	7
Support from supporting/regular teachers	7
Higher degree of freedom	5
Availability of more resources	5
Curriculum tailoring/curriculum reform	1 / 1
Small class size	1

Concerning the support needed, seven co-researchers requested to have a flexible teaching syllabus so that they needed not be in a hurry to teach the students and were not confined in carrying out certain assèssment activity, e.g., observation or questioning. Seven co-researchers expected more communication and some collaboration with the supporting or regulars teachers, so that they could seek advice on the design of worksheets or assessment forms or jointly prepare worksheets. A few co-researcher

[6] Same as [5]

reflected that it was necessary to tailor or reform the curriculum if formative assessment was to be implemented in the classrooms. A co-researcher requested the advice about individual students' learning difficulties, and the schedule of school activities so that she could plan her lessons accordingly.

Some co-researchers expected to have reference materials and more resources for doing experimental activities. According to the experience of the researcher, the lack of or insufficient resources and reference materials was partially due the lower status of General Studies in the primary school curriculum, which was also reported by co-researcher G in Section 5.3.4.4.

Some co-researchers wanted to have a higher degree of freedom in designing teaching activities and worksheets, in order to cater for the learning needs of the students. In short, the school should have more confidence in the co-researchers and provide them more freedom and support so that they could practise what they had learned in the Institute. A co-researcher requested a small class size.

5.4 Teaching in General Studies Classrooms - Videotaped Lessons

During the student teaching in local primary schools, each of the co-researchers videotaped a lesson in each teaching practice block, so that the researcher could obtain an understanding of what their lessons were like, and to what extent they had implemented formative assessment in their teaching. The lessons ranged from twenty-five to fifty minutes. From the videotaped lessons observed, it was found that during the two teaching practice blocks, the major concerns of most of the co-researchers were class management, and their survival in the classrooms. It was apparent that when most of them got the experience of teaching in the first teaching practice block, they began to

be concerned more about students' learning, and conducted more formative assessment activities. Thus, the findings in this section were based on the co-researchers' videotaped lessons during the second teaching block. Table 5.9 shows the topics and levels of the lessons that the co-researchers videotaped during the second teaching practice block.

Table 5.9 Lessons videotaped during the second teaching practice block (N=15)

Level	**Topic**	**No. of co-researchers**
P.1	Parks/Introduction to Science - Sound	1 / 1
P.3	Our Basic Needs - Housing, Imported Food/Common Diseases	3 / 1
P.4	The Earth/ The Climate of Hong Kong/Electricity and Living/Wonders of the Human Body - Bones and Muscles	1 / 1 / 1 / 1
P.5	Puberty	1
P.6	Environmental Protection - Polluted Water/Developing a Global Perspective - Population Problem	2 / 2
	Grand Total	15

In the following section, firstly, the in-depth analysis of two videotaped lessons is presented, and then there is an overview of all the fifteen videotaped lessons. The structure of the lessons was traced from the transcripts; then the lessons were analyzed according to the criteria for observation - assessment for learning in practice (Kavanagh, 2002). The criteria are illustrated below (Table 5.10):

Table 5.10 Criteria for observation - assessment for learning in practice (Kavanagh, 2002)

Strategy	**Major Evidences**
Rich questioning	• Hands down; teacher selecting student to answer • Wait time • Students being encouraged to consult in their group in order to formulate an answer • Teacher involving a number of students in the answer to a single question

	• Use of wrong answers to develop understanding • Appropriateness of questions • Quality of questions • Opportunities for students to formulate questions
Effective feedback	• Feedback focusing on learning objective(s) • Evaluative comments which indicate how to improve • Opportunities for/evidence of, follow-up • Note: Oral feedback in plenary session, individually or collectively
Peer and self-assessments	• Opportunities for students to reflect • Teachers making assessment criteria explicit to students • Students using assessment criteria to evaluate their own work • Whole class review of work, e.g., plenary session • Small group work; evaluation and support
Regulating learning	• Circulating whilst students were engaged in a task, involving assessment and intervention which take learning forward Note: • Good use of time: teacher's ability to engage with a number of students; rather than becoming 'stuck' with one or two students • Teacher's awareness of the needs of the rest of the class whilst engaging with individual students • Judgment about whether or not to intervene • Appropriate strategies employed leading to improvement • Teacher's recognition, as appropriate, of needs/opportunities for group or even whole class teaching input

.

5.4.1 Lessons conducted by two co-researchers

In order to find out to what extent the co-researchers implemented formative assessment in General Studies classrooms, this section describes two videotaped lessons in depth.

5.4.1.1 Lesson taught by co-researcher G

Co-researcher G taught the primary four students the topic, Bones and Muscles.

The transcription of the lesson is shown in Appendix L.1. The structure of the lesson is illustrated below (Table 5.11):

Table 5.11 Structure of the videotaped lesson - Co-researcher G

minutes	Activities in the lesson
3	Teacher started the lesson by simple introduction. She asked the students about the different bones they had. The students were not fully engaged in this question and answer session.
8	Students held group discussions on the questions in worksheet 1. For example, what happens if there is no skull?
7	Plenary session after group work.
7	Teacher summed up the different functions of bone and demonstrated how the muscle and the bone work together to produce movement.
2	Teacher's introduction and class discussion on correct postures.
6	Students' group discussion on the question in worksheet 2: what are the influences of the incorrect postures (shown in the picture) on the bones?
10	Plenary session again with students' demonstration on correct posture.

This double lesson should last for fifty minutes. As it was after the recess and was videotaped, the lesson only lasted forty-three minutes. From the above description, co-researcher G made use of all exposition, group work and teacher's demonstration alternatively to engage all the students in the lesson. The following reports the analysis of the videotaped lesson with respect to rich questioning, effective feedback, peer and self-assessment, and regulating learning.

5.4.1.1.1 Rich questioning

At the beginning of the lesson, when co-researcher G asked the students to name the different bones we have, most of the students raised their hands to show their eagerness to answer the questions. It seemed that no wait time was needed. Very quickly students lost interest in this class discussion and offered other strange answers. During

the class discussion and the plenary session, co-researcher G insisted on the raising hands of the students. She paused for a while, which served as the wait time, and then invited those raising hands to tell their ideas.

In order to help students formulate good answers, co-researcher G provided a chance for students to hold discussion in groups of four so that they could consult each other. The questions were high quality questions with good question stems, i.e., 'What happens if there is no skull?' in Worksheets 1 and 'What will be the effects of the incorrect postures (shown in the pictures) on the bones?' in Worksheet 2. Students were engaged in the group discussion and wrote down their ideas in the worksheets. The teacher emphasized that the answers could not be found in the textbooks. Some of the dialogue was recorded on the videotaped lesson, such as:

It's like a balloon with air coming out.
Very simple. It's like a lump of meat.
He will die.

Co-researcher G provided students with opportunities to develop chains of reasoning to help students scaffold the protective function of the skull. She asked probing questions, for example,

T: What happens if there is no skull?
S: If there is no skull, there will be no places for the eyes, ears, nose and month.
.....
S: The head will be very soft.
T: Very soft. What will happen?
S: It will be very painful if it crashes on something.
T: It will be very painful if it crashes on something. Then what is the use of

the skull?

S: Protection.

T: What to be protected? What is inside the skull?

(S): The brain. (*The student shouts the answer out.)*

T: You all use backpacks. Why do you use backpacks?

S: Our two shoulders carry the weight. When we use the school bag, only one shoulder carries the weight.

T: When we use the school bag, only one shoulder carries the weight. What is the effect?

S: There will be too much pressure for one shoulder. However, when we use backpacks, there will be less pressure for each of the two shoulders.

T: There will be too much pressure for one shoulder. What else?

S: It will be lighter for each of my two shoulders (*pointing to his two shoulders*).

T: I can carry few books. Why should I use the backpack? *(One hand goes up!)*

S: I do not have the good posture. (*The student demonstrates that posture.)*

T: If we continue to carry the school bag in that way, how will it affect us?

S: It will affect our growth.

T: The poor posture will become worse.

Furthermore, the co-researcher allowed several students to answer a single question. For example,

T: The spine? (What happens if there is no spine?) The 4th group.

S: The upper part of our body will bend.

T: The upper part of our body will bend. We cannot stand straight.

(S): We will crawl on the floor.

T: Raise your hand, please.

S: We are not in the same group. ... We will crawl on the floor. (*A student demonstrates the idea by crawling on the desk.)*

T: Yes. We will become very soft and fall on the floor.

T: ... The shinbone? Group one?

S: We cannot stand.

T: We cannot stand. Very soft. We cannot stand and fall on the floor. Beside that, what else?

S: We cannot walk.

In the plenary session, co-researcher G did ask 'why' and 'what', and invited students to explain their answers. For example,

If we don't have the spine/the pelvis/the shinbone/the metatarsal bones, what will happen to us?

Why do you kneel on the floor?

What is the effect?

Why do high heels make the feet ache?

On the whole, co-researcher G asked a lot of 'high level' questions to encourage students to think. There was a reasonable mixture of easy questions to involve more students in the learning process.

5.4.1.1.2 Effective feedback

Co-researcher G repeated the answers of the students to show her approval. For example,

T: Why does the bone have to cooperate with the muscle? I am holding a ruler. Which part of our body does it look like? (*The teacher shows the ruler and makes the two arms of the ruler move.)*

S: The joint.

T: The joint. There are two kinds of joints. Do you know?

Moreover, co-researcher G told the class why the answer provided by the student

was correct. For example,

T: There are different functions of different bones. The skull … the breastbone … their use?
S: To protect the brain, … the heart.
T: To protect the different organs. Therefore the first function of the bones is to protect our body. (*The teacher pastes the sentence strip on the blackboard.)*

On the other hand, when a student could not demonstrate the correct posture of picking up a 'heavy item', she invited another student to demonstrate again and asked others students to watch carefully. Then she asked the student the following questions:

T: I want to interview you. What did you do? What did you pay attention to?
S: Paying attention to the back.
T: The spine.
S: If I bend, it hurts the spine.
T: So, what do you pay attention to?
S: …

As the student could not provide an answer, she asked the student to do it again. Then she asked him why he knelt on the floor. In this way, though that particular student could not tell her idea, another student could tell the correct answer, "If we don't kneel on the floor, we have to bend to pick the box up."

5.4.1.1.3 Self- and peer assessment

When a student was going to demonstrate the correct posture of picking up the heavy stuff, co-researcher G explicitly invited the class to watch carefully, and asked whether it was correct after the demonstration. She also asked the student to help him

assess his understanding:

T: What should we do? *(Many hands go up.)* I only invite those who are quiet to demonstrate the correct posture. *(A boy at the back is invited and demonstrates to the class).* Correct or not? …
One more demonstration. Please watch more carefully. *(The student demonstrates again.)*
I want to interview you. What did you do? What did you pay attention to?
S: Paying attention to the back.
T: The spine.
S: If I bend, it hurts the spine.
T: So, what did you pay attention to?
S: …
T: Can you demonstrate once again to show us what we should do? *(The student did pick up the box again.)*
T: Why do you kneel on the floor?

Co-researcher G also provided students with the opportunities for peer assessment during the group discussion. During the two group discussions, they had to finish a worksheet in group basis and present their ideas to the whole class afterwards.

5.4.1.1.4 Regulating learning

During the first plenary session, co-researcher G asked a student whether he wanted to make supplement though he waved his head. During group work, she circulated in the class while the students were engaged in the work. She looked at the students' work, talked to them, and told them to close the textbooks.

In learning how the joints help produce movement, co-researcher G invited students to demonstrate the movement to assess their understanding. She also asked them to demonstrate the correct postures of picking up heavy items, sitting, doing

homework, and standing.

Furthermore, co-researcher G did ask a student to help the student who could demonstrate the correct posture but could not provide an explanation,

T: Can you demonstrate once again to show us what we should do? *The student did pick up the box again.*
T: Why did you kneel on the floor?
S: ....
T: Can anyone help him? (Some hands go up.)
S: If we don't kneel, we have to bend down to pick the box up.

On the whole, co-researcher G made use of the questions in the worksheets to assess the learning of the students. She regulated the learning of the students by providing them with the chance of group discussion, in groups of four, and moved among the groups to talk to them. During the class discussion and plenary sessions, she provided students with feedback by asking them to explain or extend their answers. However, the students became less engaged during the latter part of group presentations, as there were eight presentations. Thus co-researcher G depended completely on students who raised their hands to provide responses. Lastly, she invited the class to assess whether the demonstrations of correct postures were correct, and asked questions to help the particular student assess his own understanding.

5.4.1.2 Lesson taught by co-researcher J

Co-researcher J taught a class of primary six and the topic was 'the Problem of World Population'. The transcription of the lesson is shown in Appendix L.2. The structure of the lesson is illustrated below (Table 5.12):

Table 5.12 Structure of the videotaped lesson - Co-researcher J

minutes	Activities in the lesson
2	Teacher started the lesson with a simple introduction. She provided students with two pictures and made use of the question and answer session to arouse the interest of the students. They were asked to figure out the different resources that each of the two families had.
1	Teacher showed the class a newspaper clipping, and involved students to tell the countries which have a large population, and whether they are developed or developing countries.
3	Worksheet 1 was provided to each student, so as to reinforce the discussion and to get students engaged in the task. There were questions about the problems caused by the aging population.
3	Plenary session after the individual work. The teacher not only checked the answers, she also asked students to explain.
8	Worksheet 2 was provided to each student. The students formed into groups of two to work on the exercises. Students observed the pictures and figured out the problems caused by population explosion. Furthermore, they had to tell whether these problems are more serious in developing or developed countries.
8	Plenary session again. The teacher concluded the lesson by asking students to consider the population problem from the viewpoints of different countries.

The lesson should last for thirty-five minutes. The videotaping began when the class was settled down and the teacher started her teaching. Consequently, there were only twenty-five minutes in the videotaped lesson. From the above description, co-researcher J made use of exposition, individual and group work alternatively to involve all the students in the lesson. The following reports the analysis of the videotaped lesson with respect to rich questioning, effective feedback, self- and peer assessment, and regulating learning.

5.4.1.2.1 Rich questioning

In the video-taped lesson, not many students raised hands to volunteer an answer. It was those sitting at the front who volunteered to answer questions. Co-researcher J

usually glanced at the class. Thus, a short period of wait time, two or three seconds, was provided and then she invited or named those raising hands to answer. There were a few students sitting at the back of the classroom who shouted the answer out; co-researcher J either reminded them to raise their hands or ignored them by inviting others to answer.

When asking students questions, co-researcher J provided students with the opportunities to develop chains of reasoning to help them scaffold the concept. For example,

T: There are two pictures, Family A and Family B. I want to ask you which family you want to live in, Family A or Family B?
S: Family B.
T: Please raise your hands. K.Y.
KY: Family A.
T: Why?
S: There is confusion in Family B.
T: There is confusion in Family B. Yes. Any other opinion? Y.S.
YS: Family B.
T: Why?
YS: There are more people in Family B and the ambience there is good.
T: Any more opinion?
S: ... *(inaudible)*
T: Yes. We just mentioned that there is confusion in Family B. Why there is confusion in Family B?
P: Because there are many people in Family B.
T: There are more children in Family B. Compared with each child in Family A, can each child in Family B get more things? Or they get less?
(Ps): Less.
T: Yes. There are more people in Family B. The resources each one can get will be less. The standard of living will be lowered. Therefore, we have to control the population.

From the videotaped lesson observed, the students in this class seemed to be quite passive in the class discussion, but they were fully engaged in doing the worksheets either individually or in groups. Co-researcher J set some good questions in the worksheets to involve all the students in learning. In the worksheets, there were two types of questions. In worksheet 1, the first three questions were to help the students consolidate the previous class discussion. The fourth question, 'What are the problems caused by the aging population?' was of a higher-level and helped the co-researcher assess the learning of the students.

In order to stimulate the thinking of the students, co-researcher J asked the students to observe the pictures and write down the problems caused by population explosion in worksheet 2. Then they had to consider whether each of these problems was more serious in developing or developed countries. She also provided a chance for students to consult their partners in order to formulate an answer: they held discussion in groups of two. In the plenary session, she invited students to report their answers. However, when checking the answers on the first part of the two worksheets, she was satisfied with short answers from students. When it came to the second part, she did ask 'why' and 'what', and invited the students to explain their answers. For example,

Usually what happens to the elderly?
What are the other problems concerning social services?
Why is there a decrease in productivity?
The living environment. What is it about?

5.4.1.2.2 Effective feedback

During the first plenary session, co-researcher J confirmed students' ideas by

writing them on the blackboard. She seemed to have ignored the wrong answer provided by a student:

S: The problem of law and order.
S1: Why it is not an education problem?
T: Any other opinion?
S1: Why it is not an education problem?
T: Education problem?
S1: Yes. The people have no education. They have no job or money and then they become robbers.
T: You mentioned a good idea, unemployment, which is not shown in the pictures, but the education level may not be the cause of robbery.

Eventually, she praised the student's idea, wrote it on the blackboard to confirm the student's effort, and made use of the ideas in the following discussion.

However, co-researcher J did not ask the students to explain their ideas, or provide them with any assistance when they provided the 'wrong answer' during the plenary session. She just reminded the student the theme of that part of the discussion. For example,

T: Yes. What are the other problems of social welfare?
S: Pollution problem.
T: Pollution problem? We are talking about social welfare.

S: Many people live in a room.
T: Yes. Many people live in a room. In the underdeveloped countries, such as Ethiopia, what is the situation there?
S: People have many children.
T: We are talking about the living environment ...

Furthermore, after students had finished Worksheet 2, during the plenary session the teacher seemed to be looking for the right answers or the correct terms. When the student provided the 'related' answer, such as 'living environment, not enough', or 'low teaching standard', she immediately told the students the 'correct answer' or the correct terms. She did not make use of the wrong answers to help students develop their understanding. For example,

T: For the first picture, what is the problem? H.C.
HC: Shortage of food.
T: The second picture?
S: Living environment, not enough.
T: Crowded living environment. The third picture?
S: Low teaching standard.
T: Low standard? In the picture, many students rush into a classroom? W.M.
WM: The great pressure faced by the teachers.
T: Teachers' pressure. That is the education problem. Many students rushing into the classroom, which means there are not enough education opportunities ...

The data show that the feedback loops were very short. As the students were not fully involved in the class discussion, co-researcher J accepted short answers and looked for correct answers, in order to avoid the dead silence in the classroom. In the worksheets, there was a mixture of some simple questions and some quality questions to provoke students' thinking. Co-researcher J reported it was to involve all students in the group work.

5.4.1.2.3 Self- and peer assessments

Co-researcher J provided students with the opportunities for peer assessment during their pair work. They assessed the understanding of their partners before their presentation. When co-researcher J was looking for the right answers during the plenary session, she did not allow time for the students' self- or peer assessment.

5.4.1.2.4 Regulating learning

As not all the students were engaged in the class discussion, co-researcher J involved them in the learning process by asking them to do Worksheet 1 individually, to consolidate the learning during class discussion. She did ask the student to explain their answers in the plenary session. For example,

T: What kind of country faces the population problem? C.K.
CK: Developing.
T: Yes. For example, China. What are the other problems caused by the aging problem?
S: The problem of social welfare and the decrease of productivity.
T: Good. What is the social welfare problem about?
S: The people have no job, and then they get the assistance from the government.
T: Yes. When the elderly people retire, what will they get from the government?
S: We call it 'the money for the elderly to buy fruit'.

She also invited students to work in groups of two, and then there was a plenary session to check the answers. During group work, she circulated in the class whilst the students were engaged in the work. She also glanced at the students' work, talked to them, and told them to close the textbooks, as the content of the newspaper clipping could not be found in the textbooks.

Co-researcher J tried to help students apply the newly learnt concepts. She directed students to relate the situations in Hong Kong (developed area) and China in learning developed and developing countries. She also asked students to provide explanations. Furthermore, she encouraged students to consider the problems faced by different countries before she dismissed the class. For example,

T: From the World Vision, we know that there is the problem of illiteracy in China. Some children do not have the chance to go to school. Therefore, education problem is more serious in developing countries. Are there any other problems more serious in developed countries? (*No response from the students.)* In developed countries, the living standards and the education standards are high. The hygiene and medical services are very good.

S: Pollution problem.

T: Pollution problem. Why?

S: The streets are dirty.

T: The streets are dirty. Anyone disagree? (*No response from the students.)* You all think that it is problem of the developed countries. I wanted to ask you about China. China is a developing country. Is the pollution problem more serious in China or in Hong Kong?

S: China.

T: Yes. Therefore, why do you say that pollution problem is more serious in developed countries? ... In fact, both developed and developing countries face pollution problem. In developing countries, there are not adequate facilities to protect the environment. In Hong Kong, there are too many people so the pollution problem is very serious in Hong Kong. Any other problems faced by the developed countries? W.M.

WM: Transportation problem. ....

T: Yes, it is more serious in developed countries. In the developing countries, the transportation network is not well developed. In Hong Kong there is always traffic jam. There is also unemployment problem.
(*The teacher puts a circle next to the two terms, 'Developing countries' and 'Developed countries/areas'.*) The industry and commerce are well

developed in the developed countries, but we are suffering from economic depression. Now I want to ask you about Hong Kong: Hong Kong is a developed city, what are the problems we face?

S: Pollution problem.

T: Any others?

S: Unemployment.

T: We are good in law and order, and education. You may consider the problems faced by different countries.

On the whole, co-researcher J tried to engage the class which did not like to respond during questioning by asking them to answer questions in the worksheets, either individually or in pairs. She succeeded as students were fully engaged in doing the worksheets. During the plenary sessions, she depended on those raising hands to answer the questions. Sometimes, she looked for the right answers or the correct terms. Occasionally, she invited students to provide explanations. At times, it seemed that she did not know the technique to deal with the 'wrong' or 'partially correct' answers. She regulated the learning of the students during their individual or pair work. She provided students with the chance for peer assessment during group work. However, the chance for self- or peer assessment was not provided, when she just looked for right answers during the question and answer session in the videotaped lesson.

5.4.2 An overview of the videotaped lessons conducted by the co-researchers

The following describes the overview of the videotaped lessons conducted by the fifteen co-researchers. The lessons lasted from twenty to fifty minutes. Four of the co-researchers provided two major types of activities, i.e.,

- question and answer session while watching photos (3) or followed by students finishing the worksheets (1); and

- group discussion (2) or group work (2) with class review in the plenary session.

Another four co-researchers provided three major types of activities as their lessons lasted for forty to fifty minutes. The third type of activity might be one more question and answer session (2), or group discussion (2) and plenary session. Three co-researchers only provided one group activity and one plenary session to the students. Four co-researchers led the lesson through by means of question and answer, while students were watching photos (1), or doing classification and matching task on the blackboard (1). At times, the co-researchers provided explanation about maps (1) or diagrams (1).

The following describes the analysis of the fifteen videotaped lessons observed with respect to rich questioning, effective feedback, self- and peer assessment and regulating learning.

5.4.2.1 Rich questioning

Concerning raising hands, there were always some students raising their hands after the co-researchers asked the questions, but fewer in the upper primary levels, primary five and six students. Most of the co-researchers depended on those students who raised their hands to answer questions; they occasionally invited some who did not put up their hands to answer. Six co-researchers named the students to answer their questions. At the beginning of the lesson, a co-researcher asked an inattentive student a question as a method of classroom management (Dv2). One co-researcher told the students at the beginning of the lesson that she just invited those who raised their hands and were quiet to answer (Nv2).

In ten videotaped lessons observed, students shouted the answers out. Three co-

researchers insisted or reminded students to raise their hands at the beginning of the lesson, but later on, answers shouted out were accepted (2). Two co-researchers reminded students not to shout out the answers, and their responses were ignored; the other two co-researchers just ignored the shouted out answers. Three co-researchers accepted the simple shouted out answers, but a co-researcher insisted on students' raising hands when she expected longer answers (Dv2).

Concerning wait time, most co-researchers provided some wait time to allow students to have the opportunity to think before answering. Usually after they had asked a question, except when the answer was shouted out, they glanced at the students, waited for three to five seconds, and invited those who raised their hands to answer. From time to time, the co-researchers invited those who did not put up their hands so that they also knew that they had to think and provide an answer. In general, upper primary students were not so eager to raise hands as the lower primary students. When the co-researchers had to look at the seating plan in order to call names of the students, they provided longer wait time. Some co-researchers over-estimated the duration of the wait time because both the co-researchers and the students were not used to the provision of wait time.

Concerning students' consulting with their partners to formulate an answer, ten co-researchers provided students with chances for group discussion (9) or group work (1) before their presentation. Usually there were four students in a group. In three videotaped lessons, the group size varied from two to eight students. For the group work on matching the appropriate notices to the misbehaviours of the children, there were two P.1 students in a group (Lv2). A co-researcher asked the P.4 students to form groups of two to three students, to find out from the newspaper clippings the impacts of the bad

weather on the Hong Kong community. She told the students other reasonable answers would also be accepted, and only four well-behaved groups could have the chance to present their ideas during plenary session. It was because the co-researcher circulated among the groups and checked their performance in the worksheets (Mv2). When the students worked on the close circuit, there were six to eight students in a group because of the limited resources available (Dv2). In one videotaped lesson, there were only group presentations (Hv2). The co-researcher reported that students consulted their group members and set their role-play scripts during their free time. In another videotaped lesson, some students kept on shouting out answers and gave 'strange' answers during the question and answer sessions, but they were fully engaged in the group discussion session (Fv2).

On the other hand, four co-researchers provided teacher-centred activities in their lessons; consequently they did not provide students with any opportunities to discuss with each other.

Concerning the involvement of students in the answer to a single question, nine co-researchers required different students to provide answers to a question. For example, a co-researcher allowed two students to say why they preferred to use ear muffs (Fv2). Another co-researcher asked students, "Do you agree with the matching on the blackboard?" (Lv2) Co-research D involved students to a single answer, i.e.,

T: In what ways these two items are the same?
S1: The two are batteries.
T: Yes. They are batteries. In what ways they are the same?
S2: Both have negative and positive sides. (Dv2)

Concerning the use of wrong answers to develop understanding, it seemed that eight co-researchers did not know how to make use of them to develop the understanding of the students. Three of them just reminded the students the topic of the lesson. One told the student that he was wrong and provided the explanation while the other two just told the student the correct answers. For example, when co-researcher O asked students about the facilities in the new towns:

T: What is it?
S1: Hospital Authority.
T: You mean 'hospital'.
S2: Farmland. (This answer was ignored.)

The other co-researcher told the student to read the diagram carefully (Bv2). When the student wrongly placed the negative sign on the drawing of a battery, other students laughed. The co-researcher did not deal with the laughter but just asked the class whether it was correct or not. She told the students she would not invite those who shouted the answers out to do the correction (Dv2). Only three co-researchers used the wrong answers to promote students' understanding. One co-researcher invited another student to demonstrate the correct posture to pick up the heavy stuff (Gv2). When the student told the co-researcher that she did not know the expectations of her friend, co-researcher K told her to reflect on her expectation on her friends, and invited her to present to the class (Kv2). Another co-researcher picked up the 'wrong' notice, asked the student what it was about, and why it should be pasted there (Lv2).

Concerning the appropriateness of the questions, the questions set in the worksheets (6) or for the question and answer sessions (3) were appropriate, and the

students were fully engaged in the tasks in the nine videotaped lessons observed,. For example, two of the classes were not actively engaged during the question and answer sessions, though the co-researchers showed the pupils the photos of facilities found in the new towns (1), or pictures showing how a sound was produced (1). They were fully engaged when they were asked to classify the different types of facilities (Ov2), or to hold group discussion on 'Which of the following, the loud speaker, the ear muffs or the ear plugs, you would use to listen to music? Why do you prefer it to the others?' (Fv2) Furthermore, in the latter case, the co-researcher reminded the students that they could not find the answers in the textbooks. She did get the students to consult each other and say in what ways they could protect their hearing. Another co-researcher asked the students about the work of different government departments in protecting the environment, and she allowed them to do the preparation during their free time. Four of the five groups used role-play to present their understanding (Hv2).

On the other hand, in six videotaped lessons, the questions set on the worksheets (4) or for the question and answer sessions (2) might not enhance and assess the learning of the students. For example, in answering the question in the worksheet for group discussion, 'What are the effects of polluted water on the environment?' a student copied the answer from the book (Jv2). In one videotaped lesson, students were engaged in group work to find out the place of imported food in order to answer the question, 'Where was most of our food imported from?' However, the answers were biased as the students just copied the names of the countries from the packets of the snacks that they brought to the class (Cv2). In another videotaped lesson, though the co-researcher asked students to hold group discussion, they were engaged in answering questions in the worksheet individually, 'Am I under any one of the pressures illustrated below because

of my improper behaviour? How could I make improvements?' There was no discussion in the group as this should be treated as self reflection. Furthermore, when the co-researcher invited the students to share their experiences, no one came out for presentation (Kv2).

Moreover, while watching the photos of different types of houses, the questions such as, "What is this? Who lives there? Have you been there? What are the special features?" could not help the students learn why such buildings were built and the lives of the people there (Av2). In learning about the earth, the co-researcher asked the students, "What is the use of the atmosphere?" Without suitable teaching resources or learning activities, students could not figure out the answer (Ev2).

Concerning the quality of the questions, the co-researchers asked questions with good question stems, e.g., "Why does ...? "(5) or "Why not ..." (1) and "What if ...?" (3) in nine videotaped lessons. Some of the questions were:

> Why was there an increase in the natural growth rate of the Hong Kong population?
> Why did the government build the Ma On Shan railway?
> Why don't you talk to your grandparents when you have problems?
> What would you do to promote the birth rate if you were the government officials?
> What would happen to you if you were a fish in the polluted sea?

In another three videotaped lessons observed, the co-researchers did ask high quality questions. For example, "What happens if the atmosphere at a place is thin?" and "Why is the atmosphere thin there?" are good questions. However, when there was no response from the students, the co-researcher did not provide proper learning activities or teaching aids to help students develop their understanding. She just told them the answers (Ev2). After doing the experimental activity, a co-researcher asked the students,

"Why is the second circuit diagram correct?" She accepted short answers and provided explanations herself (Dv2).

Furthermore, in three videotaped lessons observed, one co-researcher asked for the names of the types of houses in Hong Kong, "What is name of this kind of buildings?" Even though she provided probing questions, the students could not tell the specific term, 'commercial and residential building' (Av2). Another two co-researchers expected students to know terms like, 'new towns' (Cv2), and the slogans, 'to be considerate in the park' and 'to use the facilities properly'[7](Lv2).

Lastly, three co-researchers reminded the students to close their textbooks and told them the answers could not be found there. However, in one videotaped lesson, when the co-researcher was asking students questions about the photos of different facilities in the new towns, a student shouted, "It's on page 19." Then the co-researcher told the students:

> We will revise the text by the end of the lesson. I make use of the activity approach. You have to construct knowledge through activities. I show you the photos and you need not open the books (Ov2).

Concerning the opportunities for students to formulate questions, the co-researchers' friendly relationship with the students facilitated them to ask questions in the lessons. For example, in learning the close-circuit, a student asked, "Why is diagram 4 not correct?" Then the co-researcher did the demonstration again (Dv2). During the plenary session on the problems caused by population explosion, a student kept on asking, "Why it is not an education problem?' (Jv2) Then he was invited to provide explanations and was praised by the co-researcher.

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[7] The slogans are expressed in four Chinese characters.

5.4.2.2 Effective feedback

Concerning focusing on the learning objective(s), the co-researchers either wrote the correct answers on the blackboard (3), or pasted the related sentence strips on the blackboard (3) during the question and answer sessions or the plenary sessions in six videotaped lessons. The latter practice seemed to encourage students to guess what was on the sentence strips. One of the co-researchers allowed a student to paste the sentence strip after he had provided the correct answer. This served as a reward for the correct answers (Nv2).

The other five co-researchers' feedback on the correct answers were not related to the learning objectives. They praised the students, "Clever!"(2) or "Smart!"(2). Furthermore, another co-researcher added one mark to the group on the blackboard, when a member of the group provided correct answer or the group behaved well in the lesson (Kv2).

Concerning evaluative comments which indicated how to improve, it seemed that most of the co-researchers did not provide any evaluative comments. When the students did not provide any answers, the co-researchers either gave the answers herself (Ev2), or asked the student to do the demonstration again (Jv2).

Concerning opportunities for follow-up, twelve co-researchers asked probing questions during the lesson. Some provided chains of questions for reasoning (10), but some only asked for names or specific terms (3). One of the twelve co-researchers asked students probing questions to develop their understanding, but also sought the right terms from the students in the lesson (Lv2). Another co-researcher asked students probing questions and supplied them the term that they had to learn:

T: What are the main features of summer?
S: Landslide.
T: Why is there a landside?
S: It rains very heavily.
T: That is the 'bad weather'. (Mv2)

Three co-researchers seemed to be satisfied with short or simple answers. They did not ask the students to extend or explain their answers; they just provided explanations themselves, while the other six co-researchers just sought for the right answers from the pupils. A co-researcher ignored the student's question, "How about the number of deaths?" when the class learned that in every two seconds a baby was born (Bv2).

5.4.2.3 Self- and peer assessments

Concerning opportunities for students to reflect, two co-researchers asked students whether the answers were correct not, e.g., the reason why the spring water was hot, and the correct posture to lift up a heavy object. Four co-researchers invited students to reflect on the classification work (2) or the matching work on the blackboard, and do correction if necessary (2). After the matching work was first done in pairs and then on the blackboard, the co-researcher asked the students to evaluate their own work first and then invited the class to make comments (Lv2). A co-researcher asked students to reflect on the living environment in the old public housing estates, compare it with their own living environment, and see whether they were better off (Av2).

Concerning making assessment criteria explicit to students, and students using assessment criteria to evaluate their own work, a co-researcher reminded the class the criteria for peer assessment were distributed and had been explained to them in the previous lesson. The criteria included: organization, clear content, time management,

ways of presentation (creative, interesting), and relevance to the theme. In that lesson, each student had to use the peer assessment form to assess the performance of the other groups (Hv2).

Concerning the whole class review of work in plenary sessions, students were engaged in the class review sessions in five videotaped lessons. However, in the other videotaped lesson, the students were not interested in the sharing as they had to share their personal ideas and behaviour during puberty (Kv2). Five co-researchers just checked for the right answers and students just presented factual data in one videotaped lessons. Consequently there was no review of work.

Concerning small group work and response partners, in general, the co-researchers asked students to form groups with their neighbouring classmates, as the seating plan of the class was well arranged by the class teachers. Thus, they could support each other in the group activities, or evaluate ideas of other members in their groups. Eleven co-researchers asked students to form groups of two to four students to hold group discussion (10), or do some group work (6). Then they had to present to the class in the plenary session. However, in some classes, there was not enough interaction in the group, as there were seven to eight students in a group. It was because there were insufficient resources to form small groups to do the inquiry or the experimental activity. On the contrary, four co-researchers provided teacher-centred activities during the whole lesson and did not provide students with any group work.

5.4.2.4 Regulating learning.

Concerning circulating while students were engaged in a task, the co-researchers did move among the groups during group discussion (8) or group work (1) in nine videotaped lessons. They first settled down the groups, got everyone on task, then

glanced at their work, talked to individual groups, and answered their questions in order to regulate their learning. However, in one video-taped lesson, it took about nine minutes for the co-researcher to distribute the materials for experimental activity and settled the groups down for the activity (Dv2). A co-researcher followed the school reward system to regulate the learning, and also the activity in the group work and plenary session: only those who behaved well and jotted down a lot of ideas could have the chance to do the presentation and get two 'ticks' as a reward (Mv2).

Furthermore, during group discussion, three co-researchers talked to the class when they found their feedback was essential for the whole class. For example, a co-researcher explained to the class the meaning of the expectations of the society on them (Kv2). Another co-researcher provided scenarios for the students to consider during group discussion, for example, "What happens if you drink the polluted water?" and "What would happen if you were a fish in the polluted sea?" (Iv2) Four of the co-researchers reminded students that they could not find answers from the textbooks. A co-researcher told them, "When you read the textbook to search for answers, that means you don't use your brain." (Fv2)

During the question and answer sessions in four videotaped lessons, most of the co-researchers invited those students who raised their hands to answer questions. From time to time, they invited some who did not put their hands up to answer in order to involve them in the learning. When the students could not provide an answer, the co-researchers invited other students to help rather than becoming stuck with a student.

On the whole, concerning rich questioning, some co-researchers provided quality questions for group discussion or group work. During the question and answer sessions, some asked simple questions and accepted short and simple answers. Most of them

depended on those who raised their hands to answer their questions. When they called the names of the students, a longer wait time was therefore provided. Concerning effective feedback, some of the co-researchers asked the class or that particular student probing questions during the question and answer sessions. Feedback was also provided during the group work. Concerning self- and peer assessment, most of the co-researchers provided students with group discussion or group activities, so they had the chance to assess each other's understanding, and to work together for a learning output. Some co-researchers invited students to assess other's work on the blackboard, or others' performance. Only one co-researcher invited students to fill in the peer assessment forms during the group presentations. Concerning regulating learning, most of the co-researchers moved among groups during group discussion or group work to make sure students were on task. Then they provided students with feedback to regulate their learning. During the question and answer sessions, most of the co-researchers invited students who raised their hands to answer, as well as students who did not raise their hands in order to involve them in the learning process.

5.5 Summary

This chapter describes the teaching experiences of the co-researchers in two main areas: aligning assessment activities with learning objectives and learning activities when preparing for their student teaching, and their teaching in General Studies lessons during the second teaching practice block.

When preparing to teach General Studies in local primary schools, the co-researchers aligned learning activities with assessment activities. Among the factors that affected the co-researchers' design of learning activities, school ethos played an

important role either in support or imposing constraints on the teaching of the co-researchers. The latter mainly included the approach of teaching, the tight teaching schedule and insufficient teaching resources.

Planned formative assessment activities included selected response assessment and performance assessment. The former consisted of worksheets and workbooks, while the latter consisted of group presentation, role-play, matching or classification work on the blackboard. Interactive formative assessment included questioning and observation in the classrooms. The major difficulties that co-researchers encountered in alignment were time constraints in carrying different types of assessment activities, different agenda of the schools/the regular teachers and co-researchers, no teaching aids or teaching materials, and not enough equipment for doing experimental activities.

While implementing formative assessment in General Studies classrooms, most of the co-researchers reported that they made use of questioning to assess the learning of the students. The majority of them invited those who raised their hands to answer questions. They asked those who did not put up their hands to answer in order to make them become attentive in the lessons. They asked probing questions and short wait time was provided if there were no shout-out answers. All of them observed students during the lesson. Some of them proclaimed that they observed students more during their group work. Most of them provided students with worksheets either with the learning activities, such as group discussion and group work, or by the end of the lesson. Some of them provided grades on the workbooks and the school-prepared worksheets, while some provided grades and comments on their worksheets.

The factors affecting the implementation included the school ethos and learning styles of the students, the support from supporting or regular teachers, the high degree of

freedom, the availability of resources, and the attitudes and perceptions of the co-researchers on self- and peer assessment. The main difficulty the co-researchers faced when implementing formative assessment in General Studies lessons was the short time span in a lesson. They were in a hurry to finish the tight teaching syllabus so they did not have enough time to carry out various assessment activities. They also found difficulties in questioning, observation and taking care of individual differences. Major supports that the co-researchers expected were a higher degree of freedom in designing teaching approaches and strategies, a flexible teaching syllabus, more resources available in schools, and more support from the regular or supporting teachers.

From the videotaped lessons observed, most of the co-researchers provided two major types of activities in a lesson of twenty to fifty minutes, i.e., the question and answer sessions, the group discussion/work and class review sessions. The implementation of formative assessment was analyzed with reference to four criteria, i.e., rich questioning, effective feedback, self- and peer assessment, and regulating learning. Concerning rich questioning, most of the co-researchers provided some high quality and appropriate questions in the worksheets, in order to help students learn difficult concepts, assess their learning and develop their understanding during group work or group discussion. During the question and answer sessions, most of the co-researchers asked different types of questions, including 'what, how and why' questions. Reference materials, e.g., photos, diagrams or newspaper clippings were provided with questions printed in worksheets, or raised by the co-researchers during the question and answer sessions. However, some co-researchers just sought for right answers or looked for names or specific terms. Concerning effective feedback, some of the co-researchers accepted short answers and provided explanation themselves during the question and

answer sessions. Some also accepted answers that were shouted out. Oral feedback was also provided when the students were working in groups. During class review sessions, some co-researchers also provided feedback on the presentation of the students. Concerning self- and peer assessment, only a few co-researchers asked students to conduct self-assessment and peer assessment during group work. During the plenary session, one co-researcher invited the students to assess the performance of other groups and filled in the peer assessment forms. Concerning regulating learning, most of the co-researchers circulated among the groups first to regulate the activities, then to regulate their learning during group work or discussion. During the question and answer sessions, most of the co-researchers depended on those raising hands to answer their questions. At times they invited those not raising hands in order to regulate the activity in the lessons and regulate the learning.

The next chapter looks into the professional development of the co-researchers. It includes the co-researchers' learning experiences and perception of formative assessment, students' knowledge of and feedback on formative assessment, co-researchers' reflection on their implementation formative assessment, and comparison between the interview data and the videotaped data on the implementation of formative assessment in General Studies classrooms.

Chapter 6

Professional Development of the Co-researchers

This chapter describes the professional development of the co-researchers in the areas of their learning experiences and their perceptions of formative assessment, students' learning of formative assessment and perceptions of assessment activities, and the co-researchers' perceptions of their own teaching during the two teaching practice blocks. Finally, the researcher compared the interview data with the videotaped data on the co-researchers' implementation of formative assessment in General Studies classrooms, in order to investigate to what extent the co-researchers implemented what they claimed to have done in their teaching.

6.1 Co-researchers' Learning Experiences and Perceptions of Formative Assessment

During the interview after the first teaching practice block, the co-researchers were asked to describe their learning experiences of formative assessment in their primary, secondary and tertiary education. Eight co-researchers reported that they did not have such experience in any stage of their previous education. Two co-researchers reflected the traditional views of teaching, learning and assessment. They stated the following:

> In secondary school, they were tests. We were examination-oriented; our focus was on the A-level examination. Teacher talk was the method employed by most teachers. (Bi1)

> ... I thought assessment was about tests or examinations. There was a lot of homework with model answers; it did not demand any thinking. When the teachers asked questions, there was only one answer. We were not asked to

provide different answers. (Ci1)

A co-researcher reported her experience in continuous assessment:

> ... In my primary school education, I only knew that there were tests and examinations, three or four times in a year. They determined everything. In secondary six and seven, there was a small percentage on daily marks in the subject, Chinese Language. When I was in the university ... the assignment and the attendance were counted. Some teachers even said that they counted whether we raised questions or answered questions. We scored marks but not too many. Half of the marks were the daily marks; while the other half were examination marks. At that time, I thought it was good; but I did not know it was formative assessment. (Ai1)

Co-researcher L stated another aspect of learning,

> ... In Form 7, the teacher printed some good essays and distributed to us to let us study what were good and why they were good. It helped a little. (Li1)

When the co-researchers were asked to explain their ideas of formative assessment during the first interview, thirteen of them reported that it was to assess whether students had learned in the lessons, so that they could know the progress of students' learning (3), to provide follow-up activities or intervention when the students had not learned (7), or to make adjustment or improvement in their own teaching (5). The co-researchers remarked that assessment activities included questioning (6), doing worksheets (4), discussion (1), or some classification work (1). These activities were conducted continuously (2), either at the beginning (2), in the middle (1), or by the end of a lesson (1). One co-researcher did not have a clear concept as she stated that it was conducted at the end of a chapter (Di1).

During the second interview, the co-researchers were asked to explain their ideas of the formative assessment again. They showed better understanding and told their

experiences of the implementation. They remarked that it was continuous (2) and that there should be variety (3), which included questioning, observation and doing worksheets. From the assessment data, they could make adjustment to help the learning of the students (2) and improve their teaching (1). Some of them mentioned the following:

> It should be done continuously, and diversified in the types which included questioning and activities, but not just using pen and paper. There were not many difficulties in implementing formative assessment, but we had to spend more effort in designing different types of assessment activities. It was relatively easy to design assessment of pen and paper, about knowledge, but it was difficult to assess the attitudes of the students. It was not difficult to do the follow-up. The problem was about time and whether you had the awareness to do it. (Ni2)

> I think my teaching was better in the second teaching practice. When I implemented formative assessment, I always made adjustment to my teaching. (Ai2)

Three co-researchers reported the care of all the students in the class, the proper attitude of a teacher, the need for slimming the curriculum, and the role of students. They stated the following:

> When I was young, the teacher just asked one or two questions, and invited two or three students to answer. Then she continued to teach. Now we have to take care of all the students; we have to ask more students. We should provide students with chances to express their opinion and have the courage to speak in front of the class. The teacher can make reflection to see what improvements should be made or what follow-up should be done. (Ki2)

> The classroom atmosphere is very important if we want to carry out formative assessment in a good way. The teacher should be very sharp in

> observation. ... s/he has to slim the curriculum to allow students to speak or share their ideas. Then, the teacher may know whether students have learned or not. All these depend on the attitude of the teacher. ... (Ai2)

> ... It can be conducted by different persons: students and teachers. Pupils should also assess their own selves to see how their learning is. When I become a regular teacher, I will provide my students with self-assessment (I consider it useful.) at the end of each unit, but not peer assessment. (Ji2)

Furthermore, other co-researchers reported it was workable (1), helpful (1), should be implemented (2) in the daily teaching (1).

During the first interview, when the co-researchers were asked how the ideas of formative assessment affected their teaching beliefs, all of them reported that formative assessment activities helped them know immediately whether the students had learned or not in the lessons. Some of them reflected the traditional view of teaching that they held in the past. They reported the following:

> I should not consider I had finished my teaching duty by just talking to them. I had to assess what they had learned or had not learned, and see how I could make improvement. (Oi1)

> I taught for two years in the primary school. At that time, I knew nothing about formative or summative assessment. After finishing a chapter, I did not make an effort to see whether they understood or not. I thought if they were not sleeping, they should understand. Now I know that I can assess the learning of students by inviting them to do worksheets or something on the blackboard, or asking them questions. Now I have more confidence and more satisfaction in teaching. I know the students really understood ... (Di1)

> I taught before. At that time I thought teaching was to teach the text. After the students did the workbooks, the teacher knew whether the students had learned or not. There might be some questioning. The way that students did

worksheets was not the same as our students'. (Gi1)

> In the past ... it was through homework, tests or examinations, we knew that the students had not learned or not ... Then we did the remedial. Now, formative assessment activities can quickly reflect the learning of the students, and we can provide response to them before any problem occurs. (Li1)

> In the past, teachers focused on the result. Now, teachers should consider the process: at this moment, whether students have learned or not and whether they have to do interventions. (Ii1)

> ... In the past, I asked students till an answer was given. Now I know that I have to ask them probing questions to make them think gradually. To guide them is more important. In the past, I set worksheets according to the text. Now ... I should make use of worksheets to train their thinking. (Ci1)

When the co-researchers were asked to tell their expectations of their students or the role of students in General Studies lessons during the two interviews, three of them remarked that students should be the major characters in the lessons, while the other eight co-researchers reported that students should play an active role and take the initiative to learn in the lessons. Other four co-researchers stated that students should be in charge of their learning, and participate in various activities such as asking questions, telling their suggestions, doing inquiry, being willing to learn and work with others, and providing feedback to teachers. Whenever they did not understand, they should raise their hands. However, though three co-researchers reported that students should actively participate in the activities, they emphasized students should pay attention in the lessons. One of them stated the following:

> They should play an active role, not me. Especially for the lower primary, the number one job of a teacher was to keep the class discipline. It would be O.K. for a teacher to just prepare the teaching materials, teaching aids and scenarios. (Ai1)

After the co-researchers gained some experience in their first student teaching, they were concerned more about their students and their learning. Consequently, they were asked whether their students could meet their expectations during the second interview. Eight co-researchers reported some of their students met their expectations. For example, they mentioned the following:

> During group discussion, many of them raised hands to ask whether their answers were correct. (Di2)

> They could find out the answers. My students were willing to do the work and think. (Hi2)

> ... They could meet my expectations. ... The supporting teacher told me that they knew my requirements. (Li2)

During the second interview, the co-researchers were also asked to tell the role of a teacher in formative assessment classrooms. Nine of them reported that they were to guide students to learn through questioning, discussion, and to have critical thinking. Another five co-researchers remarked that they should help students learn by asking them questions, answering their questions, and stimulate their thinking. They should also help students understand how much they had learned. One of the five co-researchers stated the following:

> ... I should promote the learning of the students and help them learn. It was difficult but I did try my best. I asked questions instead of telling them the knowledge. (Hi2)

Another co-researcher described the interaction among the teacher and the students during various activities, and told her idea about the equal relationship among

the teacher and students, but the attentiveness of the students was also emphasized. She stated,

> ... There is equal relationship among the teacher and the students. It is different from the past. It was the one-way relationship in the past: the teacher had the power, so s/he talked and students listened. During the teaching practice, when the students listened to me, the lesson was conducted smoothly; otherwise, it was a mess. We should exercise our power at the right time. Nowadays, there is a more equal relationship among the teacher and the students. (Mi2)

After studying the module of curriculum studies and undergoing the two teaching practices, most of the co-researchers had a better understanding of formative assessment, their role as facilitators of various activities and students' role as active participants. The importance of formative assessment was emphasized. However, some of them still considered class discipline and the attentiveness of the students as the most important issues in classroom teaching.

The above data show most of co-researchers claimed that they did not have any experiences of formative assessment in their previous education. They thought assessment was about tests and examinations. A few of them had some experiences in their upper secondary or tertiary education, but the latter only reflected the practice of continuous assessment. Consequently, some reported the change of their teaching beliefs after undergoing the intervention untaken by the researcher and the teaching practice. All of them reflected that the practice of formative assessment helped them understand the learning of the students. Most of them claimed that they should provide activities to guide students to learn, and the students should take the initiative to learn. Only a few co-researchers mentioned that they should help students understand how much they had learned, and become responsible for their own learning. The following

section describes the influence of the co-researchers on the students when they implemented formative assessment in General Studies lessons.

6.2 Co-researchers, Students and Formative Assessment

This session reports the experience of the students in formative assessment activities. Firstly, the session below reports the students' knowledge of formative assessment when the co-researchers implemented formative assessment in General Studies classrooms during their student teaching. Then it describes the feedback from the students when they were interviewed by the co-researches by the end of the teaching practice blocks.

6.2.1 Students' knowledge of formative assessment

During the interviews after the two teaching practice blocks, the co-researchers were asked by the researcher the following questions:

1. Did you tell your students about formative assessment?
2. Please explain why you told them or why you did not?

According to the experience of the researcher, student teachers usually made 'new' didactic contracts (Brousseau, 1997) with the students at the beginning of the teaching practice block, in order to establish some basic rules and strategies in the lessons so that they could implement what they had learned in the Institute. This was especial important when they found their teaching styles or strategies were different from those of the regular teachers. They invited students to take part in various activities, class and group activities, in the lessons. When they observed that students liked to shout out answers, the student teachers requested them to raise hands, and get the approval from the teacher before they told the answers. During the first interview,

all co-researchers provided different reasons for their not formally telling students about formative assessment. Some doubted the abilities of the students (6). They reported the following:

> They were Primary four students. 'Formative assessment' is too academic to them. ... I did not think there was any need for them to know the name. (Ji1)

> I think it is a theory. It is the teacher to design something to assess students continuously. She needs not tell them she is going to assess them. (Gi1)

> After talking to the regular teacher, I considered it was not necessary to tell the students. ... It would confuse them. ... They only had tests and examinations in their heads. They had not thought they could do so many things in ordinary days. (Ai1)

> The primary two students are too young. They might not understand even I told them. (Ni1)

> I was afraid that they might not understand. Furthermore, I had to be in a hurry to finish the teaching syllabus. ... Furthermore, they did not say anything about the assessment tasks. (Ii1)

Three co-researchers reported that when they asked the students to do the worksheets, some students exclaimed, "Worksheets again!" One of them told the students, "Yes, the text is very simple. I want you to learn more." (Fi1) The answer told nothing about formative assessment and students' role in the learning and assessment process. The other co-researcher stated that she just smiled and did not say anything because she did not know what to say. She reflected,

> Now I know what I should say. I should tell them, "Yes, I ask you to do worksheets so that I will know whether you have learned or not." I should

have explained to them. (Gi1)

The other three co-researchers also shared the idea of co-researcher I that they had not received any complaints or queries about the assessment tasks from the students. One of them stated that the students should know the purpose of doing worksheets. She told the following:

> ... When I distributed the worksheets to them, I thought they should know that the teacher wanted to know how much they had learned. (Ci1)

Only one co-researcher reported students' acceptance of the assessment task. She said,

> ... They found them novel, and learned from these activities so the responses were good. It seemed that they accepted the assessment activities. (Bi1)

On the other hand, one co-researcher told the students that she wanted to know whether they really understood what she had taught in the lessons, when she asked them to finish the worksheets (Di1). Two co-researchers remarked that when they asked the students to fill in the self-assessment forms, they said, "I want to know how much you have learned (2) and how I have taught (1)." However, when another co-researcher told the students to give themselves marks and see how much they had leaned, some of them asked who would read the assessment forms (Li1). During the second interview, a co-researcher remarked that she told the students about formative assessment. She reported, "It seemed that they were familiar with the term and had such experience in other lessons." (Ni2) More co-researchers told the students that they wanted to know about their learning (5), or asked them to assess their

learning or the performance of their own group and other groups (4) during their second student teaching. The other co-researcher stated,

> When I invited them to do self-assessment, I told them that I was a student teacher; I wanted to know what they had not learned well, or what was not clear to them. ... (Ki2)

On the other hand, some co-researchers avoided telling students the purpose of the assessment activities. For example, one co-researcher just told the students, "I provide you with a question. You have to think about it." (Ci2) The other co-researcher remarked, "I printed the words, 'Students' Self-Assessment', on the assessment forms. They must have had a look at the words." (Hi2)

Thus, though the students participated in different assessment activities provided by the co-researchers, they did not have an adequate knowledge of formative assessment. Some of them might think it was the student teachers who wanted to know the effectiveness of their teaching, and the learning of the students. Therefore, it was not a surprise that some co-researchers reported students' resistance and doubts about the self- and peer assessment tasks, and their role in self-assessment. They reported the following:

> After finishing a chapter, I distributed the self-assessment forms to the students, asking them to assess their own performance. A student wrote, "I do not know. It is the teacher to assess my performance in the class." I wrote that he could also do the assessment himself. I did not mention this to the whole class ... Besides providing them comments, I also discussed with the class the questions that they raised in the assessment forms. During the discussion, one student asked, "The chapter was finished. Why are we holding discussion?" It seemed that the student only focused on the textbook knowledge. ..." (Hi2)

> A primary three student told me that he had not thought he could do the

self- reflection. He thought he only had to listen to the teacher, read the text, do the exercise, and sit for the examination. Those were all the things that he should do. He never thought he could assess whether he had been attentive and had behaved well in the lessons. ... (Ai2)

I asked the students to assess the participation of others and whether they understood. They were very anxious. They felt it was not good to assess others. One student was assessed to be not so good. He snatched the assessment form, erased the comment and changed it to 'Good'. ... (Di1)

... I told them that it was to assess whether they had learned or not, and whether my teaching was effective or not... The idea, teacher doing the assessment, surprised the students ... (Mi2)

6.2.2 Students' feedback on the assessment activities

By the end of the teaching practice blocks, each co-researcher interviewed their students in order to have their feedback on the assessment activities. By the end of the first teaching practice block, each of the thirteen co-researchers interviewed two to six of their students (Chapter 3.4.5, Appendix E1 & E2). Altogether sixty four students were interviewed. Two co-researchers did not interview any students: one claimed that her students should not know how to answer the questions, while the other reported that he did not have time to conduct the interview.

When the students were asked whether they liked General Studies lessons and to explain their reasons, it is not a surprise that all of them reported that they liked the lessons. Seventeen students remarked that they liked the lesson because there were games (6), group discussion (4), role-play (4), group activities (2) and presentation (1). Thirteen students emphasized that they had fun in the lessons because there were many and different activities. Eleven stated that they gained knowledge in the lessons. Three students remarked that the teacher was kind, while the other two said that they liked the teacher. Some students reported that they had the chance to explain things in detail

(1), raise questions (1), as well as play and learn (1). Four students reported that they liked the quiz contest (1) as they got either a small gift (1) or a bookmark (1).

When the students were asked about the activities they liked in the lessons, they reported they liked experimental activities (14), role-play (11), discussion or group discussion (9), games (7), answering questions (5) and receiving presents (1), working on the blackboard (5), quiz contest (6), puzzle (3), watching the Educational Television programmes (3), group activities (2), being a 'junior teacher' (1), and observing photos or pictures (1). Among these activities, experimental activities, role-play, answering questions and working on the blackboard served as assessment activities to assess the learning of the students.

By the end of the second teaching practice block, the co-researchers were asked to interview some quiet students in order to understand different perspectives of the students. Fifty-three students were interviewed by the thirteen co-researchers. They named the different activities provided by the co-researchers, such as answering questions, brain storming, observing photos or pictures, pasting the sentence strips or matching work on the blackboard, watching the Educational Television programmes, filling in self-assessment forms, quiz contest, doing worksheets, group activities such as survey and collecting data, group discussion followed by presentation or performance, drama, experimental activities, games and role-play. During their second student teaching, the co-researchers provided more varieties of learning and assessment activities to promote the learning of the students and to assess their understanding.

During the two interviews, when the students were asked whether the activities helped their learning and to provide explanations, sixty-nine students agreed the activities helped their learning but four could not provide any explanation. Students remarked that when participating in different activities, they discussed (2) and listened

to others' opinion (5) , cooperated with others (3), understood the feelings of the others (2), and could assess other students (1). Moreover, one student stated that during discussion he had the chance to talk with his peers and it trained his patience (Ki2s2), while another student said that they were trained to listen and concentrated their attention (Ji2s1). Others reported that they learned more (6), understood more (3), played and learned (3), and were happy (2). Some reflected that they learned through their own thinking (3), while some found it was easier to learn and understand (2). However, some students held the traditional view of learning. They reported that through different activities they found it easier to remember what they learned (4), and had deeper impression and remembered it well (5). On the other hand, nine students did not provide any response to the question. The other two said that they did not know and one said "no" to the question.

When the students were asked how they knew that they had learned, students reported that they finished the tasks in the lessons (21) such as games (4), role-play (3), doing worksheets (2), group discussion (2), group work (3), working on the blackboard (1), experimental activities (1) and puzzle (1). Some stated that they did the worksheets or the workbooks at home (16), and answered questions in the lessons (2). They also knew how to apply the newly learned knowledge (2), and understood the feelings of others after doing different activities (2). Some of them held the view of active learning, including self- and peer assessment. They mentioned the following:

> We tried to do the experimental activities. We tried to use the stuffs so we learned. (Ki1s3)

> I discussed with other classmates, and checked whose idea was correct. It helped me see whether one's idea was correct, and the difference between my idea and theirs. (Bi1s5)

> I had an answer in my heart. When it was wrong, I would know. Then I would have revision on that part. During discussion, when the others had learned but I had not, I asked them. They told me so I learned. (Ji1s3)

> The teacher invited us to check the answers. I did check the answers. (Ci1s1)

On the other hand, some students reflected that when they did the revision at home (10), or when their family members (7) or private tutors (1) asked them questions, they knew the answers. One of them proclaimed, "When I did the revision, without reading the book, I could recite it." (Mi1s2) However, some students held the traditional view of learning. They reported that they knew they had learned because the teacher taught them (10), or they paid attention to the teacher in the lessons (3). One of them emphasized, "I liked to listen to the teacher." (Ji1s2) Two students reported that they learned after watching the Educational Television programmes. On the other had, six students did not provide any answers to the question, Three students said that they did not know . One of them added, "I had never thought of this." (Li1s3)

When the students were asked what the co-researchers did to help them when they did not understand. Eighty-seven of them reported they raised their hands to ask the co-researchers. Then the co-researchers answered their questions, taught the whole class, asked them questions, or emailed the website to the student so that he could find the answer himself. Twenty-six students claimed that during group work, they only asked their classmates for help; eight of them reported that they asked the co-researchers or neighbouring classmates to help them. Other students reported their different responses such as, thinking it over (2), doing revision (2), reading the textbook (1), listening to others (1), asking the co-researcher to invite a classmate to help him (1), asking his parents for help (1) or asking the co-researchers during recess (4).

When the students were asked whether they had answered any questions during the lessons, and what the co-researchers did when they did not know how to answer, one hundred students replied that they had answered questions during the lessons, but three provided no answers to the second question. Twelve students reported that when they did not know the answer, they told the co-researchers. Then the co-researchers asked them to sit down (5), invited the others to answer (5), asked them to try (3), asked him to listen to the others (1) or taught them (7). Some of them reported the following:

> The teacher invited the others to answer ... until someone could answer. If no one could answer, she told them the answers. (Hi1s6)

> The teacher told me to sit down, think it over, and tell her if I thought of the answer. (Li1s2)

> ... The teacher asked us to be brave to answer. She said it did not matter if the answer was wrong. (Ii2s1; Ii2s2)

Some students reported that when they did not know how to answer, they thought it over (4) and let others answer first (5). One of them emphasized that there must be someone who knew the answer (Li1s1). Some students were passive in learning: they said that they listened to the answers of the others (3), or asked their classmates to help (11). On the other hand, two students mentioned that they just said something. One of them reported that it was better than not to say anything. When the answer was wrong, the co-researcher told him to sit down, and invited the others to answer. When it was correct, the co-researcher praised him (Ji1s4). However, some students remarked that when they did not say a word, the co-researchers responded in different ways, e.g., they asked other classmates to answer (2), let them stand for a while (2), told him that

it did not matter (1) or asked him to sit down (1). On the other hand, six students provided no response to the two questions, and other four students claimed that they did not know how to answer the questions, raised by the co-researchers during the interviews.

When the students were asked whether questioning helped their learning and to say how it helped, sixty-three students agreed that it helped their learning but seven of them did not answer the second question. Eight students reported they could answer the questions, so questioning helped their thinking. Their answers show their different views of learning. Some took an active role of learning, including self-assessment. Some emphasized rote learning and their learning was textbook-oriented. Their answers also portrayed their teachers' 'quasi-questioning'. They mentioned the following:

> I am happy that I had the chance to answer. We should speak up but not be like dummies. (Ai1s2)

> When I provided an answer ... I should have learned. (Ki1s3)

> When I answered and it was wrong, the teacher or the classmates told the answer. Then I knew the correct answer. ...Comparing my answers with the answers of the other classmates, I knew which part of my answer was correct and which part was wrong. (Ii1s3)

> After the teacher asked the question and I provided the answer, I could remember the answer well. Then when I did the homework or was asked by others, I could answer. (Li1s3)

> The teacher answered our questions. (Di1s4)

> All the questions were from the textbook. It was to test whether we could

remember it ... When I answered the questions, it meant I had learned the content of the textbook. (Hi1s4)

Seven students said that they learned more, as some questions were not from the text (2). Eight students replied that questioning helped their understanding. One student explained, "It helped test whether I had learned or not." (Ki1s1) Another student reported how students were helped by questioning, "Some topics were difficult. The teacher asked questions, simplified them and asked us again. Then we could answer easily." (Hi1s3) On the other hand, the feedback from four students reflected the co-researchers' use of questioning for revision. They mentioned the following:

After the teacher taught us, she asked us questions. We revised what we had learned, ... (Ji1s4)

I did the revision and read the text. Then when the teacher asked questions, I knew how to answer. (Gi1s5)

However, four students held the view of passive learning. They reported that questioning helped their learning as they listened to the answers of the others. They mentioned the following:

I listened to the others. If it was correct, I remember the method and did the homework accordingly. I listened to the answers of other classmates and understood the reasons. (Ci1s5)

I listened to the answers of other classmates and memorized them. (Gi1s3)

If the question was difficult, I listened to the others' opinion. Then I thought it over. (Bi1s5)

On the other hand, twelve students did not provide any answer to the question raised by the co-researchers during the interview.

When the students were asked whether they knew how to do the worksheets and what the co-researcher did when they did not know how to do them, ninety six students replied that they knew how to finish the tasks and only three of them did not provide an answer to the second question. However, six students reported that they only sometimes knew how to do the worksheets. Twenty-eight students asked the co-researchers for help. One student reported that the co-researcher first asked her to think it over. If she still could not do the work, the co-researcher explained to her (Ai2s2). However, another student remarked that she did not ask the co-researcher for help and she only asked the classmates to help her (Ki2s2). Two students reported their different responses when the co-researcher did not tell them the answers. They mentioned the following:

> When the teacher did not tell me, I checked whether the neighbouring classmates could help me. (Li1s4)

> When the teacher did not tell us, I asked my private tutor. (Ei1s1)

Furthermore, students reflected that when they did not know how to do the worksheets, they asked their classmates for help (25). When the classmates could not help them, sixteen of them asked the co-researchers for help. Some thought it over (4), or did the revision first (1).

By the end of the second teaching practice block, the students were asked about the expectations of the co-researchers on them in the lessons. Students mentioned that they should be actively engaged in the lessons (3), figure out answers themselves (2), answer all the questions clearly (2), do the assessment about his own performance and

learning in the lessons (1), and learn more (1). They emphasized they should cooperate to answer questions, to do the work (15) and to do worksheets together (11) during group discussion. All these were about their learning but some just talked about the regulation of activity. They remarked on the following: to be quiet or not to be noisy (23), in order to listen to the teacher (4) and the classmates' opinion and experiences (1) so that they could learn the knowledge (3), to observe the rules in the classrooms (2), to raise hands in order to answer questions (1), and to raise hands more often in the lessons. Furthermore, they should not disturb the other group (2), chat (1), or talk about irrelevant affairs (1) during group discussion. On the other hand, four students reported that the co-researchers did not have any expectations on them. Two of them said the co-researchers were nice and lenient with them (2).

When the students were asked whether they met the expectations of the co-researchers and to provide an explanation, thirty-seven students agreed they meet the expectations of the co-researchers but fourteen of them provided no explanations. Some students remarked that they met the expectations because they cooperated and discussed what they did not understand (3), understood and learned (2), figured out how to answer the questions (1), told his ideas (1), knew the answer (1) and knew how to do the classification work (1). Some reported about the regulation of activity: they kept quiet (4) as he had not time to talk (1), got along well with each other (3), listened to the teacher (3), were serious in their work (2), closed the book (1), behaved well and got some reward (1), and raised his hand only when he knew the answer (1). A student mentioned that he did not leave his seat nor talk loudly (Ni2s3) while the other said that he did not talk about anything that was irrelevant (Ki2s3). Some students mentioned the following:

> When the problem was difficult, we paid more attention in the discussion.

When the problem was simple, we were not serious. (Ni2s6)

Though I did not know the answer, I was brave enough to ask. During the group activities, some talked about funny things. Some did not concentrate their attention and had bad temper. (Ji2s1)

On the other hand, three students did not provide any answer to the question. Five students replied that they did not meet the expectations of the co-researchers but provided no explanation.

When the students were asked about the influence of the teachers' expectations on their learning, they replied that it was helpful (4) and easier for them to learn (1), they learned more (4) or faster (1), and had deeper understanding (1). Other students reported that during discussion, they shared their opinions (2), learned to work together (2) and listened to others (2). One student reflected that he understood the lesson more through the lively activities. Another student reflected that she understood herself through self-assessment but it was dull to do the assessment (Hi2s1). However, some students remarked about the classroom atmosphere or discipline. They reported: they learned in the quiet atmosphere or observe the regulations (6), and studied in the happy atmosphere (2). On the other hand, five students claimed that the teachers' expectations did not have any influence on their learning, but provided no explanation while three students did not provide any response to the question.

In short, according to the experience of the researcher, most of the students in the teaching practice schools welcomed student teachers as they provided various activities, especially group activities, in the lessons. Most of them were used to the different teaching styles or strategies of student teachers. Furthermore, in general, the co-researchers invited and welcomed those out-spoken students to be interviewees. Therefore, it is not a surprise that when the students were interviewed by the

co-researchers, most of them claimed that they liked the various learning and assessment activities in General Studies lessons. Some of them told how the assessment activities, e.g., questioning, doing worksheets, working on the blackboard, and role-play, etc. helped their learning and understanding. Their answers also portrayed the co-researchers' implementation of formative assessment in the classrooms. Furthermore, most of them did answer questions in the lessons. Actually, in most classes, it was always a small portion of the students raised hands to answer questions. Some answers also showed their traditional view of learning: to remember well what they had learned was important in learning. A few mentioned that they had learned knowledge in the lessons because the teacher taught them and they listened to the teacher or ideas of other students. On the other hand, some pupils could not tell how the activities helped their learning or refused to answer the question. It was because it is not the practice of Hong Kong students to reflect on their learning. Furthermore, some students reported that they knew they had learned as they could do the tasks, e.g., doing worksheets or answering questions, in the lessons. Some students claimed that they raised hands to ask their teachers if they had not learned; most of them reflected that they were helped by their peers. Only a few tried to solve the problem by him/herself.

Students provided diversified answers about teacher's expectation on them. Most of the answers were about the regulation of activity: to be attentive in the lessons, to keep quiet, to raise hands before they were invited to answer questions and to be co-operative during group work, etc. Without clear explanation from the co-researchers, students might not see the purpose of raising hands nor see the value of peer assessment in learning and assessment. They might just take these as measures of keeping good class discipline.

6.3 Co-researchers' Reflection on Their Implementation of Formative Assessment

As the co-researchers were trained to be reflective practitioners, they were asked to assess their assessment work during the second teaching block, and compare their implementation of formative assessment in the two teaching practice blocks. Furthermore, their dialogue with the researcher during the two interviews also helped illustrate their professional development. The following shows their understanding of formative assessment, the use of assessment activities such as questioning, observation, worksheets, self- and peer assessment, the regulation of activity, and the assessment system.

6.3.1 Understanding of formative assessment

During the interview after the first teaching practice, when the co-researchers were asked how they aligned assessment activities with learning activities, two of them reported the following which illustrated that they did not have comprehensive knowledge of formative assessment:

> Is it counted as part of the total marks? ...I prepared a lot teaching aids, e.g., pictures. I taught happily as I provided students with many activities ... I did not care that I spent a lot of time in preparing the teaching materials. ... If I only talked and they just looked at me, I did not know whether they had learned or not. ... Before the role play, I asked the class to watch out what was omitted ... though no marks were provided. I considered this as one kind of assessment. I could then make adjustment to my teaching. (Ai1)

> I asked students to do the classification on the blackboard. The results were shown immediately. I knew whether they had learned or not. Was this assessment? (Ni1)

However, a co-researcher emphasized her concern of her teaching effectiveness when she invited the students to do various activities. She professed,

I asked the students to do group discussion ... finish the worksheets .... It was me who wanted to know whether my activities were useful. (Di1)

During the second interview, some of them reported their better understanding and started to concern about their students' learning, but not just their teaching. They reported the following:

I had clear concept this time - what assessment was. I spent more time on assessment. I gained more experience. (Ki2)

This time, I was surer about my role as a teacher, my professional role. I knew what I had to do. I was enthusiastic about the learning of the students. I wanted them to learn well and I wanted to teach well. I prepared well for the lessons. (Mi2)

This time, I first considered the whole environment and the performance of the students when I prepared the worksheets. I did the follow-up by having revision in the class ... the lesson was also conducted smoothly. I spent more time in taking care of the responses of the students before I continued to teach. This time, the focus was different: I was aware of the responses of the students and how to do assessment. (Bi2)

6.3.2 Interactive formative assessment

Some co-researchers reflected on their practices of questioning and observation during their student teaching.

6.3.2.1 Questioning

During the first interview, two co-researchers mentioned their worries of the tight teaching schedule and their not implementing authentic assessment in the following aspects:

When I asked questions, I was afraid that they might give wrong answers,

or they did not know the answers, then I had to say it again. I would be teaching behind the teaching schedule. (Ei1)

At the beginning of the teaching practice block, I asked a lot of questions. For each question, I asked three to four students. There was overrun. Consequently, I had to control the time. I set some restrictions. For each question, I only asked one student to answer. It was much better." (Ji1)

During the second interview, co-researcher J showed her professional development by taking students' thinking into consideration. She mentioned:

... The students were used to open the textbooks during the lesson. When I asked them questions, they opened the textbooks to search for answers though I told them not to do so. It was only the last one or two weeks that they did not open the textbooks and thought. Gradually, I noticed that fewer students opened the textbooks. ... At the beginning of my student teaching, it took longer time for the students to think and there were not many ideas. Later it was faster and students presented more ideas. I made the worksheets simple ... I printed some pictures to stimulate their thinking and asked them to tick or circle the correct answers to facilitate their thinking. Just a question could not facilitate their thinking. (Ji2)

A co-researcher remarked her better performance in the second teaching practice block, and related the importance of the attitude of the teachers and the need of slimming the curriculum. She reported the following:

... teachers had to slim the curriculum to allow students to speak or share their ideas. Then, they might know whether the students had learned or not. All these depended on the attitude of the teachers. I could do nothing on formative assessment, if I did what I had done in the first teaching practice block – just talked and taught. (Ai2)

Two co-researchers reported that they performed better during the second teaching practice as they asked more questions and talked less. Other two

co-researchers reflected their better practice in questioning. They reported the following:

> I knew more and was clearer about questioning. The questions should be specific. Usually I raised questions at the beginning of a lesson, before and after an activity. (Ii2)

> I had improved the questioning technique but was not quick in response. I did not expect students to give such answers. That hindered the progress of the lesson. (Li2)

However, co-researcher L did not see the value of the 'alternate' answers in helping clarify students' ideas. Furthermore, a co-researcher did not invite students to discuss the wrong answers. Another co-researcher showed that she did not know how to deal with wrong answers. They reported the following:

> Sometimes they did not analyze my question and shouted the answers out. Their wrong answers misled other students, and then I had to guide the students back onto the right track. (Fi2)

> In doing classification, I did not know how to reject students' ideas. Consequently, more time was spent on the discussion. (Li2)

Furthermore, during the second interview, three of the fifteen co-researchers reported that there was room for improvement, for example, the questioning technique and setting better questions. One of them stated that though eventually, students gave the correct answer, she knew that her question had misled them (Ai2). The fourth co-researcher admitted that he only asked students the question, "Do you understand the lesson?" If they did not, he explained to them again (Oi2).

6.3.2.2 Observation

When the co-researcher was asked about the practice of observation in the lessons, a co-researcher mentioned the following:

> This time it was better. I grasped the idea (I applied what I had learned in the Institute). I knew how to support students and their learning. I was not familiar with the idea during last student teaching. This time the students were well-behaved. (Di2)

6.3.3 Planned formative assessment

Some co-researchers reflected on their use of planned formative assessment activities. Four co-researchers stated that they did more by providing students with more activities while other co-researchers remarked that they provided the students with more worksheets (5), and more varieties of activities such as experimental activities, discussion and worksheets (3), self- or peer assessment forms (6) and discussion cards (1). Another co-researcher reported that she should have provided students with more activities (Ei2).

6.3.3.1 Worksheets

A co-researcher showed her understanding about the use of worksheets during the first interview. She said,

> At first, I thought worksheets were to be finished at home. Now I know that when they are finished in the lesson, I immediately know the learning of my students. (Bi1)

During the second interview, two other co-researchers also reflected that from the worksheets, they understood how much the students had grasped. Another co-researcher reported her use of worksheets,

> I provided a question in the worksheets. Pupils searched relevant information, held discussion and reported to the class. (Ci2)

Moreover, a co-researcher reported the benefits she received from discussing and jointly preparing worksheets with other student teachers in the same teaching practice school (Ji2).

On the other hand, a co-researcher reported about the provision of grades in the worksheets and thus showed that she did not accept the ideas of assessment for learning. She stated the following:

> The last time I did not provide students with grades, but this time I provided grades. I considered this was also an assessment. After I had ticked the correct answers, grades were provided according to the number of the correct answers. Thus, the grade also served as a feedback on the performance. Furthermore, students were used to receive grades. It took more time to write comments for each student. On the other hand, for some performance, I did not know what should be written down. (Ii2)

Furthermore, four co-researchers' reports showed the traditional view of learning and the belief of the passive learning:

> Students remembered well what they had learned after they spent some time in writing in the worksheets. (Bi2; Ji2)

> It was not possible to spend a lot of class time in preparing a 1-minute activity. By viewing the demonstration in the Educational Television programmes, students could apply what they had learned at home. ... (D2w3)

> I provided students with the worksheets to guide their discussion, otherwise, they might not present what they had to learn. (Hi2)

6.3.3.2 Self- and peer assessments

Some co-researchers remarked on the benefits in providing students assessment forms, i.e., understanding students' learning (3) and the effectiveness of her own teaching (1). They stated the following:

> It should be comprehensive. I provided a few assessments in the first teaching practice block. This time after I had collected and read the assessment sheets, I noticed the thinking of my students, the problem of communication and their good performance. They told me they had learned a lot from the examples that I provided in the lessons (when I asked them how much they had learned.). (Ci2)

> From the self-assessment forms and worksheets, I immediately knew the learning of the students. This time I did more assessment and follow-up. ... I knew clearly every one of them. It was helpful. (Li2)

> I should have done more assessments, and self-assessment was good. ... I considered self-assessment reliable. (Ki2)

> I wanted to know my performance, therefore I provided students with more assessment activities (assessment forms).(Ii2)

A co-researcher reported her reflection on her practice of questioning, and students' ability in doing self-assessment. She remarked the following:

> Sometimes I asked myself: did I ask too much? In doing self-assessment, did students understand the questions? It was because they did not write too much (concerning the topic). Was it the case that they did not know what they had not learned? Were there other problems? (Ei2)

Concerning feeding forward after collecting assessment forms from the students, four co-researchers reported different approaches they had adopted. One of them remarked that the long, written feedback was welcomed by the students but not the regular teacher. She did the same in teaching the other subject. The other two

researchers did not return the assessment forms to students, as the assessment was conducted in the last lesson. A co-researcher reflected that not feeding forward could not help students improve their learning. They reported the following:

> I provided students with self-assessment. They wrote their questions. I provided answers in the assessment forms, returned the assessment forms to the students, and talked to the class in the lesson ... The response was good ... A student said, "You write the thesis again!" I also taught them the other subject, visual art, and provided feedback to them. The regular teacher said I wrote very long. When she taught the students again, it would be a difficult job for her. (Hi2)

> I did not feed forward after I had collected their peer assessment forms. Thus they did not know what to do and how to make improvement in the next group activity. (Gi2)

6.3.4 Regulation of activity

Furthermore, five co-researchers made use of various reward systems and some sort of competition to regulate the activity, or to keep the students on task. However, only one co-researcher realized that only some pupils tried to answer every question, and some were still inactive. They reported the following:

> In the lessons, we played a game: if a student could write the answer on the blackboard or answer the question, he got a sticker ... (A1w3) ... I also conducted contests, row by row; then I gave them some small gifts ... (Ai1)

> ... I told the students a story. Then there was a competition. The students listened attentively; most of the students raised their hands to answer. ... (M1w3)

> In the quiz contest, I knew the students had learned about the work of the medical workers. (N1w2)

> ... I made use of the 'reward system' to help them actively participate in the classroom activities. (J1w1)

> Starting from the second week, I made a change in the 'Reward System'. I rewarded the performance of a group instead of that of individual students. I observed that students were actively helping their group members ... Those of the middle level became more willing to answer questions and discuss with other classmates. Those who were active in the class were more active. A few students were still listeners ... but in the group contest, some students wanted to win and tried to answer every question. There was confusion. (L1w2)

On the whole, during the second interview, the co-researchers commented on professional development. After the intervention and undergoing the student teaching, some co-researchers proclaimed that they had better understanding of formative assessment, e.g., about questioning and doing worksheets. The main concern during the first teaching practice block was their own teaching, and to finish the teaching syllabus. Some co-researchers reported during the second teaching practice block, they asked more and better questions; some started to care about students' needs and tried to stimulate their thinking in preparing the lessons. However, due to their experience of the traditional style of learning, some did not know how to deal with wrong answers, nor see the value of exploring the wrong answers with the students. Some reflected that they had to improve their questioning technique. When the students were well-behaved, the co-researcher could observe the whole class.

Some co-researchers reported that they provided more students with more assessment activities during the second student teaching. Some admitted that they provided students with worksheets in the lessons in order to assess their learning.

learn better in writing down something, and a co-researcher did not accept the idea of not providing grades in the worksheets. Compared with the first teaching practice block, some more co-researchers provided students with self- and peer assessment forms during the second student teaching. They reflected that such practice helped them understand students' learning and their teaching effectiveness. A co-researcher remarked the students' self-assessment was reliable. Some co-researchers returned students the assessment forms, but some did not as the assessment was conducted in the last lesson. During the two teaching practice blocks, the main concern of most of the co-researchers was the regulation of activity. Some co-researchers started to regulate the learning of the students during the second student teaching, as they had experience and more confidence in their teaching. Some co-researchers made use of different reward systems, or adopted that of the teaching practice schools to keep class discipline, make students attentive, or participate in the activities in the lessons. The following section describes to what extent the co-researchers implemented what they had proclaimed.

6.4 Comparison between the Interview Data and the Videotaped Data on the Implementation of Formative Assessment in General Studies Classrooms

The previous sections (Section 5.3; Section 6.3) described how the co-researchers of the present study reported, reflected and compared their implementation of formative assessment in General Studies lessons during the two teaching practice blocks. Schoenfeld (2002) believed one's epistemological world view should contribute to shape one's instructional practices. One of the ways to tease out the relationship is to look at their practices. Therefore by observing the videotaped lessons, the implementation of formative assessment by the co-researchers would be

Cohen (1990) illustrated that though she saw herself as a success for the new policy of mathematics education, observation of her classroom revealed that the innovation in her teaching was filtered through a very traditional approach to instruction. Her practice did not match with her ideals. Did the co-researchers of the present study implement what they had proclaimed? The following section compares what the co-researchers reported during the two interviews with what they did in the classrooms which were recorded in the videotaped lessons during the second teaching practice block, with respect to the criteria for observation: rich questioning, effective feedback, peer and self-assessment, and regulation of activity (Section 5.4).

6.4.1. Rich questioning

Concerning wait time, all the co-researchers reported that they provided wait time for students to think, before they were invited to answer questions. However, in the ten videotaped lessons, students shouted the answers out immediately after the questions were raised. Some co-researchers also admitted it was always the few students who shouted out the answers. Thus the purpose of providing wait time was not accomplished, even though sometimes the shout-out answers were not accepted, or the students concerned were asked by the teachers to raise their hands and then called upon to answer the questions. Furthermore, this phenomenon occurred very often when the questions required simple or factual answers, especially during the question and answer sessions.

When the students observed the didactic contracts and raised their hands to show they wanted to answer the questions, the co-researchers spent about three to five seconds to look at the whole class, and then either invited those raising or not raising hands to answer. Those always raising hands knew that they would not be called upon by the co-researchers all the time. Usually a few more seconds was provided when the co-researchers had to call names from the seating plan, and the class was patient to

wait. In the video-taped lessons, it was found that most of the co-researchers and the students were not used to the dead silence of long wait time during the question and answer sessions.

Concerning the quality of the questions, only one co-researcher doubted whether her questions were too easy (Ci1). Three co-researchers admitted that they made use of questioning to teach something simple. In four videotaped lessons, the teachers led the lessons through by means of questioning. Two co-researchers did a lot of preparation and provided students with a large numbers of photos of different types of houses and various facilities in the new towns in Hong Kong (Av2; Ov2). They asked about what was shown in the photos or some specific terms about the houses. All these did not help assess the understanding of why such houses or facilities are provided, especially more than half of the population in Hong Kong are living in the public housing provided by the government. The co-researchers seemed to be satisfied with showing students photos, students' quick responses and their own explanations.

Furthermore, during the interviews, most co-researchers stated that when the questions were difficult, they provided students with worksheets, asked them to hold group discussion, and present the discussion results during the plenary sessions. Therefore, in the videotaped lessons, most of the questions in worksheets were better and more varied than those in the question and answer sessions. Some questions were big questions with some data or scènarios to stimulate students' thinking, or with guidelines for group work such as discussion, experimental activities, matching or classification work. Most of the students grasped such opportunities to consult other group members, so that they could finish their tasks in the lessons. On the contrary, when there was only one question but not enough information provided in the worksheets, though students loved role-play, they could not act their ideas out to show their understanding (Lv2). On the other hand, in two videotaped lessons, students

closed the textbooks and discussed among themselves (Gi2; Ji2) because the answers could not be found there. However, in another videotaped lesson, when a student provided an answer during class discussion, another student remarked that he had read the textbook in the lesson and he had just quoted the textbook (Ii2). A few students, when they were interviewed by the co-researchers, also reported that they could answer questions in the lessons because they could find answers from the text, or the questions were the same as those in the textbooks.

Concerning probing questions, all co-researchers reflected that they asked probing questions to enhance students' understanding during the interviews. Usually, they probed the whole class instead of individual students, due to the tight teaching schedule and the short time span in the lessons. Furthermore, they wanted to make the lesson proceed more smoothly.

Concerning the use of wrong answers, a few co-researchers reflected that they did not know how to deal with unexpected answers or wrong ideas. In the videotaped lessons, some of the co-researchers did not know how to deal with the 'wrong answers' and they were usually ignored. It was only after the student kept on asking, then the teacher invited him to explain and accepted his ideas as a new teaching point (Ji2).

Lastly, fourteen co-researchers reported that they had good relationship with the students. The good learning atmosphere allowed students to have the courage to ask questions in the lessons (Jv2). A student also reported in the interview that he met the expectation of the teacher, as he was brave to ask questions when he had not learned the material (Ji2s1).

6.4.2 Effective feedback

The co-researchers provided different reasons for asking probing questions to the whole class or a particular student concerned during the two interviews. In the

most of the co-researchers invited others to answer during the question and answer sessions. In many classes, some students kept on raising their hands while a student was providing an answer or the teacher was waiting for an answer from a student. It was rare that the co-researcher probed that particular student (Gi2). Furthermore, in some videotaped lessons, when the whole class could not provide what the co-researchers expected, they either probed the whole class, or simply told the answers in order to proceed quickly to another activity. During the class review sessions, five co-researchers just checked the answers with the students and provided explanations themselves. They did not provide chances for other students to follow up because they had to finish what was planned for the lesson. Furthermore, a co-researcher admitted that she had not thought that students would provide such an answer (Li2). Thus, it was observed in some videotaped lessons that some co-researchers did not provide feedback to the students because of their limited experiences.

During the interviews, all the co-researchers proclaimed that when they observed that students had not learned during group work, they explained to them. This was witnessed in most of the videotaped lessons: the co-researchers listened to the groups, talked with them, and explained to the class when the co-researcher considered the issue would help the others (Ii2).

6.4.3 Self- and peer assessments

During the interviews, some co-researchers reported that during the whole class review session, they invited students to observe others' work on the blackboard, role-play and presentations. Then the students did the correction when necessary, or held discussion to assess the others' performance. In a videotaped lesson, it was observed that students made corrections to the work on the blackboard such as classification or matching work. However, as students spent more time in group discussion, the teachers did not have time to invite opinions from the class after group

representations. It was the teachers who made the supplements or corrections.

In some videotaped lessons, only one worksheet was given to each group during group work or discussion. It was witnessed that the students did put their heads together to share their ideas and assess others' learning and understanding.

Most of the co-researchers proclaimed that they provided students with self- or peer assessment forms when they finished a chapter or a unit, or during some group work and presentation. Only in one video-taped lesson, the students did fill in peer assessment forms when they were watching the performance of the other groups. Furthermore, the co-researcher reminded students to follow the assessment criteria that they were told during the previous lesson (Hv2). No self- or peer assessment was witnessed in the three teacher-led lessons. One co-researcher invited students to do classification work on the blackboard, and asked the rest of the class to check the answers. However, there were only a few responses from the students (Oi2).

6.4.4 Regulation of learning

During the interviews, ten co-researchers claimed that they invited both raising and not raising hands to answer questions. From the videotaped lessons, it was found that most co-researchers depended heavily on those raising hands to provide the answers. They usually invited those who were quiet and did not raise hands to answer to assess their learning in the middle of the lesson. In order to regulate the activity in the lessons, they invited those raising hands at the beginning or by the end of the lesson to ensure smooth running of the lesson or because the time ran short. They also regulated the activity by asking students who misbehaved or were inattentive to answer questions.

During the interviews, most of the co-researchers mentioned that they could observe all the students during students' group work, as they circulated among the groups in the classrooms. Some claimed that they observed the attitudes of the students

during their group work. Two co-researchers reported that they listened to the discussions. From most of the videotaped lessons, it was found that the first concern of the co-researchers was to ensure the students were on task. They glanced at the students' work and answered their questions. It seemed that the top priority was the regulation of activity instead of the regulation of learning. Furthermore, some co-researchers reported that students liked group discussion because they could chat during group discussion. Thus they provided students with worksheets to ensure they were on task or talked about what the co-researchers expected them to learn. A worksheet was given to each group during the group work or discussion to ensure the students work together, and produce a better learning outcome.

In the videotaped lessons, groups usually consisted of three to four students and there were still some quiet or idle members. In contrast, students' engagement was better in the pair work. It was observed that some classes were not engaged in class activities or group work. Thus some reward systems were adopted by the co-researchers to make them answer the questions or participate in the group work. From the co-researchers' reports, it seemed to be workable in those classes. Therefore, in some videotaped lessons, the co-researchers wrote 'ticks' on the blackboard when they got the correct answers from the students, or when the group behaved well in the group work. There is evidence that the regulation of activity was more important than the regulation of learning in the classroom teaching of some of the co-researchers. To conclude, only when the co-researchers could survive in the classrooms, they did assess and help promote students' learning and the effectiveness of their teaching.

6.5 Summary

This chapter describes the professional development of the co-researchers during their student teaching. After learning the curriculum studies, General Studies Teaching

in Primary Schools, they grasped some of the concepts around formative assessment, which most of them did not have any learning experiences in their previous education. However, some of them did not have comprehensive knowledge even after the intervention conducted by the researcher. Most of them did not formally tell the students about its major characteristics. However, some of them told the students that they wanted to know about their learning during the second teaching practice block. Consequently, though the students liked the assessment activities, they did not necessarily understand their role in formative assessment. Most of the co-researchers were satisfied with their implementation of formative assessment in General studies lessons, and one of them also implemented it in her visual art class. When comparing what the co-researchers did in the videotaped lessons with what they proclaimed during the interviews, it was observed that some of them did not implement authentic formative assessment.

The next chapter summarizes the data analysis of the co-researchers' implementation of formative assessment in the 'figured world' of General Studies classrooms, and in terms of the intended curriculum, the implemented curriculum and the attained curriculum. Moreover, a model of implementing formative assessment in a subject classroom is presented. Finally, the last part describes how practicing teachers might bring about educational change for the authentic implementation of formative assessment in their subject classrooms.

Chapter 7

Discussion

7.1 Introduction

Since 2000, a number of different educational reforms have been launched in Hong Kong in order to promote the learning of students. Formative assessment is advocated as one of the measures to facilitate learning and teaching. The new General Studies syllabus (2002) (Curriculum Development Council, 2002b), which aims to prepare students to acquire knowledge, basic skills, values and attitudes in a knowledge-based society, has been fully implemented in local primary schools from primary one to six since the academic year 2004-2005. The new curriculum emphasizes a learner-centred approach and introduces different methods of formative assessment. The Assessment Reform Group (2002) emphasized that formative assessment is central to everyday classroom practice. It involves both teachers and learners in the learning process. They obtain and use information about students' progress towards learning goals. Among the major problems in educational change described by Fullan and Hargreaves (1992), the problems of overload, and isolation are more apparent in Hong Kong. Thus, teachers have to adopt educational reform measures in their own classrooms, and translate them into effective classroom practices in order to make educational change successful (Fullan & Hargreaves, 1992).

The Hong Kong community has been accustomed to summative assessment. As a teacher educator, the researcher wanted to study how student teachers implemented formative assessment in General Studies classrooms. She invited all the twenty-nine student teachers of the Postgraduate Diploma of Education (Full-time) (Primary) Programme and they all accepted the role of co-researchers of the present study. This helped to promote student teachers' ownership and involvement in the study

(Oldfather, 1993, 1997). Firstly, they underwent the intervention conducted by the researcher, which was in form of the delivery of a curriculum studies module and workshops before the teaching practice blocks, in order to let them learn, and experience the practice of formative assessment and the constraints encountered during the lectures. Then fifteen of them were invited and agreed to implement formative assessment in their classroom teaching during the two teaching blocks. They collected data on their teaching and students' learning, and reflected on their implementation. They wrote weekly reflection reports, videotaped a lesson, and interviewed their students. They were interviewed by the researcher after their student teaching. During the teaching practice, most of them saw the need of implementing formative assessment as it helped them understand the learning of their students and the effectiveness of their teaching.

This chapter consists of four parts. The first part summarizes the data analysis of the co-researchers' implementation of formative assessment in the 'figured world' of General Studies classrooms. The second part summarizes the implementation in terms of the intended curriculum, the implemented curriculum [1] (Third International Mathematics and Science Study, 1999) and the attained curriculum. Then a model of implementing formative assessment in the subject classrooms of General Studies is presented. The last part describes how practicing teachers may initiate, implement, and institutionalize educational change for the authentic implementation of formative assessment in their subject classrooms.

7.2 The 'Figured World' of General Studies Classrooms

[1] The implemented curriculum may not be identical to the intended curriculum. In classroom teaching, teachers interpret and modify the intended curriculum, the official curriculum guidelines and the textbooks, according to their perceptions of the needs and abilities of the students and create their own implemented curriculum (TIMSS, 1999).

The 'figured world' of the subject classroom consists of four components, i.e. teachers, students, subjects and theories of learning (Black & Wiliam, 2001). The following illustrates the co-researchers' implementation of formative assessment in the 'figured world' of General Studies classrooms in terms of the interactions among these components: the relationship of teachers and students to the subject discipline, the relationship between teacher and theories of learning, the student-teacher interaction and the concept of feedback, and student's role in the classroom.

7.2.1 Relationship of teachers and students to General Studies

The relationship of teachers and students to the subject discipline affects the nature of the 'figured world' of the subject classroom. The data analysis of the present study suggests that interventions provided by the researcher facilitated the training of the co-researchers to be reflective practitioners, assessors in the classrooms, and co-researchers in the study. During the study of the curriculum studies module, they learned the aim of General Studies, the major teaching strategies, as well as the concept and the major characteristics of formative assessment (Section 4.2). Though there were individual variations, most of them adopted the learner-centred approach and provided different activities to facilitate students to carry out inquiry and science investigations, in order to construct knowledge, acquire different skills. and develop appropriate attitudes and values. Some of them mentioned that they became aware of, and assessed students' learning in every lesson.

Their expectations of the students were different from their experiences of being good students in the classrooms (Section 4.2.1). Most of them reported that in their experience, a good student was attentive in the class and listened to the teacher. However, they expected their students to actively participate in different activities, and provide feedback to them so that they could understand the effectiveness of their

teaching and students' learning (Section 6.2.2). Thus, as student teachers[2], most of the co-researchers made new didactic contracts (Brousseau, 1997) with their students at the start of their student teaching, notably about the teaching and learning strategies and students' behaviour in class. For example, small groups were formed and students were encouraged to take part in various activities. They should raise hands to ask or answer questions. Only those who were quiet and raised hands would be invited to answer questions. Those not raising hands would also be invited to answer questions. Some co-researchers told the students to close their textbooks during the lessons, so that they would figure out answers themselves. Students were also reminded to be attentive and quiet during the activities. However, the co-researchers did not formally tell the students about the assessment for learning. Some of the co-researchers reported that by the end of the teaching practice block, nearly all the students in the class raised hands and were invited to answer questions. Some also reflected that they had more interaction with the students when they closed the textbooks and participated in the activities (Section 5.3.1.1.1). The students knew well that co-researchers might carry out innovative practices, and were accustomed to the practice of the student teaching. Therefore, from time to time, the didactic contracts were revisited and revised before new activities were carried out. During the interviews, most of the co-researchers reported that the students met their expectations (Section 6.3). Furthermore, all the students who were interviewed by the co-researchers reported that they liked General Studies lessons because they could participate in various activities, both learning and assessment activities (Section 6.2.2).

Most of the co-researchers tried to practise what they had learned during their student teaching in local primary schools. In preparing General Studies lessons, they

[2] Most of the co-researchers have to wear a badge with the words, student teacher, during their student teaching.

read the textbooks and reference materials before they wrote the lesson plans. The column, Assessment Activities, in the lesson plan served to remind them to align various planned or interactive assessment activities with the learning objectives and the learning activities. Some co-researchers heavily depended on questioning and observation to assess the learning of the students. Generally, key questions were designed and written in the lesson plans. In general, a lesson consisted of two parts: the question and answer session, and the group work and class review session (Session 5.4.2). Most of the co-researchers made use of the question and answer sessions for simple concepts in which they did not want to spend too much time, and set 'big' questions for group discussions. They also designed different tasks for group work sessions. Some of them admitted that the alignment of the assessment activities with the learning activities affected their choice of pedagogic instructions (Section 5.2.1). However, some co-researchers did not implement authentic formative assessment practices. Some made use of questioning during the whole lesson and expected short or factual information from students (Section 5.4.2). Some students reported that the teachers asked the same questions set in the textbooks or the answers could be found in the text. The students claimed that it was to help revise the content in the textbooks (Section 6.2.2). Thus, it suggests that it might be easier to change the intention of the co-researchers than their behaviour in the classrooms.

In preparing activities, some of the co-researchers reported that they considered the abilities and the needs of the students (Section 5.2.2). With the advice provided by the supporting teachers, they defined the gap between what the students could achieve without and with suitable help. Thus, they helped students scaffold learning either through individual seat work, group or class work. Not all the co-researchers invited students to fill in the self- or peer assessment forms during the two teaching practice blocks; some doubt the abilities of the students to engage in peer assessment, or the

value of peer assessment. Those who provided students with self- or peer assessment forms claimed that these activities helped them understand individual students and their potential. Because of time constraints, only a few co-researchers took care of the 'differentiation' of students in the class and enhanced the student-teacher interaction. Though students should be trained to make reflection on their own learning, most of them were told that it was the co-researchers who wanted to know about their learning or the teaching effectiveness. In doing group work, students not only learned to develop generic skills, integrate and apply knowledge within and across the key learning areas (Curriculum Development Council, 2001), they also had the chance to have more interaction and cooperation with their group members, and direct interaction with their own learning outcomes, e.g., their presentation or projects.

7.2.2. Relationship between teachers and theories of learning

In the 'figured world' of the subject classroom, teachers' beliefs about the nature of the subject and their theories of learning affect their teaching, and interaction with the students. The first level of management of situations, which favours the interactive regulation of learning process, is the setting up of situations through larger mechanism and classroom management (Perrenoud, 1998). In the present study, most of the co-researchers were allowed to put what they had learned in the Institute into practice during their student teaching. The rival pressure faced by most of the co-researchers and the regular teachers was to finish the tight teaching schedule (Section 5.2.4.2; Section 5.3.4.2). Different school ethos and students' behaviour in the classrooms, such as the emphasis on discipline during activities and the traditional view of learning held by some students negatively affected the co-researchers' teaching and their implementation of formative assessment (Section 5.4.3.5). On the other hand, some students stressed their active role in the lessons and actively participated in the activities. Some of co-researchers proclaimed that they were supported by the regular

or supporting teachers who advised them on their teaching and classroom management. However, some were asked to follow the practices of the regular teachers (Section 5.3.2.1). For most of them, the major issue in the classroom teaching was the management of a class of thirty-five students. Some co-researchers created their own reward systems, or adopted those of the regular teachers to provide students with some extrinsic rewards to encourage them to have good discipline in the class, participate in group work, or provide quality responses (Section 5.4.2.2; Section 5.4.2.4). After the co-researchers had gained experience and confidence in the regulation of activity in the first teaching practice block, some of them spent more time on interventions to regulate students' learning during the second teaching block (Section 5.4.2.4).

The second level that favours the interactive regulation of learning process is the interactive regulation which takes place through didactic situations (Perrenoud, 1998). During the second teaching block, most of the co-researchers showed the professional development by providing more and different kinds of meaningful activities to facilitate students' development of different abilities, and to assess their learning (Section 5.2.2). Some of them set quality and appropriate questions for group work/discussion in the lessons. They provided students with worksheets which were to be finished in the lessons, for difficult topics that required more thinking. Scenarios or pictures were also provided in order to facilitate thinking (Section 5.2.3.1.1). However, some co-researchers showed the traditional view of learning. They remarked that they provided students with worksheets because students could have a deeper impression and remember well after they had some writing (Section 5.3.3.4; Section 6.3.3.1).

On the other hand, most of the co-researchers usually asked something simple during the question and answer sessions. In the videotaped lessons, some provided chains of questions to develop and assess student's understanding, and an appropriate wait time was provided (Section 5.4.2.1). From the videotaped and interview data,

most of the co-researchers asked both those who raised their hands and those who did not to answer questions, to regulate the learning as well as to regulate the activity (Section 5.4.2.1; Section 5.3.1.1.1). However, a few co-researchers seldom invited those not raising hands to answer the questions for different reasons. For example, some were afraid that the students would ask them why they were invited. Some just accepted the shout-out answers to save time.

Some provided students with self- and peer assessment forms for group activities in order to regulate the activity and the learning, and to seek feedback on their learning. Some composed comments and returned students the assessment forms, but some just read them for the improvement of their own teaching. The findings suggest that the co-researcher did not place self- and peer assessment a high priority. Some doubted the abilities of the students in assessing themselves and their peers, and the benefit of peer assessment to the students.

7.2.3 Student-teacher interaction and feedback

Student-teacher interaction is the crucial relationship in Black and Wiliam's (2001) four-component model. In the video-taped lessons, from time to time, some of the co-researchers required students to close their books and do the thinking themselves, either in the question and answers session or during group discussions. Some of them made the emphasis to the students that the learning process was more important (Section 5.4.2.2). During the latter part of the teaching practice blocks, this 'new learning culture' of closing the textbooks and participating in the activities was established in most classrooms.

Black and Wiliam (2001) suggested feedback is an essential element in formative assessment and the learning process. During the learning and teaching process, both the teacher and the students are involved in feedback activities, either in the short term loop or in the long term loop (Section 2.4.3.1). In a lesson of thirty to

thirty five minutes, the class structure usually consisted of two parts, the question and answer session, and the group work and class review session. In the videotaped lessons, at the start of an activity, most of the co-researchers told students the learning goal(s) of the activity. When the co-researchers were not in a hurry to finish the teaching syllabus, most of them engaged more students in collecting feedback from them, and provided feedback to them in the short-term loop. Then they moved to the next part of the lesson and started teaching in another long-term loop. During interactive assessment activities, some co-researchers claimed that they observed students or asked them questions, noticed the responses of the students, recognized their needs and responded accordingly. However, in some videotaped lessons, the co-researchers were satisfied with short or the right answers provided by the students. Some did not provide feedback to the wrong answers, but answered the questions themselves because of time constraints, or their inexperience to deal with wrong answers. A co-researcher was afraid that the wrong answers would mislead the other students. On the other hand, the co-researchers' friendly relationship with the students encouraged them to ask questions during the learning process in or after the lesson (Section 5.4.2.1).

In the videotaped lessons, during planned assessment activities, most of the co-researchers designed various group activities such as group discussions or experimental activities. They moved among the groups to observe the students and listened to them (Section 5.3.1.1.2). They also collected feedback through worksheets, students' presentation or classification work on the blackboard in the lessons. They interpreted the feedback and decided the actions to be taken. When all the students had not learned, some of them intervened by explaining again immediately or in the next lesson. Only a few of them provided other activities to help students learn again, as they had to catch up with the tight teaching schedule. Some of them remarked that they

did not have time in the lessons to help individual students. Most of the co-researchers admitted that the feedback helped them understand their students, and adjust their teaching strategies accordingly. However, only some of them invited students either to assess their own work or other students' work (Section 5.3.1.2.1). Furthermore, most of the co-researchers claimed that through students' feedback, they understood each of the students more and could design appropriate learning activities accordingly (Section 5.3.1.2.3). However, only a few of them fed forward to engage students in the development of metacognition in the process of learning. They claimed that it was because of the short time span in a lesson. It might also be explained by the insufficient knowledge and experience of self- and peer assessment of the co-researchers. A co-researcher admitted that if she had provided 'useful' feedback to the students, they would have been able to make improvements according to the feedback. Then, the learning outcomes in terms of content knowledge, skills of learning and attitudes would have been promoted.

7.2.4. Student's role in the classroom

Black and Wiliam (2001) stated that the regulation potential of learning activities not only depends on the school context, but also depends on what students bring into the class, the classroom culture, and the way in which students invest themselves in the work. By the end of each teaching practice block, each co-researcher interviewed five to six students. Before the second teaching practice block, the co-researchers were asked to interview some students who were quiet or introvert, so that they could collect more different ideas from the students. During the interviews, all their students reported that they liked the activities in General Studies lessons (Section 6.3). Most of them reported that they fulfilled the expectations of the co-researchers, though some of them stressed their being attentive and quiet in the lessons. Some claimed that they benefited from the happy atmosphere and the lively activities in the lessons.

From the videotaped lessons observed, many of the students were motivated by the various learning and assessment activities, especially the group work, provided by the co-researchers in the lessons. During the question and answer sessions, many of the students were inactive; they were not engaged in the interaction with the co-researchers or the classmates. It was always the same few students who raised their hands and answered the questions, or those who shouted the answers out. Compared with junior level students, less senior level students raised hands more often in the lessons. It seems that the practice of 'no hands-up' (Black & Wiliam, 2001), i.e. students need not raise their hands but they are expected to answer questions at any time in the lesson, should be introduced to all levels of students, so that there will not be any more shouted-out answers and all pupils are required to provide an answer.

Some students remarked that they knew they had learned in the lessons because they could finish different tasks, answered questions, applied the newly learned knowledge, or they were helped by their group members or the co-researchers in the lessons. A few students reported that when they found the work challenging, they were more on task (Section 6.2.2). In most of the videotaped lessons, students consulted one another and were more engaged in group work (Section 5.4.2.1). Some students also reported their development on emotional and social skills. Besides being happy in group activities, they learned to understand the feeling of others, be patient, concentrate their attention, listen to and cooperate with other students (Section 6.2.2). Some students proclaimed that different activities in the lessons helped their learning and understanding: they could finish the workbooks without referring to the textbooks, or answer questions raised by their family members or their private tutors.

From the videotaped lessons observed, when the co-researchers could regulate the activities in the class, some of them expected more from the students: actively participating in the activities to learn the major concepts, critical thinking, as well as

reflecting on their own learning. In spite of this, some co-researchers invited students to comment on others' presentation or classification work on the blackboard, or make supplements as they wanted to involve all students in the activity. They also made use of self- or peer assessment to regulate the activity and students' learning during the group work (Section 5.3.1.2.3). They only emphasized their wish to learn about their teaching effective and the learning of the students. Thus, most of the students might not aware their new role in the 'figure world' of the lessons. This is illustrated by the incidents where some students rejected peer comments, doubted the work of self-assessment or asked about who would read the assessment forms. A student also admitted that it was dull to fill in the self-assessment form (Section 6.2.2).

7.3 Intended, Implemented and Attained Curriculum

The previous section describes the co-researchers' implementation of formative assessment in the 'figured world' of General Studies classrooms. This section summarizes the data analysis of the implementation in terms of the intended curriculum, the implemented curriculum (TIMSS, 1999) and the attained curriculum, as depicted in Figure 7.1.

7.3.1 Intended Curriculum

In response to the education reform launched in Hong Kong and convinced by the ideas of assessment for learning, the researcher embarked on the present study. She invited twenty nine student teachers and they all accepted to be the co-researchers of the present study. She introduced to them the intended curriculum: the concept and the major characteristics of formative assessment and the role of formative assessment in the education reform in Hong Kong. She also provided them with formative assessment activities in the lectures of the curriculum studies module, so that they had some personal experience of formative assessment practices. Before their student

teaching, fifteen of them were invited and they all accepted to implement formative assessment, the intended curriculum, in General Studies lessons during their student teaching. This is illustrated as the left box of Figure 7.1.

7.3.2 Implemented and Attained Curriculum

When the co-researchers prepared the lessons, they aligned the assessment activities, planned and interactive assessment activities, with the learning objectives and the learning activities. All the co-researchers claimed that they had implemented formative assessment during the two teaching practice blocks. A few co-researchers reported that they became more aware of the learning of the students when they implemented formative assessment in their day-to-day teaching in the classrooms. However, because of the supporting or regular teachers' emphasis on finishing the assigned teaching schedules, some of the co-researchers found that they did not have enough time to try various learning and assessment activities. Consequently, they confined the classroom activities to certain types, e.g., questioning or observation, or adopted the traditional practices of teaching and learning, in order that the major concepts were covered and the lessons could be conducted smoothly in a lesson of a short time span, thirty to thirty minutes (Section 5.3.4.2). The inflexibility of the teaching schedule, a major difficulty encountered by most of the co-researchers, made the implementation of authentic formative assessment difficult. Other constraints and problems included insufficient or lack of resources, different school ethos and classroom cultures, insufficient knowledge and experiences of the co-researchers, and assistance provided by parents or private tutors to the students after school. In order to cope with the above constraints and difficulties, and to implement this new assessment practice in General Studies classroom, the co-researchers created their own implemented curriculum, depicted as the box in the centre of Figure 7.1. Though most of the co-researchers claimed that they had implemented formative assessment

practices in their classrooms, the attained curriculum achieved by some co-researchers may reflect that they diluted or corrupted the authentic practices, which is shown as the right box of Figure 7.1. When the formative assessment practices were diluted or corrupted, the students might not enhance their learning or develop their potentials, nor might the co-researchers promote their teaching effectiveness efficiently. The following describes the major constraints and problems faced by the co-researchers to illustrate the implemented curriculum made by the co-researchers and attained curriculum that they had achieved.

7.3.2.1 Constraint on student teaching - time

Because of the tight teaching schedule, questioning was the most frequently used method, and right answers from the students were sought. Because of the short time span in a lesson, in order to finish the assigned teaching syllabus, some co-researchers admitted that they did not provide enough wait time, or probing questions, nor did they deal with students' responses or wrong answers. Shouted-out and simple answers were sometimes accepted. Some co-researchers did not ask students to extend or explain their answers (Section 5.4.4.2.2), nor allow other students to follow up; they just provided the explanations themselves (Section 5.4.2.2). Furthermore, some co-researchers claimed that they understood that taking care of differentiation among students is an important element in formative assessment (Black & Wiliam, 2001) and noticed the individual differences among students. However, they did not know how to take care of those few students who had not learned in a class of thirty-five students, in a lesson of thirty to thirty-five minutes. Some met the individual students during recess, but doubted whether it was feasible for a regular teacher (Section 5.3.3.3). Furthermore, from some videotaped lessons observed, the students were engaged and spent long time in group discussion, so that little time was left for the plenary sessions when sharing and peer assessment should be valued (Section 5.3.3.4). The above data

suggests that the authentic formative assessment practices were diluted.

On the other hand, one co-researcher was satisfied with her practice of requiring just one student to answer a question, in order to finish what was planned for the lesson and wrong answers were ignored. Another co-researcher was afraid of wrong answers because she thought that students would be misled, and she had to spend time to guide them back. Thus she invited the most able students to answer the questions. In order to catch up with the assigned teaching syllabus, a third co-researcher sometimes just taught the students according to the textbook, and asked the students questions to assess their understanding by the end of a lesson or after a chapter was finished (Section 6.3). These suggest the formative assessment practice was corrupted.

7.3.2.2 Constraint on student teaching - resources

Compared with the 'major' subjects, Chinese, English and Mathematics, General Studies suffers from a low status in the primary school curriculum in Hong Kong, and insufficient and lack of resources in most schools (Section 5.3.4.3). Some of the co-researchers spent a lot of time in searching reference materials, and in producing teaching materials of their own (Section 5.2.4.3). In some videotaped lessons, large groups of students (5-8) were formed for the group work or discussion (Section 5.5.2.4) or students just watched the experimental activities demonstrated by the co-researchers (Section 5.2.2). These suggest the authentic formative assessment was diluted. On the other hand, a co-researcher claimed that he was exhausted during the teaching practice blocks, and found no time to write comments on the worksheets (Section 5.2.4.3). Another co-researcher just asked the students to watch the Education Television programmes instead of asking students to do experimental activities (Section 5.2.2). All these negatively affected pupils' learning and suggest that the authentic formative assessment was corrupted.

7.3.2.3 Problem area - school ethos

The school ethos affected the design and the implementation of formative assessment activities in the classrooms. Some school principals' emphasis on discipline, and avoidance of noise and confusions during activities affected the co-researchers' trial on different learning and formative assessment activities. Some of the co-researchers were advised by the regular or supporting teachers not to do so many things in the lessons, nor to provide so many worksheets. Group work was not encouraged (Section 5.2.4.2). Consequently, the co-researchers might not seek support from the schools for their 'innovative' practices. Some school policies also affected the implementation of formative assessment and students' behaviour in the classroom. Though doing worksheets was a very popular assessment activity provided by the co-researchers, one of them reported that she seldom provided students with worksheets because she had to submit the worksheets for approval from the vice principal. Students of another school did not seriously do the worksheets which were prepared by the co-researcher, as they knew that the co-researcher was not allowed to return the worksheets to them (Section 5.3.2.1). The data above suggest the authentic formative assessment was diluted.

Because of the assessment system of some teaching practice schools whereby test and examination questions should be set according to the textbooks and workbooks, the co-researchers were told to find time in the lessons to follow the traditional ways of teaching. They had to read and explain the difficult words, teach the students how to write the words, and allow time for students to read the text and underline the important sentences before the end of the lesson. Some of them even had to teach the students how to do the workbooks, or the worksheets, which were to be finished at home (Section 6.3). Furthermore, the co-researchers had to follow the school policy to provide grades in the workbooks or the worksheets prepared by the schools. As exercises in the workbooks usually required students to copy answers

from the text, the co-researchers found it difficult to compose comments. They either praised the good handwriting or pointed out the mistakes made by the students but such feedback did not support learning. Moreover, some co-researchers followed the school assessment system of providing them with extrinsic rewards such as stickers, or gifts. They claimed that it was workable in keeping good discipline, and making students on task in the lessons (Section 5.4.2.4). All these suggest that the authentic formative assessment practices were corrupted.

7.3.2.4 Problem area - classroom culture

The regulation potential of any learning activities depends on the students and the classroom culture (Black & Wiliam, 2001). In some classrooms, the culture such as searching answers from the textbooks (Section 5.4.2.4) negatively affected the interaction among the co-researchers and the students in the question and answer sessions, and among the students in group work. Students' shouting the answers out (Section 5.4.2.1) also hindered the practice of formative assessment, as it did not allow other students to make use of the wait time to think and be engaged in the learning process. Thus the above data suggests the authentic practices of formative assessment were diluted.

Furthermore, the co-researchers had to cope with the different expectations and behaviours of the students in the classrooms. Some co-researchers admitted when they invited those who raised their hands to answer questions, they then realized that the responses were always from those at the front and near them. It was always those few students answering the questions. On the contrary, some co-researchers realized that some students knew the answers but were not accustomed to raising hands, especially in the upper primary levels (Section 5.3.1.1.1). They were used to the traditional way of learning - listening attentively to the teachers and working hard to complete the worksheets and workbooks. Some students proclaimed that they learned because they

had paid attention to and liked to listen to the co-researchers. Some just wanted to learn what was in the textbooks (Section 6.2.1). When they did not understand in the lessons, some were contented to remain silent and listen to others. Some students approached the co-researchers after the lesson, or sought assistance from their parents or private tutors (Section 6.2.2). All these negatively affected the interaction among the co-researchers and the students, and diluted the authentic practices of formative assessment.

7.3.2.5 Problem area- the knowledge and experiences of the student teachers

Being student teachers, most of the co-researchers' main concern in the classrooms was the discipline problem. Some co-researchers made use of questioning to warn students who misbehaved or daydreamed during the lessons. Some asked students to assess others' work during the class review sessions, because they wanted to involve more students in the activities (Section 5.3.2.5). Some emphasized the regulation of activity during group work (Section 5.4.2.4), and provided students with worksheets to ensure that they were on task, or guide them to discuss what they were expected to learn (Section 5.3.1.2.3). Some invited students to fill in the self-assessment forms to reflect on their learning during the last lesson of the teaching practice blocks, and did not return the assessment forms to the students. Some admitted if the students had received the assessment forms, they would have known how to make improvements (Section 5.3.1.2.3). Apparently, their focus was the effectiveness of their teaching and the usefulness of the activities. The above data suggest the formative assessment practices were corrupted.

Due to the insufficient knowledge and experiences of formative assessment (Section 5.2.1), most of the co-researchers did not formally tell the students about the concept and the major characteristics of formative assessment. Some co-researchers told their students that they wanted to know about their teaching effectiveness. Some

co-researchers did not have the knowledge of or underestimated the abilities of the students. Consequently, they reported that the students might not understand what formative assessment was even they were told. On the other hand, most students reported that they were expected to be quiet in order to listen to the co-researchers and other classmates in the lessons. Only a few stated that they should take the initiative role to answer questions and cooperate with others in the group discussion or group work (Section 6.2.2). These also help explain why some students asked who would read the self-assessment forms, reported that it was the teacher to assess his performance in the class and did not accept the adverse comment made by his group members (Section 6.2.1). Thus, these suggest the authentic formative assessment practices were corrupted.

All the co-researchers reported that they provided wait time, ranging from five seconds to one minute (Section 5.3.1.1.1). From the videotaped lessons, the co-researchers usually provided five seconds as wait time. Thus, the answer, one minute, tells that the co-researcher's conception of the 'long' period of the 'unbearable silences' (Black et al., 2003b). Some were also afraid that the 'long' wait time would affect the smoothness of the classroom teaching. Some of the co-researchers reported that sometimes no wait time was needed after they had raised the questions as students immediately shouted the answers out. Only a few doubted whether the students were very clever or their questions were too simple (Section 5.3.1.1.1). Some co-researchers did not have enough or necessary pedagogical techniques, or content knowledge to respond immediately to the students' wrong answers (Section 6.3), or to use the wrong answers to guide students' thinking and close their gaps (Section 5.4.2.1). Consequently wrong answers were ignored. Some co-researchers were also afraid that students would feel embarrassed if they asked them probing questions (Section 6.4.2). Students also admitted that when they did not know the answers, the co-researchers

did not blame them but invited others to help (Section 6.2.2). Moreover, as some students in the class liked to laugh at the others, a co-researcher did not invite the class to do peer assessment (Section 6.3). All these suggest the authentic formative assessment practices were diluted. Furthermore, some co-researchers were satisfied with providing lots of photos, and asked students questions about the factual data of the photos, then provided their supplements (Section 6.4.1). Some students also reported that the questions raised by the teachers were the same in the textbooks. They trusted that the purpose of questioning was to check whether they could remember the text (Section 6.2.2). Hence, the authentic practices of formative assessment were corrupted.

On the other hand, some co-researchers praised the students as clever or smart when they provided correct answers, but such feedback was not related to the learning objectives nor helpful to support learning (5.4.4.2.2). In a videotaped lesson observed, some students copied answers from the text when they were doing the worksheets, but the answers were accepted by the co-researcher. Some co-researchers emphasized they provided students with worksheets so that students had deeper impression and remembered the lesson well. Some just wanted students to have some homework to do after a lesson (Section 5.2.3.1.1). The above data shows that authentic formative assessment practices were also corrupted.

Most of the co-researchers did not understand the importance of self- and peer assessment in helping the development of students' metacognition. Some of the co-researchers did not provide students with peer assessment. When some co-researchers asked the students to do the assessment, they did not explain to the students how the assessment could help their learning. Most of them did not inform the students before the activities or discuss the criteria of the assessment with them (Section 6.2). Some returned the assessment forms through the monitors after the

lessons, and claimed that they had no time to discuss with the students and did not know the responses of the students (Section 5.3.1.2.2). On the other hand, a co-researcher doubted the use of peer marking. She was afraid that the students would change their answers and then she might not know the true picture of the students' learning. Consequently she did the marking herself (Section 5.4.2.3). The above data suggests the authentic formative assessment practices were diluted.

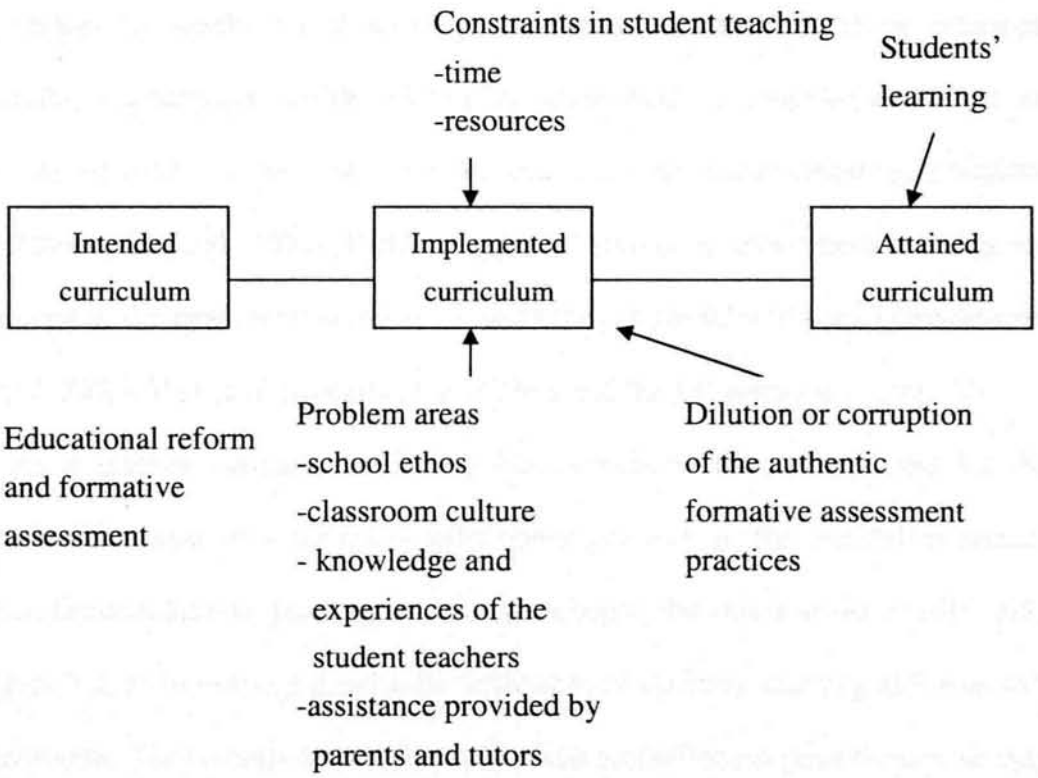
7.3.2.6 Parents' expectation/the assistance provided by parents and private tutors

Parents' expectation of students' reading the text during the lessons affected the co-researchers' planning of the lessons (Section 6.3). Some students reported when they did not know how to finish the worksheets or answer the questions, they did not ask the co-researchers or their classmates, but asked their parents or private tutors. Some reported that when the co-researcher did not tell him the answers, he asked his private tutor instead of figuring it out himself or consulting his peers (Section 6.2.2). The assistance provided by the parents and private tutors might refrain students from interacting with the co-researchers and other students in the lessons. The data above suggests the authentic formative assessment was diluted.

In short, formative assessment is emphasized in various education reform documents, and the new General Studies Curriculum Guide. After studying the curriculum studies module and having some experiences of formative assessment, the co-researchers accepted the researcher's invitation to implement formative assessment in General Studies lessons, the intended curriculum, during their student teaching. During the interview, most of the co-researchers claimed they practised formative assessment in the classrooms, and the implementation was successful. They also stated that students' performance in the class also met their expectation. In spite of this, the data analysis shows that there was individual variations in the degree of authentic implementation of formative assessment. In some classroom practices, the

implemented curriculum was affected by the constraints and the problems encountered by the co-researchers and the authentic formative assessment practice was either diluted or corrupted, as depicted in Figure 7.1.

Fig. 7.1 Intended, implemented and attained curriculum



7.4 A Model of Implementing Formative Assessment in the Subject Classrooms of General Studies

After analyzing the co-researchers' implementation of formative assessment in General Studies classrooms in terms of the intended curriculum, the implemented curriculum and the attained curriculum, this section firstly puts the data of the intervention of the present study into a model, the delivery model of the curriculum studies module, as depicted in Figure 7.2. Then a model of implementing formative assessment in the subject classrooms of General Studies is produced, as depicted in Figure 7.3, based on all the data collected in the study.

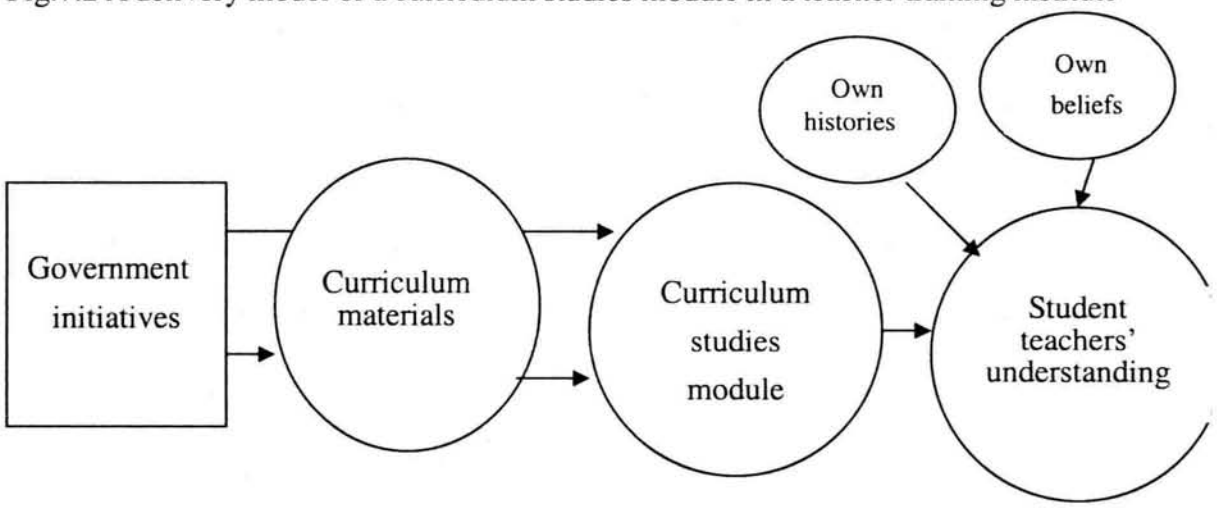
7.4.1 Delivery of a curriculum studies module, General Studies Teaching in Primary Schools

Since October 2000, the Hong Kong Government has been implementing a series of education reform measures, so as to prepare students to pursue all-round development through life-long learning. In order to provide the most favourable environment for teaching and learning, the education system is to be reformed (Education Commission 2000). Formative assessment is emphasized to be an important measure to promote learning and teaching effectiveness (Curriculum Development Council, 2002). Different types of formative assessment methods are introduced in the new General Studies Curriculum Guide (Curriculum Development Council, 2002). This is illustrated as the left box and the left circle of Figure 7.2

As a teacher educator, the researcher introduced the concept and let the co-researchers experience formative assessment practices in the curriculum studies module, General Studies Teaching in Primary Schools, illustrated as the middle circle of Figure 7.2, so as to equip them to be facilitators of students' learning and assessors in classrooms. The co-researchers were to be trained as reflective practitioners, so they were invited to reflect on their experiences of being students, so as to see the change of roles of teachers and students during the implementation of formative assessment in the classrooms. From the learning of the curriculum studies module, they understood the implementation of formative assessment helped their learning. Most of the co-researchers did not have any knowledge or experiences of formative assessment in their previous education. Though they were passive recipients in the previous education, they expected students to play active roles in the lessons. Moreover, the co-researchers' understanding of the implementation of formative assessment was affected by their own histories and beliefs of teaching. Some of them held the traditional view of learning, such as doing some writing on the worksheets helped

students remember well. These are illustrated as the three circles at the right side of Figure 7.2. Consequently , some of them did not have the comprehensive idea of assessment for learning.

Fig.7.2 A delivery model of a curriculum studies module in a teacher training institute



7.4.2 Implementation of formative assessment in the subject classrooms of General Studies

After showing the delivery model of a curriculum studies module in a teacher training institute, Figure 7.2, the following describes a model of implementing formative assessment in the subject classrooms of General Studies, Figure 7.3. Figure 7.2 is placed at the top of Figure 7.3 to show its relations with the implementation of formative assessment in primary school classrooms.

When the co-researchers prepared lessons for their student teaching in local primary schools, their understanding of the methods and strategies of teaching General Studies, including formative assessment, affected the design and implementation of formative assessment in General Studies classrooms. Planned assessment activities included worksheets, performance-based assessment activities, self- and peer assessment activities. Interactive assessment activities included questioning and observation. The design and the implementation of the learning and the assessment

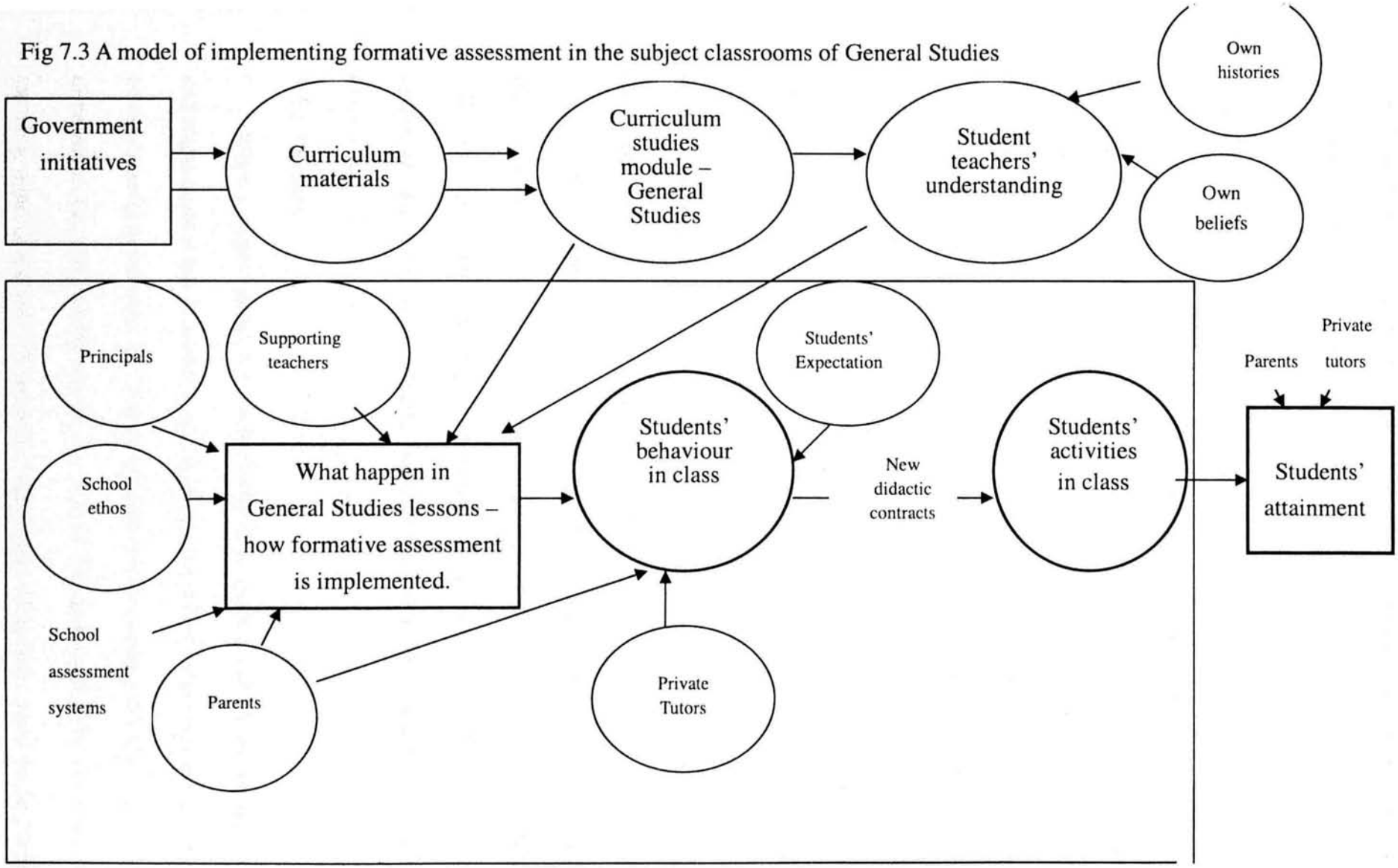
activities were also heavily affected by the teaching schedule assigned, and the advice or support provided by the supporting or regular teachers. When the teaching schedule was rigid and inflexible, either the co-researchers found no time to conduct assessment activities, or they diluted or corrupted the authentic practices. The design and the implementation of formative assessment activities was also adversely affected by some supporting or regular teachers They requested the student teachers not to do too many things, or to follow the traditional view of teaching and learning, e.g., reading and learning the vocabularies. On the other hand, the implementation was also facilitated by the support provided by some principals who allowed the co-researchers to practice what they had learned in the Institute and to use the different teaching resources in schools. However, the advice given by some principals, and the school ethos which included the principals' stress on discipline in the classrooms, insufficient or lack of resources in doing inquiry or experimental activities because of the low status of General Studies in the school curriculum, extrinsic reward systems, and provision of grades in the workbooks negatively affected the design and implementation of formative assessment practices in General Studies lessons. Moreover, the co-researchers also had to meet the expectations of the parents by leading pupils to read the text by the end of the lesson. All these are illustrated as the square and the four small circles at its left at the left side of Figure 7.3

Students' behaviour such as their active participation in the activities, illustrated as the circle in the middle of Figure 7.3, was not only affected by the design and quality of the activities provided by the co-researchers, but also their expectation on the co-researchers as student teachers. On the other hand, the assistance provided by some parents or private tutors after school constrained students interactions with the

around the circle in the middle of Figure 7.3.

At the start of their student teaching, the co-researchers made new didactic contracts with their students about the strategies of learning and assessment, and the class behaviour. Students were told to participate actively in the activities in the lessons for knowledge construction. From time to time when new activities were conducted, the didactic contracts were reviewed to ensure students' proper behaviour in the learning or assessment activities in class. The activities included games, group discussion, oral presentation, role-play, and classification on the blackboard, etc., depicted as the circle at the right side of Figure 7.3. The latter three served as formative assessment activities. The attainment of the students, depicted as the square at the right side of Figure 7.3, was the outcome of the students' activities and performance in the class. However, it was also enhanced by the assistance provided by their parents or private tutors after school.

Fig 7.3 A model of implementing formative assessment in the subject classrooms of General Studies



7.5 Managing the Educational Change for the Authentic Formative Assessment Practices in the Subject Classrooms

Most of the teaching practice schools allowed student teachers to practise what they had learned in the Institute during their student teaching. The innovative practices of some of the co-researchers stimulated the regular teachers to make changes in their teaching or placed pressure on them (Section 5.3.1.2.3). From the data analysis of the present study, factors affecting the design of learning activities (Section 5.2.3) and the implementation of formative assessment (Section 5.3.2), difficulties encountered (Section 5.2.2 & 5.3.3), and support needed during the student teaching (Section 5.3.2.2, Section 5.3.4) clearly show that implementing formative assessment is not a simple task. Teachers who work alone in their own classrooms may accomplish some thing, but they may not implement authentic formative assessment practices. It requires changes and collaboration of different agents in the school system. Therefore, subject panels and the whole panel of teachers should initiate the educational change, the second order of change, which means changes in the existing structure and the roles of all agents in the organization (Fullan, 2001), seek approval and support from the principals, and support from the local community and the government. The following describes how the educational change for the authentic formative assessment practices can be initiated, implemented and institutionalized in the subject classrooms.

7.5.1 Teachers

When a subject panel or a teacher believes in the ideas of formative assessment and wants to put it into practice in the subject classrooms of her/his school, s/he should be very careful in initiating this change of education. According to Fullan (2001), three

consideration when managing changes in education. S/he needs to study the new General Studies syllabus and the different formative assessment activities, the relationship between the learner-centred approach and the formative assessment approach, and whether the teachers in her/his school are willing to change from the traditional view of teaching and learning to these new approaches. Then, s/he shares her/his belief with other teachers in the subject panel, so that they may perceive the change of their roles in relation to their students in their classroom practices, find meaning in such change, and believe that such change can help promote the learning of the students and their teaching effectiveness. Only when all the teachers involved have a shared vision and the commitment to promote students' learning, they plan the implementation process with thoughtfulness and clarity, and thus make the implementation successful.

The data of the present study show that some of the regular teachers did not have any knowledge of formative assessment. Thus, subject teachers may be supported by different staff development programmes, so as to develop their formative assessment capabilities, and enhance their pedagogical content knowledge (Shulman, 1986). Then they can build their own understanding, plan their formative assessment practices and reform in pedagogy in collaboration with one another (Shavelson, 2nd Feb. 2004), within the constraints of their established assessment procedures and those of their schools. Teachers also have to decide how the required resources can be obtained and mobilized in the agreed-upon directions. These are the critical issues in the initiation stage of management change (Fullan, 2001).

In order to make the implementation, and the institutionalization successful, teachers may slim the curriculum or adopt the school-based curriculum, in order to cater for the abilities and needs of the students. They are to be empowered to have

they can take interventions or re-design lessons according to the feedback collected from the students but do not focus on catching up with the tight teaching syllabus (Section 5.2.3.1). Through different learner-centred activities and various assessment activities, teachers may form a new school culture which emphasizes the role of students in the learning, teaching and assessment cycle. Furthermore, by means of teachers' joint preparation of lessons, a new school culture of frequent communication, mutual support and help among teachers, is to be established (Fullan, 2001). A collaborative work culture (Fullan & Hargreaves, 1992) can make educational change successful. Black and Wiliam (1998b) highlighted that the success of formative assessment needs the contribution of all teachers. Additional resources in terms of manpower and teaching resources may also be sought in the school budget or from the government, in order to institutionalize the practice of formative assessment.

7.5.2 School principals

School principals can be initiators, facilitators or hindrance of continuous improvements in their schools (Fullan, 2001). In order to sustain the educational change in assessment practices, teachers should seek approval of and obtain support from the principal and the school board. As gatekeepers of educational changes (Fullan, 2001), principals have to ensure other policies initiated in their schools cohere with the philosophy of this change of assessment practice. They have to adopt the philosophy that everyone can succeed because everyone can improve, and schools value excellence in the progress of learning. In order to have division of labour, principals may identify teachers, e.g., class-level coordinators, and share leadership with them so that they are to be responsible for leading certain areas in the change process, and promote open, trusting, and affirmative relationship and team spirit

order to promote students' learning, teachers do not have full control of the teaching and learning process in the classrooms when formative assessment is implemented. A new timetable may be arranged to allow a longer lesson (Section 5.2.5.3), e.g., fifty minutes, so that more interactions among the teacher and students, or among students themselves can be accommodated. A new assessment system may also be established, which includes the strategy of comment-only marking in worksheets and workbooks, criteria for choosing workbooks, designing worksheets, as well as setting test and examination questions. Furthermore, they may come to agreement on how to place formative and summative assessments in a balanced relationship, as formative assessment cannot be put into practice when there is an over-emphasis on summative assessment.

Finally, as teachers take risk in the process of educational change and difficulties may emerge, principals may provide them with on-going support from experts (Shepherd, 1995). For example, staff development programmes may be jointly organized with the teacher education institutes. Principals may also help teachers acquire additional resources and assistance from the local community and government for this school-based development.

7.5.3 Students

Fullan (2001) suggested that students not only are the potential beneficiaries of the educational change, but also participants in the process of change. When formative assessment is accepted and is to be implemented in schools, teachers and principals involved should educate students about the concept and the major characteristics of formative assessment, and their new role in the learning process. Teachers may make new didactic contracts with their students who are to be empowered to learn for themselves (Black et al., 2003). Students should be actively engaged in learning, having interaction with teachers and other students in the class or in the group. They

have to be involved in the assessment of their learning and the learning of their peers. A supportive learning environment is to be created to foster good learning behaviour. Thus, when students recognize formative feedback as a helpful signal and guide, they are motivated to adopt a more serious attitude towards learning, and to seek improvement. When students are involved in constructing their own meaning of the educational change and learning, they learn more and are motivated to go even further (Fullan, 2001) in promoting their learning.

7.5.4 Parents

Fullan (2001) stated that parents may initiate, reject, support or block educational changes in schools. In order to seek their support, principals and teachers may inform the parents about the concept, major characteristics, and functions of formative assessment. They may also have frequently communication with the parents so that they become knowledgeable partners in their children's education (Epstein & Dauber, 1988, as cited in Fullan, 2001), and effectively help their children at home. They can also negotiate with private tutors on their new role in caring and educating the children.

7.5.5 Action research

Due to various constraints and problems encountered by the co-researchers during the implementation of formative assessment in General Studies classrooms, some of the practices were either diluted or corrupted. Thus, in order to redeem the authentic formative assessment practices, continuous review of this educational change is needed. Principals may help expand the professional capacities of individual teachers. They may encourage teachers to conduct action research in order to

Furthermore, teachers may gain professional support from the teacher educational institutes, either in learning the concept and the methods to conduct action research, or jointly conducting the research. From the different methods of collecting data from their teaching and from the students, e.g., writing research diaries, videotaped lessons for self-reflection, peer observation of lessons and discussion, interviewing students, and examining examples of students' work, teachers are provided with opportunities to monitor and reflect on their own classroom practices. Thus, they may investigate their practices in detail before thinking about how to develop better intervention strategies (Torrance & Pryor, 2001) to promote students' learning and their teaching effectiveness.

Moreover, they may share their experiences with other subject teachers in their schools. In this way, a new school culture of reflection, sharing, lesson observing, and discussing each other's work is established. Teachers are creating a 'professional learning community'; they are reculturing their schools (Fullan, 2001) by improving their pedagogical practices, and promoting students' learning through assessment for learning. They may regard formative assessment as a basic part of their pedagogy. Thus, teachers take ownership of all the changes because they are consistent with their beliefs and values as teachers (Black et al., 2003).

In short, the meaning of the educational change must be accomplished at every level of the school system (Fullan, 2001). The implementation of authentic formative assessment practices depends on the involvement of different agents in schools, i.e., teachers, principals, school boards, students and parents, who need to change their mindsets, adopt new roles in the change process, reculture the classrooms and the schools, set new school assessment systems and give support to this educational

implementation of formative assessment in General Studies classrooms. Finally, implications and recommendations, limitations of the study, suggestions for further research and concluding remarks are also made.

Chapter 8

Conclusion

The previous chapter describes the co-researchers' implementation of formative assessment in the 'figured world' of General Studies classrooms, and in terms of the intended curriculum, the implemented curriculum and the attained curriculum. It also illustrates a model of implementing formative assessment in the subject classrooms of General Studies, and how practising teachers can manage the educational change for the authentic implementation of formative assessment practices in their subject classrooms. This chapter summarizes the data analysis of the co-researchers' implementation of formative assessment in General Studies classrooms. Implications and recommendations for promoting authentic formative assessment practices, limitations of the research, suggestions for possible studies and concluding remarks are also made.

8.1 Formative Assessment in General Studies Classrooms

In response to the education reform in Hong Kong and belief in the ideas of assessment for learning, the researcher, being a teacher educator, wanted to study how student teachers implemented formative assessment in General Studies classrooms in local primary schools. The following attempts to answer the research questions raised at the beginning of this thesis.

8.1.1 How were the student teachers equipped to be assessors to implement formative assessment during their classroom teaching?

During the teaching of the curriculum studies module, the first phase of the study,

all agreed to be co-researchers in the study. During the intervention, though most of the co-researchers did not have any knowledge and experiences of formative assessment in the previous stages of education, they could describe the concept and major characteristics of formative assessment. However, their understanding was also affected by their own beliefs in learning and teaching. A delivery model of a curriculum studies module in a teacher training institute was then produced (Section 7.3, Fig. 7.2).

Before the two teaching practice blocks, the researcher invited fifteen of them and they all agreed to continue to be co-researchers to investigate their implementation of formative assessment in their General Studies lessons. Workshops were provided to enhance their learning of assessment for learning. Furthermore, the co-researchers were encouraged to consult the researcher during their student teaching.

8.1.2 How did the co-researchers implement formative assessment in the 'figured world' of General Studies classrooms?

During the two interviews, most of the co-researchers reported that when preparing to teach, they aligned the assessment activities with the learning objectives, and the learning activities. The planned formative assessment activities included selected response assessment in the form of worksheets; performance assessment such as oral presentation, experimental activities, as well as self- and peer assessment. The interactive formative assessment included questioning and observation in the classrooms. Findings of the study suggest that questioning, observation, and students' doing worksheets were the common assessment activities in the classrooms. Because of insufficient knowledge and experiences of formative assessment, some co-researchers doubted the usefulness of self- or peer assessment, while most of the co-researchers invited students to do assessment activities in order to know the effectiveness of their teaching.

The data analysis shows the relations of the four components: student teachers, students, General Studies and theories of learning in the 'figured-world' of General Studies classrooms. In spite of variations of the implementation of formative assessment practices in their classroom teaching, most of the co-researchers understood that they should involve students in the learning process. They provided different learning and assessment activities to help students do inquiries, in order to construct knowledge, acquire appropriate skills, desired values and attitudes, as well as assess their own learning in every lesson.

Although most of the co-researchers accepted the ideas of formative assessment and the inquiry approach of learning, some still held the traditional view of learning, e.g., over-emphasis of class discipline, being contented with providing students with their own experience or explanations, students' paying attention to the co-researchers, or writing on worksheets to remember the knowledge well. Because of the time constraint, the tight teaching schedule, and the short time span of a lesson, usually most of the co-researchers provided short-loop feedback. They did not provide enough chances for collecting or providing students' feedback. Some of them accepted shout-out or short answers, and some sought for the right answers during the question and answer sessions. Then they moved on to another activity, usually the group work and plenary sessions, in which difficult tasks were designed and more time was spent.

All the co-researchers expected students to play an active role in the class, but students were not informed that they should be responsible for their own learning. Though students claimed that they liked the activities in General Studies lessons, as there were different learning and assessment activities, some also held the traditional view of learning, e.g., they claimed that they learned well because they listened to the

From the data analysis, nearly all the major ideas about the successful events and the difficulties encountered during the implementation reflected in the weekly reflection reports were reported again during the interviews. However, the researcher not only listened to what the co-researchers said during the interviews, and read what they wrote in the weekly reflection reports, but also watched their actions or behaviour in their classroom teaching in the videotaped lessons. Thus, the videotaped lessons were used as a check on the validity of the self-reports of the co-researchers. Though most of the co-researchers claimed that they had conducted formative assessment in their teaching, from the videotaped data, some of them did not implement the authentic formative assessment practices. The discrepancy between written/verbal reports and videotaped lessons which was analogous to the discrepancy between the self-report and the classroom observation described by Cohen (1990) raised important lessons for research and practice. Just as the practice of Mrs. Oublier did not match with her ideas, i.e., practising what the new policy advocated, some co-researchers' practices of formative assessment in the classrooms were either diluted or corrupted. Thus video data were an essential aid to the researcher's understanding of what really happened in the classrooms.

8.1.3 What were the difficulties that the co-researchers encountered when they implemented formative assessment in General Studies lessons?

Firstly, the design of learning activities was mainly affected by factors such as school ethos, which included the principals' emphasis on discipline, the time constraint because of the tight teaching schedule, needs and abilities of the students, insufficient teaching resources because of the low status of General Studies in the primary school curriculum and the discipline problems in the class. In aligning

or thirty five minutes, no teaching aids or not enough equipment to do inquiries or experimental activities, different agendas of the co-researchers and the schools or supporting teachers, who requested the co-researchers to follow the traditional practices in the schools, and their lack of experiences and insufficient knowledge of formative assessment.

During the implementation of formative assessment in General Studies classrooms, major difficulties encountered by the co-researchers were the short time span in the lesson, not being able to observe all the students in the class activities, difficulty in questioning, and in handling individual differences in a class of thirty-five students. A model of implementing formative assessment in subject classrooms, General Studies, was produced (Section 7.4.2, Fig. 7.3) .

8.1.4. Did the co-researchers implement authentic formative assessment in General Studies lessons during their teaching practice in local primary schools?

Most of the co-researchers reported that they implemented formative assessment practices in their student teaching. Better performance was showed during the second teaching practice block. Because of the constraints and difficulties encountered in designing learning and assessment activities, and the implementation process, some of the co-researchers created their own implemented curriculum, and thus they diluted, or corrupted the authentic formative assessment practices. Furthermore, the attained curriculum did not show the true picture of all students' learning in the classrooms as some were helped by their parents or private tutors after school. The relationship among intended, implemented and attained curriculum is illustrated in Figure 7.1 (Section 7.3).

8.1.5. How can teachers mange the change of assessment practice in General Studies

advocated in various education reform documents, cannot be achieved by individual teachers alone. In order to implement authentic practice, teachers may work together and seek support from the principal to initiate, implement the change and make it institutionalized (Fullan, 2001). During the change process, they may also carry out action research in order to reflect on their situation, construct a general plan and appropriate action steps, as well as implement and collect data on their actions. Thus, new action steps may be planned and implemented to enhance students' learning (Elliot,1991).

8.2 Implications and Recommendations

After summarizing the findings of the present study, a number of implications and recommendations for promoting authentic formative assessment practices can be made:

- Findings of the study report that one of the difficulties encountered by the co-researchers was the insufficient knowledge and experiences of assessment for learning. The first part of the intervention of the present study was the teaching of the curriculum studies module, in which the researcher was only responsible for half of the teaching load. Therefore, even though the researcher tried to let the co-researchers experience formative assessment in her part of teaching, they might not have enough time to digest the idea to put it into practice. However, most of the co-researchers showed professional development during the second student teaching practice. It may be explained by the experiences gained during the first student teaching and the learning of another module, Curriculum

provide student teachers with more opportunities to learn and experience formative assessment in the classrooms.

- Results of the study suggest that school ethos and the teaching styles of the supporting or regular teachers heavily affected the implementation of formative assessment in the classrooms. Some regular teachers held the traditional views of teaching and learning, and stressed keeping up with the teaching schedules. Some even saw the new practices of the student teachers as a threat or pressure to their teaching. Therefore, teacher education institutes may take a leading role in this educational change by engaging schools in the practice of assessment for learning. School-based staff development programmes may be organized. Videotaped lessons may be shown so as to introduce to them the concept and the major characteristics of assessment for learning. Consequently, principals and teachers in the individual schools may not be overloaded with the different measures of the educational reform (Fullan, 2001). Thus, they will really implement the intended curriculum advocated, i.e., assessment for learning. In this way, they may understand more what the student teachers are trying to do, and may provide them with more advice and support. For example, flexibility in finishing the assigned teaching schedule is allowed, then, student teachers can have enough time to implement various assessment activities, address individual differences, and make intervention in the class when necessary during their student teaching. Furthermore, as supporting or regular teachers are requested by the Institute to provide on-site support or advice to the student teachers, observe their lessons and have tripartite conference with the Institute supervisors after the lesson observation, the researcher may also involve them in the study. She may interview them to collect their ideas and suggestions on the student teachers'

programme may be produced and launched.

- Findings of the study report that ideas of assessment for learning were alien to the co-researchers and the students in local primary schools. Some of the co-researchers invited students to fill in the self- or peer assessment forms, but they did not understand how it could help students' learning. Nor did the students understand their role in the assessment for learning. Some students preferred to sit quietly and listen to the teachers in order to absorb knowledge. Some refused to do self-assessment. It is suggested that schools may educate students about the concept and the major characteristics of formative assessment, so that students can understand their role in the learning and assessment process, and become responsible for their learning. Furthermore, schools may communicate with the parents, so that they can understand the aims of formative assessment, their new role, and the role of private tutors in helping the learning of their children.

8.3 Limitations of the Research

When studying student teachers' implementation of formative assessment in General Studies classrooms, a number of limitations are apparent:

- The present study covered two teaching practice blocks which lasted for four to five weeks in different primary schools. Within such short periods of student teaching, the co-researchers were not willing to tell students formally about formative assessment. Furthermore, they might not see any direct positive effects of their teaching in terms of gains in summative assessment. If student teachers undergo a longer period of teaching practice, they can have more opportunities to

and attainment, as measured by summative assessment.

- The researcher assumed a dual role as a teacher educator and a researcher. This may result in the limitation in the data collection process. Though the researcher made clear to the co-researchers that the data collected for the present study did not contribute to the assessment of the field experience or the assignment of the curriculum studies module, it was possible that the co-researchers provided the researcher with answers which were congruent to the concepts of assessment for learning when they were interviewed, or just implemented formative assessment when the lessons were videotaped.

8.4 Suggestions for Further Research

Based on the findings of the present study, a number of possible studies can be conducted. These include:

- Since the present study was based on the experiences of the full-time student teachers during their student teaching, the length of the study can be extended. A longitudinal study may be conducted to investigate the implementation of formative assessment when the student teachers start to teach as regular teachers. The development of the novice teachers to implement formative assessment in classrooms can be better understood and supported. Ways of facilitating the professional development in the teacher education programme may then be better planned, or other collaboration programmes with schools may be promoted.
- The findings of the present study suggest that the subject teachers may produce

programmes to encourage the participants to take the initiative in implementing authentic formative assessment practices, and manage such educational change in their own schools.

- Collaboration between the teacher education institute and local primary schools may be improved. The Institute could be a focus for innovation by providing training, information and supports to teachers and schools as a whole. Action research may be jointly conducted to study better ways to practise formative assessment in the school community, or to secure a balanced relationship between formative and summative assessment, e.g., how formative assessment can support summative assessment, or the formative use of summative tests.
- Research can be developed to study the perception of the students, especially of the role and the value of self- and peer assessment, when they are educated about the concept and the major characteristics of formative assessment.

8.5 Concluding Remarks

Formative assessment is advocated in different education reform documents in Hong Kong as the integral part of teaching and learning process. In order to better equip student teachers to be facilitators and assessors in the classrooms, this study was to study the implementation of formative assessment by the student teachers, the co-researchers of the study, in General Studies classrooms. The findings suggest that the intervention during the first phase of the study helped the co-researchers understand the major characteristics of assessment for learning. After the second phase of the study, the two teaching practice blocks, most of them proclaimed that they implemented formative assessment practices in their student teaching. Their lessons were welcomed by the students, as they provided different learning and assessment

block. the videotaped lessons illustrated the discrepancy between their reports and their actions in the lessons. The videotaped lessons helped the researcher understand more about the implementation in the classrooms. Furthermore, when the co-researchers implemented the intended curriculum, the implementation was greatly affected by the school ethos and the classroom cultures, and their own beliefs of teaching and learning. The philosophy of the school principals and the teaching beliefs of the supporting or regular teachers might support or hinder the implementation. Therefore, some of formative assessment practices were either corrupted or diluted. Moreover, the attained curriculum was also affected by the assistance provided by the parents and the private tutors, which negatively affected the behaviour of the students and their interaction with the co-researchers in the classrooms.

The findings of the present study suggest that in order to sustain authentic formative assessment in the classrooms, teachers may seek approval and support from the principals, and the support from the parents, the local community and the government. Then, they may work together to initiate and implement this educational change in their subject classrooms, in order to promote the learning of the students. Teachers may work together to conduct action researcher to reflect on their actions and practices in their classrooms during the change process, so better quality of learning outcomes may be obtained. Furthermore, the teacher education institute may hold a leading role during this educational change process, by providing supports in the form of various pre- or in-service professional development programmes, or conducting action research with its partnership schools. Lastly, it is hoped that the experiences, findings and recommendations attained in this study can provide some insight for policy makers and practising teachers in the implementation of formative assessment in the subject classrooms of General Studies, so as to enhance the learning of the students and promote teaching effectiveness.

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Appendix A.1

Questions for interviewing the co-researchers after the first teaching practice

1	a	Please describe your learning experience of formative assessment in your primary, secondary or tertiary education.
2	a	In studying the module, General Studies Teaching in Primary Schools, there was a topic called 'formative assessment'. Please describe your ideas of formative assessment.
	b	How did it influence your beliefs about teaching?
3		Please describe your teaching practice school and the learning style of the students there
4		Please tell me about:
	a	your relation with the teaching practice school principal;
	b	your relation with the other General Studies teachers;
	c	your relation (as a General Studies teacher) with the students;
	d	your expectation of the students in the General Studies lesson.
5		At the beginning of the teaching practice, you observed a lesson taught by your supporting teacher. Please describe:
	a	the teaching of your supporting teacher (teaching strategy and teaching style);
	b	the learning style of the students;
	c	how did you know that the students had learned in the lesson.
6	a	Did you tell the students about formative assessment?
	b	Please explain the reasons why you told them or did not tell them.
7		During the teaching practice, how did you prepare General Studies lessons (learning activities, assessment activities)?
	a	What learning activities did you provide to the students in General Studies lessons?
	b	How did you align the assessment activities with the learning activities?
	c	In aligning the assessment and learning activities, did you encounter any difficulties?
		If yes, please explain.
8	a	During General Studies lessons, when did you use questioning to assess the learning of the students?
	b	When did you ask probing questions?
	c	How long was your wait time? Did the wait time help the students?
	d	Did you ask those who raised their hands or those who did not raise their hands? What were the responses of the latter?
	e	If you found that the individual student/most students had not learned, what did you do?
9	a	When did you use worksheets to assess the learning of the students?
	b	Did you give them grades? Marks? Or comments only?
	c	What were the responses of the students if only comments were given?
10		Did you think homework could assess the learning of the students? Please explain.
11	a	Did you ask the students to conduct self-evaluation?
	b	If yes, please elaborate. If not, what were the reasons?
12	a	Did you ask the students to conduct peer evaluation?
	b	If yes, please elaborate. If not, what were the reasons?

13	a	When did you make use of observation to assess the learning of the students?
	b	When you observed that the student(s) had not learned, what did you do?
	c	When you observed that the student(s) had learned, what did you do?
14	a	During the teaching practice, were there any significant events that influenced your practice of formative assessment in teaching General Studies? Please elaborate.
	b	Were there any difficulties you encountered when you practised formative assessment in your teaching? Please explain.
	c	Please tell whether you could do what you planned to do in the lesson.
15	a	Were you satisfied with your General Studies teaching? Please elaborate.
	b	Did you think the students learn effectively? Please elaborate.
16		In your opinion, what might a school do to help the implementation of formative assessment?
17		Please tell me about any support that you would like to have in order to continue our research in the second teaching practice block.
18	a	Did you have any working experience?
	b	If yes, what kind of work?
	c	As you taught before, what subject did you teach? What level?

1 a Please tell me about the expectations of the principal, subject panel and the supporting teacher in your teaching practice school on the teaching General Studies.

b Did the teachers there jointly prepare lessons?
If yes, why did they do so? Please say what they had done.

c Did the General Studies teachers tailor the curriculum?
If yes, what did they add? What did they delete?

d Please describe the learning style of the students there?

2 At the beginning of the teaching practice, you observed a lesson taught by your supporting teacher.

a Please describe her/his teaching (teaching strategy and teaching style) and the learning style of the students.

b How did you know that the students had learned in the lesson?

c How do you compare your teaching with that of your supporting teacher? What were the differences?

d As there were differences, did the students adapt to your teaching?
If they did not, what did you do?

3 During the teaching practice,

a what learning activities did you provide to your students?

b how did you align the assessment activities with the learning activities?

c how did you make use of the feedback you got from the assessment activities?

4 How do you compare the assessment activities you provided in this teaching practice with those in the first teaching practice?

a Questioning: When did you use questioning to assess the learning of the students? The purpose of questioning? Whom did you ask? How long was your wait time?

b Worksheet: When did you use worksheets to assess the learning of the students? Did you give them grades? Marks? Or comments only? What were the responses of their students if only comments were given?

c Did you think homework could assess the learning of the students? Please explain.

d Did you ask the students to conduct self-evaluation? Peer evaluation?
If yes, please elaborate. If not, what were the reasons?

e When did you make use of observation to assess the learning of the students? Did you observe all the students during the whole class activities?

5 a How did the practice of 'alignment of teaching, learning and assessment' influence you teaching? Any difficulties encountered?

b How did the practice influence the students?

c In the lessons, could you carry out what you planned? Please elaborate.

d Were you satisfied with your General Studies teaching? Please elaborate.

e Did you think the students learned effectively? How did you know? Please elaborate.

f In General Studies lessons, how did you make use of the textbook? When did you ask the students to open the textbook?

6 During the teaching practice, were there any significant events that influenced your practice of formative assessment in teaching General Studies? Please elaborate.

7 Please tell:

a your relation with the teaching practice school principal and other General Studies teachers;

b your relation (as a General Studies teacher) with the students.

c Concerning learning and assessment, what was your role in General Studies classroom? Could you achieve that? Please explain.

d In your opinion, what were the roles of the students? Could they achieve those? Please elaborate.

8 In your opinion, what might a school do to facilitate the alignment of teaching, learning and assessment?

9 a Did you tell the students about formative assessment?
If yes, what did you say?

b If no, why didn't you tell them?

10 Please tell me about your perception of formative assessment.

11 How did you assess your work on assessment during this teaching practice?

12 What was your major subject in your undergraduate study? How much confidence did you have in teaching General Studies? In designing assessment activities?

Thanks.

Appendix B

Lesson Plan – General Studies

Name : _____ **Date**: _____ **Time**: _____

Primary : ___ **Topic** : _____ **Lesson:** 1st/2nd/3rd/4th (total:_ lessons)

Textbook : _____

Students' previous knowledge :

1. _____

2. _____

3. _____

Learning objectives / Learning outcomes - After finishing this lesson, students could:

1. _____

2. _____

Teaching resources:

_____

Blackboard summary:

Time	Learning Objectives/ Teaching Points	Learning Activities	Questioning/Lecture/ Instruction	Arrangement	Assessment Activities

Reflection on 'Learning, Teaching and Assessment':

Appendix C

Weekly Reflection Report

Topic _____ This week _____to_____)

Day / Month Day / Month

Name:_____ Date: _____

A successful event in implementing 'Learning, Teaching and Assessment'

Students learned _____ (major teaching point).

How did I know that my students had learned?

OR

When I found that they had not learned, what intervention did I take to help them?

Difficulties that I encountered in implementing 'Learning, Teaching and Assessment' and supports needed in schools in order to facilitate the implementation.

Appendix D

Information about the videotaped lesson

Name: _____

Contact No.:_____ Email Address:_____

Primary:_____ (No. of Students:____)

Topic: _____ (Time:_____ minutes.)

1. Reasons for videotaping this particular lesson:

_____

_____

_____

2. How did I make use of the feedback collected in the lesson?

_____

_____

3. Self Assessment:

- Did I align the assessment activities with the learning activities?

_____

_____

- Did the assessment activities help me understand the learning of my students?

_____

_____

- Did the assessment activities help students understand their own learning?

_____

_____

Appendix E

1. Questions for interviewing General Studies students by the co-researchers during the first teaching practice block

1		Do you like General Studies lessons? Why?
2	a	Did you like the activities in the lesson?
	b	Did they help your learning?
	c	How do you know that they helped your learning?
	d	If you didn't understand, what did I do to help you?
3	a	Did you answer any questions during General Studies lessons? If you didn't understand, what did I help you?
	b	Did the questions help your learning? If yes, how did it help your learning?
4	a	Did you know how to do the worksheets in the lessons?
	b	If you didn't understand, what did I do to help you?
5		What did you learn in the past few weeks?

2. Questions for interviewing General Studies students by the co-researchers during the second teaching practice block

1	a	Please tell me what your classmates did during General Studies lessons. (What were the activities provided in the lesson?)
	b	During these activities, what were my expectations on the students?
	c	Did you meet my expectations? Please explain.
	d	How did these influence your learning?
2	a	Did you answer any questions during General Studies lessons? If you didn't know how to answer, what did you do? What did I do to help you?
3	a	Did you know how to do the worksheets in the lessons?
	b	If you didn't know how to do something, what did you do? What did I do to help you?
4	a	Please tell me what activities you liked most.
	b	Did they help your learning?
	c	How do you know that you had learned in the lesson?
	d	If you hadn't learned, what did you do? What did I do to help you?

Appendix F

Individual Reflection

Individual Reflection 29-8-2002

1. With reference to you experience,
   a. what characterises a good student in the classroom?

   b. what characterises a good teacher in the classroom?

2. What are your expectations of this module?

I expect to learn:	Rank (1- the top; 5-the bottom)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

3. What are your expectations of yourself in learning this module?

4. What are your expectations of the lecturer?

Appendix G
The Muddiest Point

Formative Assessment:

1. What is the muddiest point in the lesson?

2. The following is/are my expectation but was/were not mentioned by the lecturer:

Appendix H
Paraphrasing

Formative Assessment

What is the role of
(1) a teacher;
(2) a student
in the process of social inquiry and value learning?

Appendix I

Microteaching – Peer Assessment

Topic : _____ Date : _____

	Items	Pass	Could have been improved	Overall Comment: (the best area of this microteaching / area for improvement)
1.	Clear aims and objectives			
2.	Matching the content of the teaching with the standard of students			
3.	Designing teaching strategies according to the philosophy of General Studies			
4.	Appropriate selection & use of resources			
5.	Assessment activities to assess the learning of students			
6.	Achievement of the teaching objective(s)			
7.	Performance of the teacher(s)			
8.				
9.				

Student Assessor :

Appendix J

Interim Evaluation

What is/are the best aspect(s) of this module and the teaching?	How could this module and the teaching be improved?
Please add any additional comments if you wish.	

Appendix K

Interim Evaluation on 'peer assessment on microteaching'

What I have learned in assessing other students in microteaching:	What I have learned from the feedback provided by other student teachers:

Suggestion for improvement:

1. microteaching

_____

_____

_____

_____

_____

2. peer assessment

_____

_____

_____

_____

_____

Appendix L.1

Co-researcher G

Primary 4

Bones & Muscles (1)

Double lesson: 60 minutes

Learning Objectives: After the lesson, students will be able to

1. know the main functions of bone;
2. know the expansion and the contraction of muscles help produce movement;
3. tell correct postures can help protect bones and muscles;
4. demonstrate the correct posture to move heavy items.

minutes	T/P	Teaching learning and assessment
0:01	T:	Please touch your head. How do you feel? Move your hand downwards. How do you feel? *The teacher demonstrates touching her head, and moves her hand downwards to touch her shoulder and arm. Then she touches her head again.* What is it? *(Most of the students raise their hands.)*
	(S):	Skull.
	T:	Put up your hands. *(Teacher's insistence on raising hands.)*
	S:	Skull.
	T:	Is it hard or soft?
	S:	Hard.
	T:	What is the soft part?
	S:	Flesh.
	T:	What other bones do we have? (Some hands go up.)
	S:	Coccyx.
	T:	Where is it?
	S:	At the back.
	T:	*The teacher touches her back.* It's not only at the back. The whole thing is called the spine.
	(S):	Ribs?
	(S):	Bones of the pig. *(Some students become not engaged in this question and answer section.)*
	(S):	Ribs of the pig.
	S:	Shoulder blade.
	S:	Pelvis
	S:	Spine.
	T:	We already mentioned coccyx. The backbone is called the spine.
	S:	Waist bone.
	T:	Do we have waist bone?
	S1:	Yes.
	S2:	No.
	T:	We shall see it later?
	S:	Ribs?
	T:	Ribs. They are at the front and the back. You may touch your body.

		They are extending from the back to the front of the body. When you touch your body, you can feel them at the front and the back of your body. What is this? What is the name of this bone? (*The teacher touches her arm.)*
	S:	Arm. *No hand goes up.*
	T:	This is the upper lib. Humerus. *The teacher touches the neck on the back.* What is this?
	S1:	The neck bone.
	S2:	The skull. *The teacher touches her head.*
	S3:	Phalanges.
		The teacher pastes a sentence strip, showing the topic of the lesson, on the blackboard.(Bones and Muscles)
2:54	T:	If there is no skull, what happens?
	S:	The …
	T:	You may have many ideas. There is a worksheet. You are going to discuss what will happen to us if there is no skull, humerus, etc.? Four persons in a group. You have 5 minutes to hold the discussion. *The teacher distributes the worksheets. There is a worksheet for each group and students have to write down the answers on it.*
4:32		*The group discussion starts. They put their desks together. Students were engaged in the group work but spoke loudly.*
	(S):	It's like a balloon with air coming out.
	T:	3 minutes left.
	(S):	Very simple. It's like a lump of meat. (*Pointing to some place in the classroom.)*If we don't have the pelvis, the kidney will become loose.
9:16	T:	The group representatives will come to the front of the class to present.
	(S):	He will die.
	(S):	Stop playing.
	T:	Don't open the book because you cannot find the answers in the textbooks.
10:30	T:	I count five, and then all of you return to your own seats. 1, 2, 3, 4, 5. Quiet. Now a group representative comes here to present about the skull. *No student is willing to present.* Group 2 please. Be quiet. What happens, if there is no skull?
	S:	If there is no skull, there will be no places for the eyes, ears, nose and month.
	T:	Yes. Be quiet. There will no be places for the stuff in the head.
	(S):	…. There will be more space. (*Some discussion at the back.)*
	T:	Come here. (*The teacher invites a student to come out.)*
	S:	The eyes.
	T:	There will be nothing to support the eyes? Do you want to make any supplement? *The student waves his head.*
	T:	What else?
	S:	The head will be very soft.
	T:	Very soft. What will happen?

	S:	It will be very painful if it crashes on something.
	T:	It will be very painful if it crashes on something. Then what is the use of the skull?
	S:	Protection.
	T:	What to be protected? What is inside the skull?
	(S):	The brain. (*The student shouts the answer out.*)
	T:	Please raise your hand.
	S:	The brain.
	T:	Besides protecting the brain, there will be no places for the eyes, ears, nose and mouth. Now, what will it be if there is no humerus? (*Some hands go up.*)
	S:	We cannot do any work. (*The microphone was provided to the boy at the front.*)
	T:	Group 6. (*A girl comes out to present.*)
	S:	We cannot write any words.
	T:	We cannot write any words. What will the humerus help us to do? To do the work, right?
	S:	…
	T:	Group 3. The phalanges?
	S:	Just like this. (*The same boy at the front who waves his fingers. Some were not engaged in this presentation.*)
	T:	What happens if we don't have the phalanges?
	S:	We cannot do many things.
	T:	… The breastbone? Please come out to present.
	S:	The lung will not be protected.
	T:	What else within the breastbone?
	S:	The heart.
	T:	There are other organs. Be quiet. The spine? The 4th group.
	S:	The upper part of our body will bend.
	T:	The upper part of our body will bend. We cannot stand straight.
	(S):	We will crawl on the floor.
	T:	Raise your hand, please.
	S:	We are not in the same group. … We will crawl on the floor. (*A student demonstrates by crawling on the desk.*)
	T:	Yes. We will become very soft and fall on the floor. The pelvis? Group 8.
	S:	We cannot sit.
	T:	Yes. You all sit properly. If you don't have the pelvis, you become very soft and can't sit properly. The shinbone? Group 1? Please come out to present.
	S:	We cannot stand.
	T:	We cannot stand. Very soft. We cannot stand and fall on the floor. Beside that, what else?
	(Ss):	We cannot walk.
	T:	Yes. The last one – what are the uses of metatarsal bones?
	(Ss):	To walk.
17:20	T:	There are different functions of different bones. The skull … the breastbone … their use …
	S:	To protect the brain, the heart.

	T:	To protect the different organs. Therefore the first function of the bones is to protect our body. (*The teacher pastes the sentence strip on the blackboard.)*If we don't have the spine, the pelvis, the shinbone and the metatarsal bones, what happens to us? We become …
	S:	We become very soft.
	T:	We cannot stand straight. The bones support our body which is very heavy. If we don't have those bones, we cannot stand and sit straight, can't we? (*Another sentence strip is posted.)* Besides all these, there is one more important function. Besides I can stand here, the bones can also help me … The bones support and protect my body, so I can stand here. There is one more important function of the bones?
	S:	It co-operates with the muscle to produce movement. (*How does the student know the answer?)*
19:30	T:	This is the third function: co-operate with the muscle to produce movement. Why it has to co-operate with the muscle? I am holding a ruler. Which part of our body does it look like? *The teacher shows a ruler and makes the two arms of the ruler move.*
	:	
	S:	The joint.
	T:	The joint. There are two kinds of joints. Do you know? (*Some hands go up but they are not invited.*) Can our breastbone move besides breathing? Can you bend it?
	S:	No.
	T:	Correct. There are two kinds of joints. One can help produce movement and one cannot. Please show me the joints that help produce movement. (*The students move their arms.)* Yes, you can move your arms and leg. Any bone has the joint that does not help produce movement?
	(S):	Pelvis.
	S:	The skull. (*A student shows his ulna.)*
	T:	There is no joint here.
	S:	Pelvis.
	T:	The pelvis cannot move; the spine can move, can't it? The bone works with the muscle to produce movement. If we just have bone, can we move? Please think about it. *The teacher demonstrates the movement of the two arms of the ruler with the help of a string. She then asks the pupils to touch the muscle on the 'front' and the 'back' on the upper limb to realize the contraction and the expansion of the muscle help us hold up the arm or put it down. The students follow the demonstration.* When we hold up our arm, the muscles at the front contract. When we put it down, the muscles front at the back contract or relax? Relax.
24:37	T:	You all use backpacks. Why do you use backpacks?
	S:	Our two shoulders carry the weight. When we use the school bag, only one shoulder carries the weight. When we use the school bag, only one shoulder carries the weight.
	S:	What is the effect?
	T:	There will be too much pressure for one shoulder but not for two shoulders.

	S:	There will be too much pressure for one shoulder. What else? It will be lighter (*pointing to his two shoulders*).
	T:	I can carry few books. Why should I use the backpack? *(One hand goes up?)*
	S:	I do not have the good posture. (*The student demonstrates that posture.)*
	T:	If we continue to carry the school bag in that way, how will it affect us?
	S:	It will affect our growth.
	T:	The poor posture will become worse. There is a picture about the people in the classroom. You are going to have group discussion for 5 minutes to study what problems are there. Then a group representative will present to the whole class.
27:32		*Students start to hold group discussion. A worksheet is distributed to each group. Students write answers on the worksheets.*
	(S):	Many people are like this. *One group opens the textbooks.*
	(S):	I understood.
32:45	T:	Those who will come out to present, please raise your hand. (*Some hands go up.)* The first group, please. Be quiet. You should make use of the chance of presentation to learn.
	S:	The old man is picking something up. His posture is not correct.
	T:	What is he picking up?
	S:	The litter bin.
	T:	What is the problem?
	S:	The posture is not correct. He will feel pain on his knees.
	T:	Assume that this box is the litter bin, show us what does he do? What is wrong with the posture? (*The learning community listens and watches.*)
	S:	He does not stand properly.
	T:	What else?
	S:	He bends down to pick up the bitter bin.
	T:	Yes. Please try to pick it in the correct posture. *The student demonstrates.*
	T:	Is it correct or not.
	(Ss):	No
	T:	What should we do? *(Many hands go up.)* I only invite those who are quiet to demonstrate. (*A boy at the back is invited and demonstrates to the class).* Correct or no? One more demonstration. Please watch carefully. (*The student demonstrates the correct posture.)* I want to interview you. What did you do? What did you pay attention to?
	S:	Paying attention to the back.
	T:	The spine.
	S:	If I bend, it hurts the spine.
	T:	So, what do you pay attention to?
	S:	…
	T:	Can you demonstrate once again to show us what we should do? *The student did pick up the box again.* Why did you kneel on the floor?
	S:	…
	T:	Anyone can help him? (Some hands go up.)

	S:	If we don't kneel, we have to bend down to pick it up.
	T:	Yes. If we kneel, we can keep our spine straight. Our spine is to support our body, so we have to keep it straight to protect it. Any other problems in the picture?
	S:	The student in front of the teacher.
	T:	What is he doing?
	S:	He is doing the exercise.
	T:	What is the problem?
	S:	His head is not in a good posture.
	T:	What is it? *(The student demonstrates the posture.)* What is the effect?
	S:	It will hurt the eyesight and it is not good to the neck bone.
	T:	What should be the correct posture to do the homework? Please show us. (*Students demonstrate the correct posture.)* Good. You all sit straight and do not lean on the desks. Any other problems in the picture?
	S:	The teacher.
	T:	What is wrong with the teacher?
	S:	She should not put on high heels. (*The teacher encourages the student to come in front of the class to present.)*
	T:	What is the problem?
	S:	Her feet ache.
	T:	Why do the high heels make the feet ache?
	S:	She bends her metatarsal bones. She will feel the pain. *(The student points to her feet.)*
	T:	If she bends her metatarsal bones the whole day, it is not good to her body. Any others?
	S:	The teacher is at the desk, her hand … (He is ignored by the teacher.)
	T:	Besides the teacher, who else?
	S:	The way the boy carries his school bag.
	T:	What kind of school bag it is?
	S:	He carries it on his right shoulder.
	T:	It seems to be a difficult job for him. Any more?
	S:	There is problem with the teacher. She uses four fingers to hold the pen. *The student comes out to speak and demonstrates how the teacher holds the pen*
	T:	What is wrong?
	S:	It's not good to the hand.
	T:	Is she writing?
	S:	Yes.
	T:	What will be the effects?
	S:	If she is used to it, it's not good to the hand.
	T:	It is not the correct posture to hold the pen. Any others?
	S:	The student in front of the teacher but …
	T:	Show me the student. (*The student shows the class the one in the picture.)* That is the student at the back of the classroom.
	S:	He is standing. His legs are tired. He cannot stand any longer. This will affect his bones. Besides standing for a long time, he is tired.
	T:	What is the other problem?

	S:	He bends.
	T:	*The teacher shows the wrong posture.* What should we do while standing? (*She asks the class to demonstrate. The class stands up and stands straight.)* Let's see who does not stand straight. Yes. Very straight. Now please be seated. Any others? … No. that is all. We have to protect our bones. We should have good postures when we pick up the heavy stuff, when we sit or stand. Besides having correct postures, what else we can do to help the bone grow better? Please think about it at home. I am going to distribute two worksheets, one is for the last lesson, heart and blood vessels, and the second one is for this lesson.
42:50		*The lesson ends.*

Appendix L.2

Co-researcher J

Primary 6

The Problem of World Population

30 minutes

Learning Objectives: After the lesson, the students will be able to

1. tell the problems caused by population explosion in the world

Time	T/P	Teaching, learning and assessment
	T:	There are two pictures, Family A and Family B. I want to ask you which family you want to live in, Family A or Family B?
	(S):	Family B. (*A student shouts the answer out.*)
	T:	Please raise your hands. (*Some hands go up.*) K.Y.
	KY:	Family A.
	T:	Why?
	KY:	There is confusion in Family B.
	T:	There is confusion in Family B. Yes. Any other opinion?. (*No hands go up)(The teacher glances at the whole class and invites a student to answer.*) Y.S.
	YS:	Family B.
	T:	Why?
	YS:	There are more people in Family B and the ambience there is good. Any more opinion?
	S:	……*(inaudible)*
	T:	Yes. We just mentioned that there is confusion in Family B. Why is there confusion in Family B?
	S:	Because there are many people in Family B.
	T:	There are more children in Family B. Compared with each child in Family A, can each child in Family B get more things? Or do they get less?
	(Ss):	Less.
	T:	Yes. There are more people in Family B. The resources each one can get will be less. The standard of living will be lowered. Therefore, we have to control the population.
2:00	T:	Now I show you a piece of news. In the last lesson, we learned about the world population. After 50 years, how many people will be there?
	S:	1 billion.
	T:	Any one can tell me the answer? H.M.
	HM:	90 billion.
	T:	Yes, 90 billion. There will be many people in the world. The population will be increased by 7 million each year. Which countries will have huge increase of population?
	S:	China, India, Pakistan, etc. (reading from the newspaper cut-out)
	T:	Are these countries developing countries or developed countries?

	(S):	Developing countries.
	T:	Yes, the population of the developed countries, such as Japan, Germany, will not increase so quickly. On the contrary, what happens to the population there?
	(S):	Decreases.
	T:	Yes. People there enjoy longevity. Compared with the people who are now under 60, how many people will be there?
	(S):	Triple of the present figure.
	T:	Please raise your hands.
	S:	Triple.
	T:	Yes. For the population who are under 80, there will be 5 times of the present figure.
3:00	T:	Now you are going to do a worksheet. According to the newspaper cutout, please answer the questions to tell which countries have serious population explosion problem, and other problems caused by the aging population. *The teacher is circulating in the class. She glances at students' work and talks to them.* You may close your textbooks. The answers cannot not be found in the textbooks.
5:48	T:	Now we check the answers. Who can tell me what kind of country China and India belong to? Developing countries? Developed countries? *(Question 1 on the worksheet)(Some hands up.)* K.W.
	KW:	Developing.
	T:	How about Japan and Germany? *(Question 2) (Some hands up.)*P.Y.
	PY:	Developed.
	T:	What kind of country faces population problem? *(Question 3)* C.K.
	CK:	Developing.
	T:	Yes. For example, China. What are the other problems caused by the aging population? *(Question 4)*
	S:	The problem of social welfare and the decrease of productivity.
	T:	Good. The problem of social welfare and the decrease of productivity. What is the social welfare problem about? (*A few hands go up. The teacher has a glance at the class and invites the raising hand to answer.)*
	S:	The people have no job, and then they get assistance from the government.
	T:	Yes. When the old people retire, what will they get from the government?
	S:	We call it, 'the money for the elderly to buy fruit'.
	T:	The old and the needy will get assistance from the government. It will be a great burden for the government. This is the problem of social welfare. Usually what happens to the elderly?
	(S):	They usually get ill.
	T:	Yes. What are the other problems of social welfare?
	S:	Pollution problem.
	T:	Pollution problem? We are talking about social welfare. The elderly …
	S:	The hospital beds. The increase of the workload of the doctors.

	T:	That is the problem of medical services. Social services include medical services and the Public Assistance Scheme. We just mention a decrease in productivity. Why is there a decrease in productivity? (*No hands go up.*)
	S:	When people retire, there will be fewer people working.
	T:	If most of the population is the elderly, the working population will fall. The productivity will drop, and this will influence the economic development. The working population has to support more people. It will be a big burden for them.
8:43	T:	Many other problems are caused by population explosion. Please form a group of two and hold the discussion. Please read the pictures, write down the different problems caused by the population explosion and distinguish whether the problem is more serious in developing or developed countries.
	T:	One more minute.
16:41	T:	For the first picture, what is the problem? Please raise you hands to answer. (*A few hands go up.*) H.C.
	HC:	Shortage of food. (*The teacher writes the answer on the blackboard.*)
	T:	The second picture? (*A few hands go up.*)
	S:	Living environment, not enough.
	T:	Crowded living environment. The third picture?
	S:	Low teaching standard.
	T:	Low standard? In the picture, many students rush into a classroom? W.M.
	WM:	The great pressure faced by the teachers.
	T:	Teachers' pressure. All these are about the education problem. Many students rushing into the classroom, which means there are not enough education opportunities. C.H.
	C.H.	Pollution problem. *(Picture 4)*
	S:	Environment pollution.
	T:	Yes.
	S:	Problem of hygiene.
	T:	Yes, problems of pollution and hygiene. Y.C.
	YC:	Transportation problem. *(Picture 5)*
	T:	Yes. There are many people and many cars. K.W.
	KW:	The problem of law and order. *(Picture 6)*
	T:	Louder please.
	KW:	The problem of law and order.
	(S):	Why it is not an education problem?
	T:	Any other opinions?
	S:	Why it is not an education problem?
	T:	Education problem?
	S:	Yes. The people have no education. They have no job or money and then they become robbers.
	T:	You mentioned a good idea, unemployment which is not shown in the pictures but the education level may not be the cause of robbery.

		During your discussion, you considered whether the problem is more serious in developing or developed countries. There is no definite answer. You answer the question according to your observation and knowledge. Several problems are more serious in certain countries. For example, the problem of food shortage. Is this problem more serious in developing countries or developed countries? Developing countries? Please raise your hands to answer. (*Almost most hands go up.)(The teacher puts a triangle next to 'Food Shortage').* Developed countries? (*No hands go up.)*
	T:	Yes, it is more serious in developing countries. Any other problems that are serious in developing countries?
	S:	The living environment.
	T:	The living environment. What is it about?
	S:	Many people live in a room.
	T:	Yes. Many people live in a room. In the underdeveloped countries, such as Ethiopia, what is the situation there?
	S:	People have many children.
	T:	We are talking about the living environment. W.M.
	WM:	.....
	T:	Yes. In the underdeveloped countries, the quality of the living condition is poor. It is overcrowded. There is also the problem of hygiene. Any other ideas? C.M.
	CM:	Education.
	T:	Why?
	CM:	There are many students in a class.
	T:	From the World Vision, we know that there is the problem of illiteracy in China. Some children do not have the chance to go to school. Therefore, education problem is more serious in developing countries. Are there any problems more serious in developed countries? (*No response from the students.)*
	T:	In the developed countries, the living standards and the education standards are high. The hygiene and medical services are very good.
	S:	Pollution problem.
	T:	Pollution problem. Why?
	S:	The streets are dirty.
	T:	The streets are dirty. Anyone disagree? (*No response from the students.)* You all think that it is problem of the developed countries. I want to ask you about China. China is a developing country. Is the pollution problem more serious in China or in Hong Kong?
	(Ss):	China.
	T:	Yes. Therefore, why do you say that pollution problem is more serious in developed countries? ... In fact, both developed and developing countries (areas) face pollution problem. In developing countries, there are not adequate facilities to protect the environment. In Hong Kong, there are too many people so the pollution problem is very serious in Hong Kong. Any other problems faced by the developed countries? W.M.

	WM:	Transportation problem. …
	T:	Yes, it is more serious in developed countries. In the developing countries, the transportation network is not well developed. In Hong Kong, there is always traffic jam. There is also unemployment problem. (*The teacher puts a circle next to the two terms, 'Developing countries' and 'Developed countries/areas'.*) The industry and commerce are well developed in the developed countries, but we are suffering from economic depression. Now I want to ask you about Hong Kong: Hong Kong is a developed city, what are the problems we face?
	S:	Pollution problem.
	T:	Any others?
	S:	Unemployment.
	T:	We are good in law and order, and education. You may consider the problems faced by different countries. Any questions? No. Good bye, class.
25:00		