National Chiao Tung University

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Master Thesis

以數位說故事教學法融入新加坡小學道德教育課之
課程設計、發展與評鑑

The Design, Development and Evaluation of
a Digital Storytelling-integrated Moral Education Curriculum
for Primary School Students in Singapore

Student: Liu Ying-Tzu

Advisor: Chien Chou, Ph.D.

September 2012
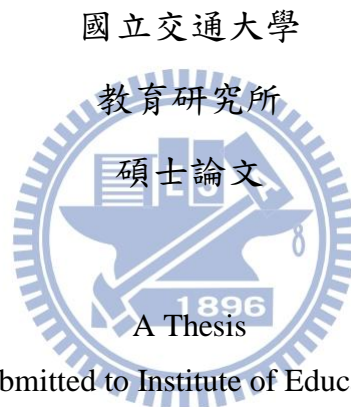
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中文摘要

本研究目的在於透過數位說故事的方式引導學生運用簡單的科技，培養學生的道德認知、情感和行為，並同時掌握 21 世紀所需的技能與能力。本研究以新加坡某一小學五年級學生為對象，發展一套以「尊重」為道德核心價值的數位說故事之道德教育課程，並以形成性評鑑評估新課程之可行性與成效。

本研究文獻探討的部分探討道德相關理論與教學策略，以及科技在教育方面的使用方式，以作為發展新課程之依據。本研究依照 Smith 和 Ragan（2005）之「分析」、「擬定教學策略」、「評鑑及修正」之系統化教學設計架構進行課程設計。在分析階段，透過資料分析、訪談教師之方式了解教學目標、學習者、教材需要與內容，及教學環境。分析結果發現現有的道德教學策略欠缺了資訊科技融入的元素與以學習者為中心的教學方式，由此可見本研究課程的需求性，同時也凸顯了新課程的特點。本研究以 Lambert（2010）的數位說故事步驟，以及 Lickona（1991，1993，2001）的道德教育架構，設計以數位說故事之道德教學課程，並規劃四個課程單元。本研究所設計與發展出的課程配套包括教案、教學素材、圖文簡報和評估表等。

在課程評鑑的部分，本研究藉由自我檢核、專家評鑑、一對一之學習者檢核和實地試教的方式評估課程之可行性與成效。根據自我檢核的結果，本課程修正並補充了現有道德教學的缺點與不足之處。專家認為課程具有適當的內容性、一致性、設計性和可行性。參與一對一評鑑的學生認為本課程的活動具有挑戰性、有趣，對學習有所幫助。

本研究以形成性評估進行課程評鑑與修改後，選取了二十位五年級小學生，進行近兩個月實地試教。實地試教結果顯示，學習者能夠理解尊重的涵義、能以不同角度理解道德情境，做出正確的價值判斷、自我反省，達成了課程所設的道德認知和情感的教學目標。在道德行為方面，學習者在各自的合作小組裡，展現了良好品德的行為，實踐了道德行為目標。學習者課後滿意度問卷和訪談顯示所提供的合作學習活動時間不夠充裕，但學生對於整體學習過程表示滿意。學習者反映本課程可促進其道德發展，也提升其資訊科技能力、社交能力和思維能力。

最後，綜合以上結果，研究者提出研究限制及未來教學與研究建議，供教師與研究者參考。

關鍵字：數位說故事教學法、道德教育課、道德核心價值、系統化教學設計、新加坡、小學五年級學生

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ABSTRACT

The purposes of this study include the design and development of a digital storytelling (DST) integrated Civics and Moral Education (CME) curriculum unit, anchoring on the core value of respect, for primary 5 students in Singapore; and the formative evaluation of the new curriculum to test its feasibility and effectiveness. Through DST, the study intends to put the simple and affordable technologies in the students' hands to facilitate them in their moral development and concurrently equip them with the essential skills of the digital era.

The researcher first presented an overview of the established morality theories and the approaches to moral education, and then reviewed the use of technology, particularly DST, in the education field. Smith and Ragan's (2005) Analysis-Strategy-Evaluation instructional design model was adopted. The analysis phase involved the analysis of instructional goal, learner characteristics learning content and environment, via document analysis and interviews. The lack of the information and communication technology (ICT) and student-oriented CME instructional approaches justified the needs and highlighted the niche of the new curriculum. In the strategy phase, with Lambert's (2010) DST steps and Lickona's (1991, 1993, 2001) moral life framework, the instructional package was designed and developed, in which included lessons plans, presentation slides, samples and assessment forms.

The new curriculum was formatively evaluated via design reviews, expert reviews, one-to-one evaluation and field trial. The design reviews showed that most of the identified inadequacies had been rectified, and the experts revealed that the curriculum had met the design standards of congruency, relevance, accuracy and feasibility. The students involved in the one-to-one review found the activities challenging yet interesting and beneficial.

The revised curriculum was administered as a field test, to a class of twenty primary 5 students. From the student participants' work, it was found that the learners were able to grasp the meaning of the value, take perspectives to make sound moral decisions, and seek self-improvement, achieving the moral cognitive and affective objectives. For the moral behaviour performance aspect, they consistently showed respectful behaviours to their group-mates. The post-curriculum feedback revealed that the amount of time for activities seemed insufficient, but the student participants found the overall learning experience enjoyable and effective in advancing their moral development and enhancing their ICT, social and critical thinking skills.

Finally, according to the research results, the researcher identified the research limitations and provided recommendations for future researchers and educators to further explore the use of digital storytelling in moral education.

Keywords: digital storytelling (DST), Civics and Moral Education (CME), moral values, instructional design (ID), Singapore, primary 5 students

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Chapter 1 Introduction

1.1. Research rationale

As Ryan and Bohlin (1999) wrote, "Since education seeks to help students to develop as persons, character development is part and parcel of whole enterprise" (p. 93) and as Pring (2001) argued "education itself is a moral practice", scholars attempt to bring across the point that a holistic education would have to incorporate both the intellectual and moral development to wholly develop a person. The Singapore Ministry of Education (MOE) desired outcomes of education too emphasises the importance of the character and moral values of a person, other than the academic achievement. Under the Singapore education system, one should develop to become a confident person, self-directed learner, active contributor and concerned citizen (Ministry of Education Singapore, 2010a). Six core values of respect, responsibility, integrity, care, resilience and harmony underpin the educational framework for the aforementioned desired outcome of education and the development of the 21st century skills, such as critical and creative thinking, information and communication skills, global awareness and civics literacy (Ministry of Education Singapore, 2010a). These values are crafted in the Civil and Moral Education (CME) syllabus and explicitly taught to students during the CME lessons in the primary schools.

However, parents had pointed out in the newspapers that non-core subjects, like Social Studies, Health education and CME, had taken a backseat to the examinable subjects in school as the examinable subjects were deemed as more important and crucial by teachers (Chua, 2010). Another news article commented that young people nowadays were less fearful of breaking rules and social conventions as parents failed to prohibit the misbehaviour of their children and teachers in schools were less willing to discipline the students for the fear of parents' complaint and students' negative responses (Hoi, 2010). In the 2009 parliamentary

supply debate, the government had been urged to place greater emphasis on instilling the young Singaporeans with sound values while in pursuit of academic excellence (People's Action Party, 2010). To prepare the Singapore students for the challenges in the globalised and knowledge-based world, education in Singapore has seek to rebalance to focus more on the moral formation aspects, equipping them with both the 21st century competencies and core moral values. Researchers agreed that children in the elementary schools are at a formative and malleable period, thus moral education can be impactful to their moral development (Baliey, Tappan & Brown, 1998). The Primary Education Review and Implementation committee was formed to review the primary education, reflecting the ministry's recognition of the integral role of moral education. The committee recommended the strengthening of the quality of non-academic education in primary schools, with greater investment in subjects such as physical education, art and music, which play a central role in character development (Ministry of Education Singapore, 2009). In addition, the recently released Secondary Education Review and Implementation report too had its focus placed on the strengthening of teacher-student relationship, social-emotional support, character-building and citizenship education (Ministry of Education Singapore, 2010b). Moral education is increasingly integrated into the formative education and more proactively promoted by the government as the new Character and Citizenship Education module is expected to be introduced and infused into the core examinable subjects by 2013 (See, 2011).

At the same time, recognising the potential impact of Information and Communication Technology (ICT) could bring to education, the MOE has launched a series of 5-year ICT Masterplans since 1997 to integrate ICT into education to enrich and transform the learning environment to assist students in the acquisition of higher order of thinking skills and the 21st century competencies (Education Technology Division, 2010). The latest ICT Masterplan with its vision of "harnessing ICT, transforming learners" prompts teachers to leverage on the

affordances of ICT to assimilate ICT into curriculum in order to promote and develop self-directed and collaborative learning skills in students (Education Technology Division, 2010). However, while the ministry policy is promoting the integration of ICT into curriculums, the MOE CME syllabus lacks mentioning the ICT pedagogical approach to moral education and ICT resources for the CME curriculum are limited (Curriculum Planning and Development Division, 2006).

There are studies that investigated the use of technology to enhance moral education; some involve the creation of computational authoring systems to assist students in self-identity construction (Bailey, Tettegah & Bradley, 2006; Bers, 2001, 2003; Bers & Cassell, 1998; Umaschi, 1996) while others attempted to explore the use of multi-users virtual environment (Jamaludin, Yam & Ho, 2009; Lee & Hoadley, 2006) or simply the use of readily available film video clips for moral development (Samuelson, 2007). With technology, students are able to engage in active learning as they take charge of their learning process and progress. Collaboration in online communities connects students to authentic learning context, and gain wide and alternative perspectives to moral issues. Digital storytelling (DST) offers an alternative and viable way to cultivate values in students. Creating digital moral stories may prompt students to review the surrounding moral issues or their experiences, clarify their values and present the abstract value concepts into a concrete and sequential manner (Watson, 2003). At the same time, students' literacy and technological skills can be enhanced (Lowenthal, 2009; Robin, 2008).

Thus, this study proposes to leverage on the digital storytelling pedagogy to foster moral development in a Singapore primary school, as an attempt to create ICT-enriched learning environment that could empower learner to engage in collaborative, authentic and self-directed learning to form and refine their value systems, as well as to acquire the 21st century skills concurrently.

1.2. Research purposes

The research purposes of this paper include the following:

(1) design and develop a digital storytelling incorporated CME curriculum unit on the moral value, respect, for the primary five students;

(2) formatively evaluate the feasibility and effectiveness of the newly designed and developed curriculum unit.

Chapter 2 Literature review

The literature review chapter first presents a brief overview of the developmental moral theories, and then outlines a few approaches to moral education and placed particular focus on the narrative pedagogy. The chapter also reviews the integration of technology in moral education, emphasising on the digital storytelling (DST) approach which fuses technology with the narrative teaching practice.

2.1. Overview of morality theories

This section briefly introduces a few significant developmental morality theories which include the Kohlberg's stages of moral development, Turiel's social domain theory, Gilligan's ethics of care and finally the character framework initiated by Lickona.

2.1.1. Theory of moral development

Piaget contributes significantly to the theory of moral development, by extending the cognitively-structural, stage-sequential and age-related formulations from his cognitive development work to moral development (Lockwood, 2009; Nucci, 2008; Tan, Parsons, Hinson & Sardo-Brown, 2003). He theorised based on his observation of the ways children play games and apply the game rules, concluding that children construct their moral values via interactions with the environment. He then divided children's moral reasoning into two stages, namely heteronomous morality and autonomous morality.

Heteronomous morality. Children under the age of ten tend to demonstrate heteronomous morality, viewing rules as constant, inflexible and absolute as they perceive the rules to be set by an authority figure and thus must be obeyed. They base their moral judgement and behaviours on external forces, such as rules and the consequences of the

actions, rather than the intentions behind the actions, thus believing that immediate punishment is inevitable when rules are broken, yet they are unable to explain why certain acts are forbidden or undesirable. This stage of moral reasoning is closely associated with young children's cognitive structure of ego centrism, whereby young children at this stage tend to focus more on self than perceiving issues from others' perspective.

Autonomous morality. Children's moral reasoning shifts from the heteronomous to autonomous moral orientation after the age of ten as they become less self-centred to become more considerate and able to demonstrate perspective-taking. They begin to view rules as flexible and negotiable, thus application of rules is selectively and based on situations. They understand rules as cooperatively developed based on mutual respect and reciprocity, instead of associating rules to power. When a rule is broken, the older children tend to consider both the outcomes and the intentions of the acts, and together work out a resolution which they deem as fair to all. This interpersonal interaction and cooperation process aids in the children's moral development, thus Piaget emphasised on cooperation and problem solving for moral education.

Another influential contributor to the field of moral education and psychology is Lawrence Kohlberg. In consistent with Piaget, Kohlberg argued that it will be myopic to simply view moral development as culture and value transmission from parents; instead, children can be philosophers, having their own morality (Carpendale, 2000; Kohlberg, 1981). Kohlberg built his theory on the foundation of Piaget's early work on cognitive and moral development. He took reference to Piaget's conception of stages and developed the theory of moral development in a more extensive manner encompassing three levels with six stages (Crain, 1985; Kohlberg, 1981; Lickona, 1994; Lockwood, 2009; Nucci, 2008; Tan, Parsons, Hinson & Sardo-Brown, 2003; Tong, 1993). The stages are age-related and in hierarchical

order, with each stage being qualitatively different from the other. Kohlberg's stages of moral development are listed in Table 1.

Table 1

Kohlberg's Stages of Moral Development

Level 1: Pre-conventional morality	Stage 1: Punishment and obedience orientation
	Stage 2: Individualism and exchange
Level 2: Conventional morality	Stage 3: Good interpersonal relationships
	Stage 4: Law and order
Level 3: Post-conventional morality	Stage 5: Social contract and individual rights
	Stage 6: Universal principles

Adapted from "*The philosophy of moral development: Moral stages and the idea of justice*," Vol. 1., p.409-412 , by L. Kohlberg, 1981, San Francisco: Harper & Row. Copyright 1981 by Lawrence Kohlberg.

Pre-conventional level. The pre-conventional level is most common in young children. At this level, children behave to avoid punishment. In stage one, children view rules as fixed and absolute and fail to see the perspectives of other. They tend to obey the rules in order to avoid punishment. As the children move to stage two, they begin to take note of their individual opinions and tend to behave in a reciprocal way and react to immediate interest.

Conventional level. The conventional level brings one to out of the ego-centric phase to consider the society and is typical of teenagers and adults. At this level, one will behave to conform to the social roles and expectations of the community or society. Stage three delineates that one conforms to the majority's stereotypical expectation in order to gain good relationships with surrounding people, usually community or family. When one decides to comply with the law and order to maintain social order, one has reached stage four. Kohlberg (1981) found that most people hardly go beyond stage four to attain higher stages of moral development.

Post-conventional level. At the post-conventional level, individual has internalised moral reasoning and will tend to operate according to one's own principles. At stage five, one

begins to realise that while laws are important for maintaining social order, one should take into account of differing views and rights in order to maintain a social system that benefits the people. The highest stage emphasises on the universal principles of justice and human rights and one should follow these abstract universal principles even if they are in conflict with the laws.

Kohlberg's theory suggests moral education programmes to be developmentally appropriate and provides moral reasoning that is a stage above the students' existing one. He advocates the use of moral dilemma discussions and "just community" to resolve complex moral issues. Faced with moral dilemmas, one encounters cognitive dissonance, and requires reasoning and rationalising through one's values to achieve the next stage of moral development. If one is unable to comprehend the moral reasoning at one stage, one may not be able to reach a higher level of moral maturity.

There are criticisms to Kohlberg's theory. Kohlberg claims that the stage is universal and can transcend across culture. However, there are views that his theory emphasises on individualistic culture on the Western countries and may not be as applicable to Asian countries with collective culture (Crain, 1985; Tan, Parsons, Hinson & Sardo-Brown, 2003). Different individuals in various cultures develop through the stages at different rates. Gilligan (1993) argued that Kohlberg's theory is male-oriented, focusing too much on rationality; and as compared to the male counterparts, the females are more inclined to interpersonal relationships. Based on Kohlberg's scale, woman may have difficulties going beyond stage 3 (Tong, 1993). While Kohlberg has offered a detailed stage sequence for moral thinking, the effects of moral emotions and behaviours may not have been emphasised in the theory (Lickona, 1994; Nodding 1992, 2002).

2.1.2. Ethics of care

Gilligan (1993) provided a divergent perspective from Kohlberg, emphasising on the aspect of care and responsibility of relationships rather than universal principles and rules. Gilligan's initial studies focused on the gender differences and their different orientations towards moral problems, developing the ethics of care which are framed within the feminism premise (Gilligan, 1993; Noddings, 1992, 2002; Nucci, 2008; Tong, 1993). Nevertheless, the caring ethics has considerable practical implications for the moral education, to have the emphasis shifted from the cognitive to the affective aspects. For females, moral reasoning and decisions are made contextually and based on interconnectedness and relations, to achieve care and responsibility for all. Women constantly negotiate between the concepts of self and others as they move in and out of the three identified levels during the moral development process. Gilligan illustrated women's moral development with the abortion study in her book, "In a different voice: psychological theory and women's development". The three levels and two transitional phases are presented in Table 2.
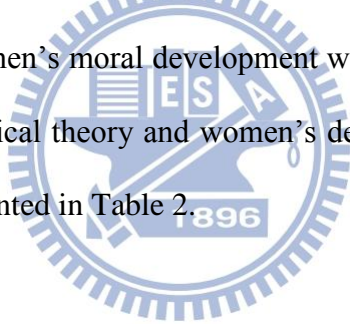
Table 2

Development of Gilligan's Ethics of Care

Level 1	Self-survival
Transitional phase 1: From selfishness to responsibility	
Level 2	Self-sacrifice
Transitional phase 2: From goodness to truth	
Level 3	Morality of non-violence

Adapted from "*In a different voice: Psychological theory and women's development*," p. 74, by C. Gilligan, 1993, Cambridge, England: Harvard University Press. Copyright 1982, 1993 by Carol Gilligan.

Level 1: self survival. Woman, in the initial stage, tend to focus on self and pragmatic concerns that are of self-interests and for survival. A powerless and helpless self tend to be manifested in this level. This may be perceived as selfishness. However, in order to establish

relationships and connectedness with others, one undergoes the transitional phase to do what one should do as an appropriate moral choice.

Level 2: self-sacrifice. At this level, one assumes responsibility and equates goodness with caring. One would forgo self-interests in favour of those of others. However, such suppression of self has the possibilities of leading to sour relationships. Thus, while caring for other, one begins to recognise one's needs and concurrently reconsider what is considered as selfish.

Level 3: morality of non-violence. To overcome the intense suppression, one may need to proceed to the next level. One would attempt to resolve the tensions between the concerns for self and others, achieving care and avoiding hurt to both self and others. At this level, one attains moral maturity, taking into consideration of both self and others as the way to maintain the social relations.

Moral education, based on the ethics of care approach, emphasises on four aspects, namely modelling, dialogue, practice and confirmation (Noddings, 1992, 2002). The role model establishes a caring relationship with the cared-for targets, showing them the ways to care. To more deeply involve the care-for targets, a dialogue can be carried out with an open mind and the aim to achieve mutual understanding, empathy or appreciation. Opportunities for moral actions, as a form of practice, may have the effects of instilling certain values and positive attitudes by putting their moral values in social situations. Confirmation through encouragement and affirmation will promote the person to keenly work towards a better self.

2.1.3. Social domain theory

Turiel's social domain theory differs from Kohlberg's paradigm with the understanding that the former suggests that children's concepts of morality and other domains of social knowledge, such as social conventions, are considered as separate entities instead of

one as they are in Kohlberg's theory (Nucci, Killen & Smetana, 1996; Nucci, 2008; Smetana, 1999; Turiel, 1983). Morality refers to the set of impersonal and obligatory criteria, laying on universal principles of welfare, trust, justice and rights, governs one's conducts; while social conventions encompass the arbitrary and socially agreed rules, coordinating and determining the socially appropriate behaviours in the social systems (Smetana, 1999; Turiel, 1983). Though both concepts may differ, they are inter-related, since all social events occur within the larger society context (Nucci, 2008). Children understand the aspect of moral domain in the terms of how they should relate to others on the basis of the universal features, and comprehend the social conventions domain in terms of how they could relate to others effectively and maintain the relationships with the socially accepted behaviours. In the process of coordinating between the moral and societal constraints to determine the right conduct, the situation and developmental aspects may come into play. According to the social domain theory, children construct varied conceptions of morality and social knowledge through their reciprocal social experiences and interaction with the social environments and surrounding people. Thus, moral judgment and decisions may be contextually based and inconsistent among individuals.

The theory calls for domain appropriate moral and social values education that focuses on the broad common features of the moral and societal domains, such as the universal principles of human welfare and fairness, and not confined to particular community values. Nevertheless, it is also recommended that discussion issues or activities could be concordant with the respective moral or societal domains; moral discussion issues should have focus on the universal principles, while learning activities would emphasise on the social norms, rules and expectations (Nucci, 2008).

2.1.4. Lickona's framework for character education

Lickona (1991, 1993, 2001) approached character development from the heart, mind and behaviour dimensions within a moral environment. Differing from Kohlberg who had his major focus on the cognitive aspect, Lickona had taken a more holistic approach to develop the character of a person by including the moral feeling and action domains other than moral thinking. Similar to Turiel's view, Lickona asserted that one's moral decisions and value system may be affected by the social environment. The framework offers the desirable goals of the character education of a whole person. Figure 1 illustrates the Lickona's framework which consists of the interrelationship and interactions between the three moral domains taken place in a social environment, and specifies the moral qualities included in each component.
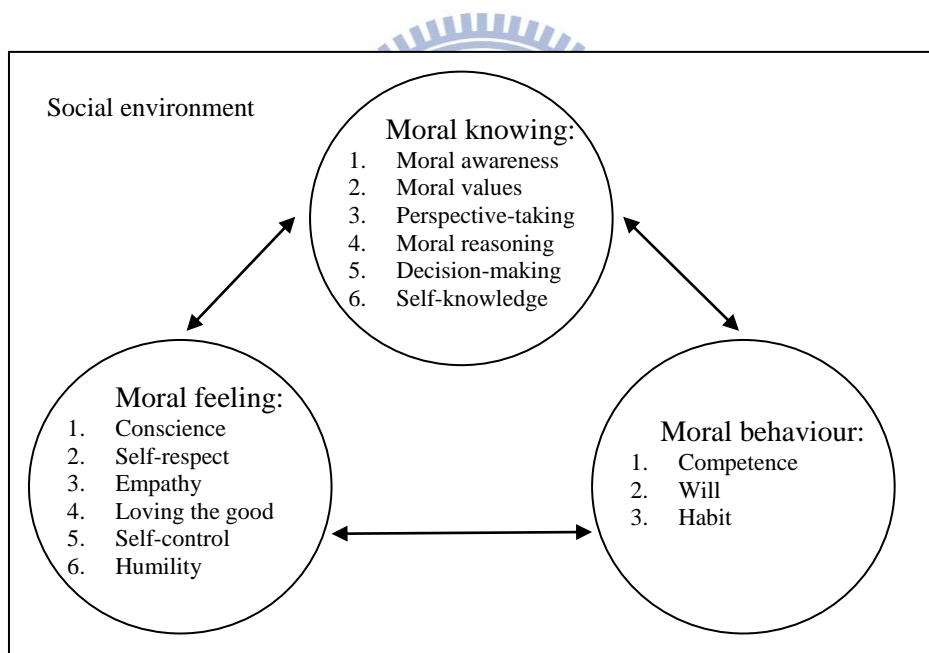
Figure 1. The interplay of the three moral domains. Reprinted from "*Educating for character: How our schools can teach respect and responsibility*," p. 53, by T. Lickona, 1991, New York: Bantam Books. Copyright 1991 by Dr. Thomas Lickona.

Moral knowing. To develop moral knowing, one needs to be aware of the moral situation that requires moral judgement and apply values when appropriate. Lickona mentioned children often fail to recognise whether the situation involves moral issue and

consequently take the wrong action. To make moral judgement, one needs to have a set of moral values. These moral values may include honesty, respect, care, integrity, compassion, fairness and many more. While resolving a moral conflict, one should also be able to take in different perspectives for sound moral judgement. Based on a set of principles and values, one engages in moral reasoning to make decision. Moral reasoning and perspective-taking are the major foci of Kohlberg's stages of moral development, which are included in the framework. The most integral part of moral thinking is "self-knowledge", meaning to be clear of one's strength and weakness, and be able to do self-reflection to clarify personal doubts and affirm one's values.

Moral feeling. As Lickona had mentioned, many people know but do not feel the need to do the right thing, this is when one's conscience and humility come into play. One who is committed to one's moral values is more likely to apply them. In relation to conscience, if one desires the good, one will naturally engage in moral action. Empathy plays a part in perspective-taking; when one takes the standpoint of others, one should be able to identify with the others and show empathy to others' plights. Before one could take into consideration of others, one should value oneself and be able to control oneself from vices. With self-respect, one would learn to respect others and with self-control, one would be less likely to engage in inappropriate behaviours.

Moral behaviour. Besides having the knowledge of and desire for moral values, it is important to put the values into practice. Moral competency refers to the ability to put moral knowledge and emotions into action. It will require social skills, like active listening, conflict resolution and communication skills. Moral action depends on how willing and determined one wants to perform the action. However, once doing a moral deed becomes a habit, one will naturally perform it again without conscious thinking; therefore, students need to be provided with various opportunities to develop and nurture the good habits.

Ryan and Lickona (1992) referred to earlier theories such as those by Piaget, Kohlberg and Gilligan as structuring moral growth in the form of vertical development which challenges one to climb up the hierarchical stages to achieve moral maturity through increasingly diverse and complex educational experiences, roles and responsibilities. Lickona seek to advocate horizontal moral development which prompts one to firmly establish and consistently apply each stage of moral capacity over a wide range of life situations (Lickona, 1994; Ryan & Lickona, 1992). Before advancing to the next higher stage of moral maturity, Lickona wished to nurture one to extend and thoroughly apply the current stage of moral reasoning to daily life situations, turning the desirable values to be part of the moral behaviours and good habits. Thus, moral or character education should be broadly promoted not only in curriculums, but also in instructional methods, classroom management and school culture (Lickona, 1991, 1993; Ryan & Lickona, 1992). Lickona's framework conceives a comprehensive concept of a person's sound character with specific moral attributes, which could function as a lamppost for the formulation of the goals and objectives for a curriculum-oriented moral education.

2.2. Approaches to moral education

This portion of the paper outlines some of the instructional practices to moral education, including direct instruction, moral dilemma discussion, role-playing and service learning.

2.2.1. Direct instruction

Being an integral stakeholder of education, teachers play a part in articulating the nation and school values. The classroom is a place where teachers share their common humanity with the pupils (Pring, 2001), while teacher as the role model to students implicitly

and explicitly transmit values through their teaching methods, relationships with students and colleagues and the learning environment they construct (Cooper, Burman, Ling, Razdevsek-Pucko, & Stephenson, 1998). As teaching is a social practice that embodies the values of the teacher, students may be inherently influenced by the teacher, thus teachers have the responsibility to teach the students directly the right moral values (Halstead & Taylor, 2000). In the course of teaching, teachers demonstrate and transfer their principles and values to students, helping them to make sense of the world. At times, students may need clear and direct moral guidance and explanations from the teachers to know what exactly what certain value means and why it is important (Lickona, 1991). Direct teaching can explicitly and intentionally promulgates the desirable values to students, raising their awareness to the importance of the sound values.

2.2.2. Moral dilemma discussion

The moral dilemma discussion method has its basis on Kohlberg's moral development theory. Moral development goes through the identified six stages in an invariant sequence, meaning one does not skip stages to get to a higher stage, thus one will have to resolve the cognitive dissonance in order to be able to proceed from one stage to the next (Crain, 1985; Kohlberg, 1981; Lockwood, 2009; Nucci, 2008). If one is unable to comprehend the moral reasoning at one stage, one may not be able to reach a higher level of moral maturity. Thus, it could be possible that one becomes physically mature but morally immature. Kohlberg emphasised the discussion of moral dilemma issues to promote moral reasoning to push one through the stages of moral development. One of the widely known moral dilemmas used by Kohlberg in his research was the "Heinz steals the drug" issue, which illustrated whether the poor Heinz should steal the newly invented yet expensive drug to save his sickly wife (Crain, 1985; Gilligan, 1993; Kohlberg, 1981; Lockwood, 2009).

Teacher-led or group-based dilemma discussions assist in moral reasoning through exposing the students to various difficult moral conflicts and eventually lead to ethical decision-making (Halstead & Taylor, 2000; Vezzuto, 2004). Seldom do students face moral dilemmas in life; the hypothetical moral situations raise the students' moral awareness, challenge their existing value system, engaging them to carry out moral reasoning (Lickona, 1991). Discussions give the students the opportunities to articulate the value systems they possess and express the ways their values guide their behaviours (Lockwood, 2009). Guidance from teachers and competent peers could help students to attain a higher level of moral maturity by presenting a moral reasoning stage higher than the students' (Halstead & Taylor, 2000; Vezzuto, 2004). Discussions also encourage perspective-taking, teaching student to respect diverse and even minority views, weigh the different viewpoints thoughtfully to reach an agreement harmoniously (Halstead & Taylor, 2000).

2.2.3. Role-playing

Children engage in role-playing everyday when they socialise or interact with other children, informally learn to make sense of the surrounding activities and have understanding of others' feelings (Stauh, 1971). Role-playing is often scripted, thus providing a non-threatening situation for students to act out the moral scenarios (Day, 2002; Lockwood, 2009). This approach enables students to extend beyond superficial thinking to assume social roles, not only to identify and demonstrate values, but also to put themselves in others' shoes to perceive matters from another perspective, so as to understand others' plights and gain a more balanced view of matters for sound moral judgement (Cooper, Burman, Ling, Razdevsek-Pucko & Stephenson, 1998; Day, 2002; Lickona, 1991; Lockwood, 2009). The enjoyable process involves both cognitive and affective components of moral development when students work out the matter from the standpoint of the distressed party and empathise with

the victims. Empathy is a central emotional response in role-playing, whereby one appropriates one's feeling to other's situation than one's own (Vitz, 1990). Through role-taking, students develop their social sensitivity and empathy for others. The other students, as the audience, too may develop a sense of empathy as they observe how the characters engage in values decision-making, act upon the values and the consequences of the moral actions (Day, 2002; Lockwood, 2009). With guidance and induction from adults or peers, students can have a better understanding of the predicament of the 'victim' and are more likely to provide assistance, advancing a step forward to putting desirable values into practice (Stauh, 1971), or extending the empathetic feeling to general human experience to form moral codes of conduct (Day, 2002).

2.2.4. Service learning

Service learning, a form of experiential learning, engages students with the wider community, enabling them to put their value convictions into action (Hill & Steward, 1999). The approach provides students a structured experience to demonstrate civics responsibility to assess and meet the needs of the community as a team (Butin, 2003; Vezzuto, 2004). In the event of serving the community, students will be challenged with complex and ambiguous moral situations that require them to reflect, evaluate and make decision based on their value systems, which could help to develop their moral competency (Butin, 2003). These personal experiences in real-life situations enhance the students' moral reasoning skills and nurture students to be a social responsible being. In Eyler and Giles' (1999) study, students who actively participated in service learning perceived themselves to appreciate the community more, become more tolerant to others, and had acquired leadership and communication skills (as cited in Hinck & Brandell, 1999). In addition, students who engage in service learning are required to keep a self-reflection journal to record experiences, observation and thoughts. The

reflection process raises the students' self-awareness, enables them to connect to the inner thoughts and internalise values, contributing to character development (Hill & Steward, 1999).

2.3. Narrative approach

Storytelling is an ancient art of transmitting knowledge, culture, values and wisdom from the old generation to the new generation, and has been central to moral education (Umaschi, 1996; Vitz, 1990). Thus, telling stories serves as a natural way to effectively engage students emotionally. Stories offer a simple yet powerful way to understand the realistic and complicated world as the students could directly witness how moral thinking, feelings and actions being put forward by the plot characters (Lockwood, 2009; Sadik, 2008). Real or fictitious stories appeal to the affective realm and relate to life experiences of students without intrusion (Vitz, 1990). Watson (2003) indicated that stories exemplify moral standards for students to follow and inspire them to become a better person. He also argued that stories are able to present abstract value conceptions in a more concrete manner, facilitating understanding as people visualise the scenarios in mind. The Heartwood (2010) and Giraffe Heroes (2011) projects are two of the well-known programmes in the United States that use the narrative approach to conduct character or moral education.

Heartwood. The Heartwood curriculum bases on the use of multi-cultural literatures, like folktales and fairy tales, to inculcate seven attributes (courage, loyalty, justice, respect, hope, honesty and love) in students (Heartwood Institute, 2010; Leming, 2000). Leming (2000) had done an evaluation of the effects of the Heartwood curriculum in four elementary schools in the western Pennsylvania and Illinois. Each school was given the Heartwood curriculum kit which consisted of children literature books and teachers were trained to conduct the curriculum. The teaching process involved introducing value concepts to students, reading of the literature book, discussion and application of concepts via written work.

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Instruments were developed to measure students' "ethical understanding", "sensibility" and "conduct". Results showed that students benefited from the programme in terms of their understanding of the value concepts and demonstrated more tolerance towards other races. This is in accordance to the study by Vitz (1990) who advocated the use of stories to directly bring out the values to be learnt. Stories are morally neutral; they constitute complex plots, good and bad characters, desirable values and vices put into practice. As such, stories allow students to image various moral experiences and moral actions and subconsciously inculcate the values in students, instead of having them to work through moral dilemmas.

Giraffe Heroes. The Giraffe Heroes project enlists stories of heroes from the everyday life to illustrate how desirable values have applied into action, teaching students courage, compassion and leadership (Giraffe Heroes Program, 2011; Ryan & Bohlin, 1999). These heroes are known as the "Giraffes", referring to anyone who has "struck their neck out for the common good" (Giraffe Heroes Program, 2011). In the programme, students will first be told of stories of the people who have contributed to the good of the society. After which, students will look within their families, neighbourhood and community for these ordinary heroes. Service learning is included in the curriculum, whereby at the end of the programme, students will carry out a community service project, analysing and meeting the needs of their community. Students will present their stories of them being the heroes. Compared to the fictional heroes, these ordinary heroes are closer to the students' life, allowing students to be better able to relate to their stories and the moral lessons in the stories.

A simple story could help students to make sense of the complex world, engaging the students cognitively and affectively. Thus, they are better able to remember stories and the lessons taught in the stories. While listening to or reading stories exposes one to the social norms and values in a vivid social context, telling a story engages the storyteller in self-scrutiny and gain insight of self. Personal narratives, in particular, personalise students'

learning experience by having them to tell their own stories and experiences, while teacher would serve as a facilitator to guide student in the construction of the personal stories and understanding of the moral lessons in the stories (Halstead & Taylor, 2000). Nevertheless, this method requires teachers' open-ended questioning, clarification and summarising to facilitate students' understanding and consideration of the values embedded in the stories (Halstead & Taylor, 2000).

2.4. Technology integration in moral education

In this highly digitalised and interconnected world, technology serves as a good complement and catalyst to the current character education (He & Zhang, 2001). Integration of technology into the moral development curriculum enables the incorporation of the various pedagogies strategies mentioned in the previous section. According to Lickona (2001), a social environment, where values can be put to test, has inherent impact on one's values and moral development, technology is able to provide this social context or environment through which students could be exposed to and able to interact with a diverse range of culture and perspectives in order to think more critically and make a more sound moral judgement to issues. Technology also allows students to become an active learner who self-direct, self-regulate and be responsible for one's learning. Through technology, students can learn by doing, making meaning to their learning process and further motivating them to take initiative in their learning progress (Bers & Cassell, 1998; He & Zhang, 2001). Past research had looked into the promises and practices of technology-enhanced curriculum related to moral education (Bailey, Tettegah & Bradley, 2006; Banaszewski, 2005; Bers, 2001, 2003; Bers & Cassell, 1998; Farmer, 2004; Jamaludin, Yam & Ho, 2009; Lee & Hoadley, 2006; Norhayati & Siew, 2004; Samuelson, 2007; Umaschi, 1996).

Bers, at the Massachusetts Institute of Technology Media Laboratory, had carried out a series of design experiments and prototypes which involved the storytelling pedagogy and computational systems, aiming to assist youth in self-identity and values construction. Her research projects include the SAGE authoring system (Storytelling Agent Generation Environment) (Bers & Cassell, 1998; Umaschi, 1996), the Zora (Bers, 2001) and Kaleidostories ICEs (Identity Construction Environments) (Bers, 2003), which are further introduced in the following paragraphs.

SAGE. The SAGE is an example of an interactive storytelling computational tool which allows students to listen, tell and make stories in an authoring environment (Bers & Cassell, 1998; Umaschi, 1996). In the level of "interacting", students converse with and listen to stories told by the programmed SAGE storytellers, "Rabbi" and "Tao". The stories told contain one of the core values found in the Ten Commandments. Such design has reference to the traditional way of storytelling, whereby the moral values are indirectly instilled in students as they listen to stories told by a wise adult. The inspiring stories would help the students to decipher their way out of their personal problems. The "authoring" function (see Figure 2) allows students to do role-playing, by taking up the role of an astute SAGE storyteller to construct their own conversational flow and write their own inspirational stories for further interaction with other children. In Bers and Cassell's (1998) investigation with fourth and fifth grade students, they found that the storytellers created by the students embodied their anticipation, emotions, interest and admiration, which are part of their identity. Story-making enables the students to connect with their inner world to construct their own identities and form their own set of values.
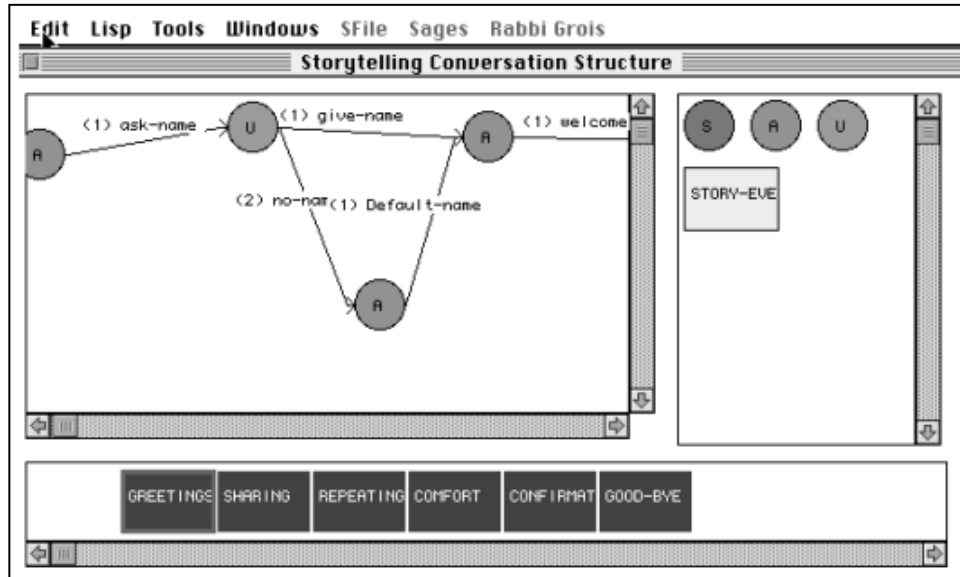
Figure 2. The SAGE authoring function. Students can construct their conversational flow and stories through manipulating the objects—circles (turns), arrows (communicative actions) and boxes (parts of conversation). Reprinted from "Interactive storytelling systems for children: Using technology to explore language and identity," by M. U. Bers & J. Cassell, 1998, *Journal of Interactive Learning Research, 9*(2), p. 213. Copyright 1998 by ACM.

Zora. According to Bers (2001, 2003), both the Zora and Kaleidostories are a form of identity construction environment (ICE) with a multi-user virtual community. An ICE is designed specifically for the purpose of introspection, reflection and discussion about moral values, to construct a self-identity. The Zora ICE (see Figure 3) is a multi-user virtual space with three-dimensional interface which resembles computer games, attracting attention of students and making user experience to be pleasant. The authoring tools allows user to customise the environment and characters to meet one's needs. Students could create characters with narrations or descriptions to illustrate the personality and values of the characters. In the process of building the story characters' profiles, they demonstrate the values they have. The collaborative values dictionary available in Zora is initially empty and requires users' effort to build it as they develop their objects and characters in the Zora space. This dictionary can be used by the user to review the values formed and embedded in the environment, as well as to evaluate and reason the clashes between them to achieve deeper

understanding of the value system. The multi-user community provides an authentic social

context for user to interact and manifest their values in behaviour.
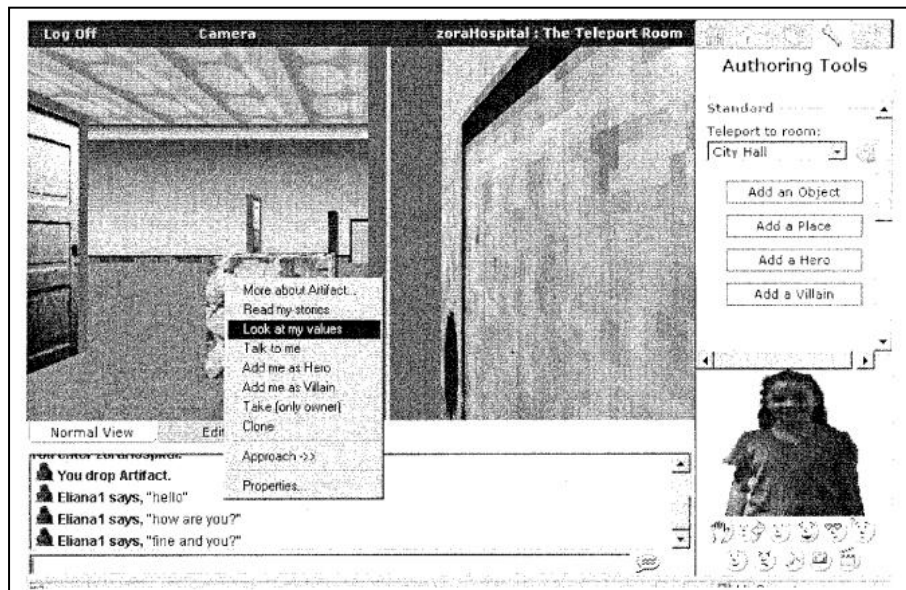
Figure 3. The Zora ICE space. This is a 3-D virtual world where students can bring their collaborative values dictionary, build objects and characters, and interact with other users. Reprinted from "Identity construction environments: Developing personal and moral values through the design of a virtual city," by M. U. Bers, 2003, *Journal of the Learning Sciences, 10*(4), p. 379. Copyright 2001 by Lawrence Erlbaum Associates.

Kaleidostories. Consolidating the previous experiences with the SAGE and the Zora

computational tools, Bers (2003) designed the Kaleidostories ICE, which appeared to be an

advanced version of the Zora. Instead of confining to a micro-community of the ICE users,

the Kaleidostories has extended the community to the web, allowing exchanges and

interaction beyond the classroom. In addition, based on the notion that an identity is multiple,

complex and dynamic, students should construct and explore a number of identities by

designing their own online portraits (see Figure 4) accompanying self-written stories, instead

of working on and with surreal system characters. It is through this authentic and personalised

way of constructing and experiencing the various identities that aid in the identity formation.

The narrative-writing process enables students to organise and engage in deep thinking about

the values that the particular identity carries. Students could also view the pages of other users

and interact with others within the community, to explore, compare and differentiate the

values to establish a more definite and firm identity. Both the Zora and the Kaleidostories tools comprise mainly the narrative construction and social participation functions to assist users to develop identity and values via the constructionist approach.

Figure 4. The Kaleidostories ICE interface. Students create their online self-portraits with self-written stories in order to construct their self-identities. Reprinted from "Kaleidostories: Sharing stories across the world in a constructionist virtual community for learning," by M. U. Bers, 2003, *Convergence: The International Journal of Research into New Media Technologies, 9*, p. 64. Copyright 2003 by SAGE Publications.

Besides the sophisticated authoring computational systems mentioned above, other researchers attempted to promote moral development in students with simpler version of authoring system (Bailey, Tettegah & Bradley, 2006), or make use of readily available technology resources, such as the Second life platform (Jamaludin, Yam & Ho, 2009; Lee & Hoadley, 2006) and film clips (Samuelson, 2007).

Clover. As compared to the SAGE, the Clover is a more simplified authoring system which merely focuses on facilitating moral story construction, lacking the pre-installed storytellers and an interactive platform. In addition, it is specifically catered for children aged 10 to 14 in assisting them to build their own animated vignettes based on their personal

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experiences or stories (Bailey, Tettegah & Bradley, 2006). An animated vignette will enable moral or social situations to be presented in a dynamic and vibrant way, to facilitate role-playing, problem-solving, reflection and discussion. Basically, an animated vignette consists of four parts—narrative, script, storyboard and animation. First, the student will organise his thoughts and narrate his experience in written form, then transforms the written narration into a script with characters. Next, the student will contextualise his story in visual form, sketching characters and story scenes, and finally to add audio effects to his vignettes (see Figure 5). In the midst of creating the vignettes, students could be reflecting on their own moral and social situations and considering the perspectives of others as they created characters of others. When the created vignettes are placed online, students could engage in dialogue and problem-solving. Creation of personal stories personalise learning, thus making learning more meaningful to the students and triggering their intrinsic motivation.
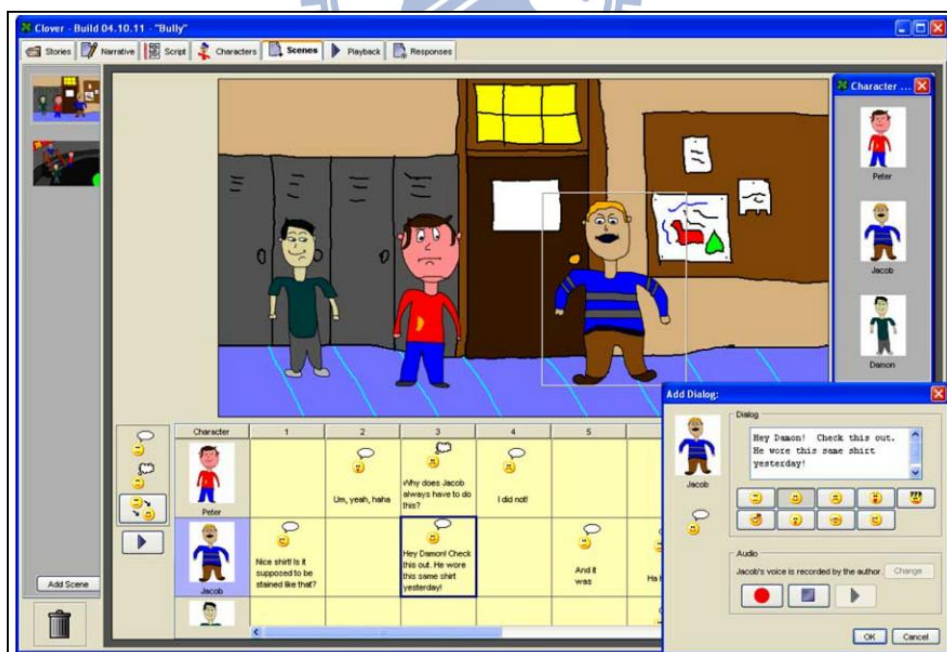
Figure 5. The Clover scene editor. Students create animated vignettes by adding sketched characters, dialogues and audio effects. Reprinted from "Clover: connecting technology and character education using personally-constructed animated vignettes," by B. P. Bailey, S.Y. Tettegah, & T. J. Bradley, 2006, *Interacting with Computers, 18*(4), p. 806. Copyright 2005 by Elsevier B. V.

Second life. Other researchers, like Lee and Hoadley (2006) and Jamaludin, Yam and Ho (2009), had also explored the use of multi-user virtual environment in fostering moral or character education. However, instead of designing and developing the required technological learning environment resembling Zora and Kaleidostories, the researchers investigated the possible use of the existing massively multiplayer online game (MMOG), Second Life, for moral development and shaping. Lee and Hoadley (2006) investigated the use of Second Life for the students' understanding of the issue of diversity and shaping their values, while Jamaludin, Yam and Ho (2009) researched on the use of Second Life for the teaching of argumentative knowledge construction that involves human values. Such game resembles the real world but is played according to the players' interpretations. It offers a vibrant virtual community where users could take up various roles or identities, resembling role-playing. In Lee and Hoadley's (2006) study, students took up the role of an opposite gender, different races or an ugly person to discover the diversity in treatment and responses. As they create their avatars, they are able to explore the values, personality and self-presentation of the identities. The multi-user environment enables users from all over the world to engage in social interaction and collaboration for experiential learning. From the authentic social contexts, users could then better understand the existent cultural differences, value systems and diversity of viewpoints, and tend to be more tolerant, social sensitive and considerate. Similarly, Jamaludin, Yam and Ho (2009) too required students to role-play and to debate controversial issues concerning human values in the immersive virtual world. As the students assumed certain roles, they had to identify with the avatars and perceive issues from the avatars' point of view. In the study, the students role-played the same set of characters through from the teenage age to old age, and the plot surrounded the ethical issue of 'euthanasia'. The platform provides the students with the authentic social context where they faced thorny moral situation that directly challenges their existent values. Role-playing allows

them to show empathy to others' plight and make sound moral judgement. Therefore, it was found that students were better able to engage in critical thinking to present a balanced and integrated perspective of the issue with higher order of argumentative skills.

Hollywood film clips. Samuelson (2007) in his dissertation had investigated the effectiveness of the Hollywood Film Clips for Character Education curriculum in a rural Georgia elementary school. As compared to the aforementioned studies, this research may be more practical and applicable to the current classroom teaching and learning. While the designed computational tools assisted students to grapple with identity issues through the constructivist approach, the Film Clips curriculum was primarily teacher-led facilitating students' moral formation and pro-social behaviour. Samuelson's study focused on the systematic use of the Film Clips curriculum for the training in cognitive and affective perspective-taking and moral dilemma discussion. The selected Hollywood film clips provide the moral contexts, conflicts and positive and negative models that could supplement or complement discussion and other classroom activities. The film clips, as a form of popular media, could easily capture students' interest, and the moving images and soundtracks in the movies could elicit empathic emotions, influencing their cognitive perspective-taking and moral reasoning.

The aforementioned studies emphasised on the narrative pedagogy, spelling the potential of stories and storytelling in moral education. The use of stories helps students to witness the moral action and consequences of others and make their own informed moral decision. Furthermore, from the studies, particularly those involved the laboratory invented authoring systems, the researchers call for the student-centred approach while weaving technology into moral education, requiring students to reflect, rationalise and reason when piecing up fragments of thoughts into a coherent moral story. This story forming process could affirm the students' moral formation. This study seeks to explore further the

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possibilities of technology integration in moral education curriculum; however with greater involvement of the students in the use of simple and inexpensive technology in their moral formation process, i.e. digital storytelling, in order to acquire both moral values and skills needed in the 21st century.

2.5. Background of digital storytelling

This segment reviews how digital storytelling (DST) is conceived, including the definition, history and development of DST. The creation process and essential elements for an engaging and successful digital story (DS) is examined, followed by past research on the educational applications of the DST.

2.5.1. Definition of digital storytelling

The term "digital storytelling" (DST) is rather ambiguous, with different scholars having slight variations in their definitions and interpretations of the term. McLellan (2006) perceived DST as the art and craft of using technology to communicate stories in a new and powerful way; and similar to Banaszewksi's (2005) observation, to any layman, DST could be broadly interpreted as the creation of a short narrative movie clip which may be supported in the forms of presentation slides, streaming media, vodcasts and other digital artefacts.

Some researchers with computer science background understood interactive storytelling as a practice of DST (Bailey, Tettegah & Bradley, 2006; Bers, 2001, 2003; Norhayati & Siew, 2004). Interactive storytelling enables children to interact with the stories to gain control over the progress of the story via hyperlinks in a storytelling system, and even to construct their own story characters and new stories (Farmer, 2004). As seen in the previous section, Bers (2001, 2003) had designed a number of interactive authoring systems woven in the ICE, including SAGE, Zora and Kaleidostories ICE, to foster language learning,

moral development and identity construction. Similarly, Bailey, Tettegah & Bradley (2006) created a computational storytelling tool, Clover, to support students' construction of vignettes, helping them in moral values formation and clarification. The construction process of a vignette is similar to the DST, involving finding a story, writing of transcripts, organising the images into storyboards and adding sound effects. The difference is the latter lacks the animations and does not require story creator to work on a specially designed story system. These studies had emphasis on the technology aspects with the design and development computational systems to enhance the process of storytelling to become a more active and interactive manner. However, on the hindsight, the self-creation of narratives may be also restricted by the constraints of the systems.

This study reserves the definition of DST, initially coined by the Centre for Digital Storytelling (CDS) as the founder and international leader of DST, within the scope of creating personal narratives using still images, voice recording and text to form a within five minutes short video clip via low-cost technology (Banaszewski, 2005; Centre for Digital Storytelling, 2010; Robin, 2008; Sadik, 2008). It is a modern way of telling stories by weaving traditional oral storytelling with digitalised images, voice, music or text (Digital Storytelling Asia, 2011). Meadows (2003) perceived DST as using low cost technology to produce short, multimedia and personal stories which are meant for publication. The created digital story (DS) resembles a movie but differs in the sense that still images and personal narrations are used and it can be produced by any "ordinary" people. DST emphasises the power of self-expression and the narrative nature of story with the use of simple and inexpensive technology rather than game-based story constructions (Hartley & McWilliam, 2009; McLellan, 2006). In other words, one is empowered with one's own voice in the choice of story, structure, images, music and narration. In addition, the created multimedia story

appears to be similar to a montage, with ideas and emotions sequential woven into a story, thus it may tend to be concise and precise yet impactful (Simondson, 2009).

2.5.2. Process of digital storytelling

The Centre for Digital Storytelling (CDS) during its early years of establishment outlined seven elements of digital storytelling (DST) which underlie the success of its workshops and creation of any digital stories (DS) (Lambert, 2010). The seven elements, which will be elaborated later, include: (1) storyteller's point of view, (2) a question for reflection, (2) emotional content, (4) a gift of gab, (5) power of music, (6) economy and (7) pace of story. These seven fundamental elements lay the foundation and provide the structure for an effective, impactful and meaningful DS. A successful DS not only incorporates the personal touch with the personal narrative but also the clever manipulation of the media to convey the meaning (Banaszewski, 2005). Several researchers had taken reference of these seven elements of DST for their studies which involved the use of DST as a form of pedagogy in a particular subject area (Banaszewski, 2002, 2005; Kulla-Abbott & Polman, 2008; Lathem, Reyes & Qi, 2006; McLellan, 2006).

Corresponding to the CDS's early seven DST elements, Kajder (2004) offered a similar simplified sequential six steps procedure to the creation of a DS. To build a DS, one would have to first go through the step of finding a story with a significant element worth telling (*identify story*) and then search for or create the corresponding images (*artefact search*) to develop into a storyboard whereby content, transitions, visual and audio effects are sequenced (*storyboarding*). The next few steps involve editing the scripts and storyboard (*revision*), adding narration and music (*construction*) and finally publish for sharing (*screening*).

Lambert (2010), director of the CDS, reviewed the elements that should be included in an effective story and reframed them as "steps", perceiving the elements as part of the storytelling process guiding storytellers along the storytelling path and towards the formation of a good DS. The revised guidelines incorporate the essential elements of DS creation, as well as the storytelling procedural steps. The seven steps include the following with the corresponding seven elements placed in parentheses:

(1) *Owning your insights (point of view).* Foremost, the DS creator will go through the process of self-reflection to have an in-depth understanding of self and one's experiences, then identify and clarify one's significant story with audience taken into consideration.

(2) *Owning your emotions (emotional content).* The injection of emotions will bring the story to live and bring the audience to a deeper layer of the story's meaning and the storyteller's internal affective thoughts. Thus, it is suggested that storyteller would like to identify the emotions one wants to include in the story and the ways these emotions are conveyed to the audience.

(3) *Finding the moment of change (a question for reflection).* This step involves the search for a significant or crucial moment of the story to capture the audience attention, provoke their thinking or prompt them to reflect the experiences upon themselves.

(4) *Seeing your story (economy).* Images are able to speak up for the implicit and unspoken meaning in the story. The choice of images and the juxtaposition convey messages to the audience.

(5) *Hearing your story (gift of gab and power of music).* The incorporation of own voice personalises the story and emotionally attaches the audience to the story, while soundtracks set the tone to the story and appeal to the affective aspect of audience, leaving them with deeper and vivid impression of the story.

(6) *Assembling your story (economy and pacing)*. This step, focusing on storyboarding and DS production, looks into the structure of the story with the incorporation of visual and audio effects to organise the story in the most effective and economised way that does not overload the audience. The pacing of the story helps in conveying more emotions and contributing another layer of meaning to story.

(7) *Sharing your story.* Bearing the audience in mind, the last review and revision will be carried out before the DS will be published.

It is worth to note that from the DS creation procedures suggested by Lambert (2010) and Kajder (2004), priority is given to the clarification and structuring of a story while technology will take place after the construction of the story. This story-centric approach is further supported by scholars like Banaszewski (2002, 2005), McLellan (2006), Ohler (2006) and Hartley and McWilliam (2009), to avoid the pitfall of focusing too much on the technology aspects at the expense of the quality of the story. A summary table on the DST process is presented in Table 3 below.
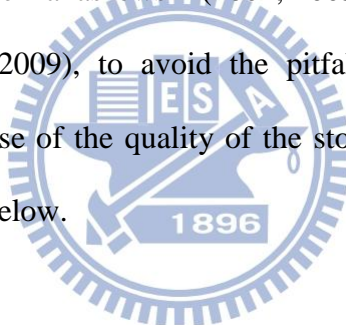
Table 3

A Summary Table of Digital Storytelling Process

Seven steps (Lambert, 2010)	Six steps (Kajder, 2006)	Genres of digital stories
1. Owning your insight	1. Identify story	• Personal
2. Owning your emotions	2. Artefact search	• Instructional
3. Finding the moment of change	3. Storyboarding	• Societal
4. Seeing your story	4. Revision	• Historical
5. Hearing your story	5. Construction	• Reflective
6. Assembling your story	6. Screening	
7. Sharing your story		

Though the CDS encourages digital storytellers to approach DS from a personal point of view, scholars like Ohler (2006) Garrety and Schmidt (2008) and Robin (2008), had

extended the possibility to create stories of a diverse range of genres, not restricting to only personal stories, especially in the educational settings. Generally, the different types of DS can be categorised into the following and listed in Table 3 as well:

(1) *Personal stories.* These personal stories may include stories about an important person or event in one's life, the things that one did, a place and other significant personal experience, which could emotionally appeal to both the DS creator and the audience (Lambert, 2010; Robin, 2008). This type of story could most probably be used in literacy classrooms, with emphasis on the storytelling process and the CDS or Lambert's seven steps of DST (Garrety & Schmidt, 2008).

(2) *Learning or instructional stories.* Course content is concisely synthesised and presented in the narrative form, facilitating comprehension and promoting higher order thinking skills. Such DS is closely linked to the curriculum and not necessarily adhered to the CDS or Lambert's seven steps to DST (Garrety & Schmidt, 2008).

(3) *Societal stories.* In the process of creating such stories, students would have to interact with the community or conduct a more extensive and in-depth research of a particular social issue in order to create a meaningful DS (Garrey & Schmidt, 2008).

(4) *Historical stories*. Historical events are pieced together using digitalised old photographs, newspapers and other materials, thus the emphasis is placed on the story formation process (Robin, 2008).

(5) *Reflective stories.* Reflections involve the use of meta-cognition processes, thus besides the story content documenting the DS creator's learning development, the images, audio effects reflect the creator's thinking and reflection process (Garrety & Schmidt, 2008).

With the various genres of DS that can be created, Ohler (2006) suggested when creating DS for educational purposes, it would be useful to think of the nature of the story using a continuum with "story" on one end and "analytical report" on the other, and evaluate

where the DS should lie along the continuum. Nevertheless, despite the many different types of DS, the main idea of DST is to put the producer's power in the students' hands to create DS that are meaningful, relevant and useful to their learning and lives (Lowenthal, 2009).

2.5.3. Development of digital storytelling

The development of digital storytelling (DST) is rather uneven with North America, Europe and Australasia enthusiastically advocating the movement, while DST in South America, Africa and Asia is less promoted (Hartley & McWilliam, 2009). DST has been around since the early 1990s when the Centre for Digital Storytelling (CDS) in Berkeley, California, was founded by the late Dana Atchley and Joe Lambert, and several sources have pointed to the CDS as the origin and leader in the DST field (Hartley & McWilliam, 2009; McLellan, 2006; Meadows, 2003; Robin, 2008). Digital videos at that time were primary studio productions; Atchley, as a storytelling performer, attempted to regain the production power in the "ordinary" people's hand to create multimedia productions with simple technology (Hartley & McWilliam, 2009). During his performance, Atchley creatively utilised multimedia, with a digital campfire as a prop and a large screen for projecting video and images, to liven his storytelling sessions (McLellan, 2006). His partner, Lambert (2010) believes that everyone has a story to tell and the technology allows people to tell their stories in a creative and interactive way that touch people's lives and this is the power of DST. Together with some other media experts, Atchley and Lambert started the CDS, exploring and leveraging simple digital media tools to give people the "voice". The CDS is then positioned as an international non-profit organisation which enthusiastically promotes DST in United States and Canada by holding workshops and trainings for people around the world in using media technology to craft and share their meaningful and significant stories (Centre for Digital Storytelling, 2010).

The CDS also collaborates with the community, educational and business institutions to develop large-scale and customised DST programmes. One of which is the partnership with the British Broadcasting Corporation (BBC) in the launching of the "Capture Wales" initiative in 2001, as a way for the corporation to connect more closely with the community and listen to the people's voice (Hartley & McWilliam, 2009; Meadows, 2003). The DST movement started in Wales and at least one workshop was conducted per month to train the community in the digital story (DS) creation process. The project empowered the community to contribute to the documentation and archiving of their historical, cultural and personal stories, thus heightening their community identity and esteem. DS were collected in a dedicated archive and published online or aired on the BBC television. The success of the project ignited and spawned the DST movement in other parts of England to start their own DST projects as well, such as the "Telling Lives" programme.

Lambert, the director of the CDS, had also visited Australia to assist in the establishment of the Australia Centre for the Moving Image (ACMI). The ACMI evolved from the Victorian Sate Film Centre which collected educational films for public screening, to become a transformative cultural institution that emphasises on audience involvement as producers of moving images (Simondson, 2009). Public-generated DS were collected and showcased on the ACMI website (http://www.acmi.net.au) and the online repository, Memory Grid. Since 2004, the ACMI has been holding DST workshops monthly, including the Mystory, an intensive DST workshop which trained teachers to integrate DST into curriculum aligning with the Victorian Essential Learning Standards (ACMI, 2011). Furthermore, with the support of the Department of Education and Early Childhood Development, the ACMI launched the award winning Generator project (http://generator.acmi.net.au/), which is an online DST educational community for students and educators to explore, create and share their DS. In 2005, the organisation even hosted the Australia's first international DST

conference. The ACMI, as the new cultural institution, plays an integral role in actively involving the public in creative moving image production process, thus pioneering and espousing the DST movement in Australia.

Though DST is less developed in the Asian regions, there are efforts to promote the DST movement. In Singapore, the Digital Storytelling Asia (DSA) was formulated by two DS facilitators, Angeline Koh and Aurelia, in 2010, and has been endorsed by the CDS and the Digistories (a DST business company set up by the BBC "Telling Lives" project leader, Barrie Stephenson) (Digital Storytelling Asia, 2011). Both founders have been conducting monthly DST workshops and giving talks in Singapore and Philippines, promoting DST in the South East Asia regions. Selected DS created during the DSA workshops have been screened on the Singapore national television channel, OKTO, and more could be found in the Youtube and the DSA website (http://digitalstorytellingasia.com). Receiving recognition from educational organisation, the DSA was invited to lead the Digital Storytelling Circle with the support of the National Book Development Council of Singapore, the National Library Board and the Institute of Technical Education in 2010. The Digital Storytelling Circle serves as a community of practice for current and prospective digital storytellers to share and interact, raising awareness and promoting DST.

2.5.4. Educational applications of digital storytelling

DST has an added advantage as compared to traditional oral storytelling, as it allows students to become a creative storyteller instead of a mere story listener, actualising stories in vivid images, text and audio effects and becoming the producer of media (Hofer & Swan, 2006; Ohler, 2006; Ng, Chai, Wen, & Lim, 2010). Sadik (2008) illustrated how digital storytelling (DST) could be effectively integrated into the curriculum of various subjects to bring about authentic and engaged learning in the Egyptian students and to demonstrate to

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teachers how they could weave technology into teaching and learning. Hofer and Swan (2006), McLellan (2006) and Robin (2008) too suggested the potential of DST to converge affordable technologies with the educational needs of today's classroom, achieving both the curriculum goals and developing the 21st century skills in students. Educators are interested in the educational uses and benefits of DST in classrooms. McWilliam (2009) reviewed three hundred DST programmes and found that one-third of them were conducted by the educational institutes, illustrating the importance of DST as instructional tool. Educators mainly used DST to effectively engage students in learning, and to improve their literacy skills and content understanding. Nevertheless, it was observed that there were differences in the ways of application according to the ages and standard of the students. For younger students, the focus is on short personal reflection stories, while there is a dual emphasis on narratives or social issues and technology as students proceed to higher levels. In the universities, DST tends to be widely used in communication and media courses and teacher education programmes. This multi-media and multi-modal pedagogical tool has proven to be applicable across various disciplines, like language learning (Banaszewski, 2002; Ng, Chai, Wen & Lim, 2010), medical education (Gazarian, 2010; Sandars & Murray, 2009), teacher education (Kearney, 2009; Lathem, Reyes & Qi, 2006; Wake, 2009), special needs education (More, 2008) and community learning (Hathorn, 2005; Nixon, 2009). The following illustrates how DST is applied in the various educational contexts.

Language learning. Given the narrative structure of a digital story, educators could adopt the DST approach for composition writing. Banaszewski (2002) got his grade 4 and 5 students excited over story writing with the use of DST. The author carefully framed the writing course within a story-centric approach and walked the students through the CDS's seven elements of DST. The students made use of multimedia to self-express their stories about an important place, which brought about a motivating learning environment and

strengthened their sense of community. Instead of focusing on story writing skills, Ng, Chai, Wen, and Lim (2010) had explored the uses of DST in improving language proficiency and competency in primary 2 students in a Singapore primary school. The students had previously experienced DST using the Photo Story software in primary 1; and in primary 2, the collaborative learning strategy and news reporting techniques were incorporated to further advance the students' language competency. The students were grouped into a journalism community of Editor, Reporter, Photographer and Interviewee to create digital news stories on a class sports event. Results showed that the overall language competency of the students improved in terms of richer content, faster and more fluent reading speed and skills. Especially those students who played the role of reporters, they were better able to describe the activities in written form since they were required to assist in script-writing.

Medical education. DST has also been used as a reflective practice tool particularly in the medical education field. Sandars and Murray (2009) investigated in their pilot study the use of DST to effectively promote reflective learning in undergraduate medical students. The research required the students to reflect on their interaction experience with their first patients, recording their own and perceived patient's thoughts and feeling before and during the interaction. An interview with the medical students revealed that the DST presentation format provided space for creativity and the image selection process allowed them to recall and rethink the situation again, thus stimulating meaning-making and reflection.

The approach was also used in the nursing clinical courses to stimulate critical, reflective and multi-perspective thinking in nursing students as they handled clinical problems (Gazarian, 2010). Unlike the medical students in the aforementioned study, the nursing students were not required to record the whole clinical process, but to recall the situation and reflect. The students were to apply three learnt concepts into a self-selected clinical situation and presented it in the form of digital story to demonstrate their synthesised nursing

knowledge and clinical decision-making skills. An example story on the experience of taking care of a drug addicted pregnant mother revealed the change in the mindset of the nursing student as she set aside her prejudice to see the noble facet of the mother, and took care of the mother and the baby with mutual respect and trust. The story involved the course concepts of "therapeutic communication", "caregiver trust" and "drug abuse" (Gazarian, 2010) and reflected her change of attitudes towards the marginalised group to recognise her role as and responsibility of a nurse.

Teacher education. Beside the medical context, DST has also been explored in teacher education. Similar to the studies on the medical education, researchers seems to focus on the use of DST for self-reflection purpose for teacher professional development programmes. Lathem, Reyes and Qi (2006) and Kearney (2009) had introduced digital stories as part of the pre-service teachers' learning portfolios which allowed the pre-service teachers to self-assess and reflect their own learning and teaching-learning processes. When working on the digital stories, the pre-service teachers developed a sense of ownership to the product, personalising the experience with careful selection of stories and images, and investing a tint of affective aspects to the portfolio. The process enabled the teachers gained insight of their professional growth and strengthened their identity of a teacher. Wake (2009) took a different approach to have the pre-service English Language teachers to improve their pedagogical content knowledge on teaching of expository text structure via the DST technique. The author attempted to adapt the narrative nature of storyboard and digital story to the teaching of expository text structures. The teachers were first exposed to the different expository text structures with graphic organisers, and later to identify the organisational structures of the given texts. Based on their prior knowledge on the narrative structure, the teachers created digital stories depicting an instructional story which describes the expository text structure of a given text. The teachers reported that they were better able to apply what they had learnt

regarding the identification and description of text structures and their teacher self-efficacy had increased.

Special needs education. More (2008) studied the use of digital stories to assist student with disabilities to acquire the necessary interpersonal social skills. The programme involved teacher, peer tutors and students' cooperation in the creation of a social story which depicted the specific desired behaviour. The use of digital media attracted and held the students' attention. While the teacher's self-created digital social stories could individualise learning and target the specific behaviour and skills, the creation process by students gave the students a sense of ownership and excitement as they saw their images and hear their voices in the digital story. The creation process stimulated the students to identify the desired behaviour and social skills to be presented; concurrently, the collaboration process also provided students with the opportunities to apply the social skills.

Identity development. The Digital Underground Storytelling for Youth (DUSTY) programme engaged middle school youth to develop a positive self-identity through writing about their community with multi-media technologies (Hathorn, 2005). This project was an outreach programme, involving university students, community and youths, as an attempt to narrow the digital divide and foster self-agency of the marginalised youth in the Oakland, California. The youth were taken to the streets for note-taking, communication with the community members and image capturing. The projects gave the participants an opportunity to view and represent themselves in relation to the community in a different perspective. Their reading and writing skills had also improved after the programme. Nixon (2009) studied how the marginalised high school students made sense of their social worlds by handling social issues through DST so as to develop their self-identities with the raise of social awareness. The digital stories on "domestic violence against women" were analysed by the author. The approach promoted deeper understanding of the issue and demonstrated the students'

decision-making through their choices of images and sound effects. For example, while the students chose to include statistical graphs and sufferings of the women to show the seriousness of the issue, images of the victims receiving help were shown to depict hope. Though the topic is on domestic violence, students were given the flexibility to work on the particular aspect of the issue that they were most concerned about. This might encourage them to relate their lives to the social problems, to evaluate what they were concerned about and are deemed as important, developing social consciousness. The digital story making process demonstrated how the students interpreted and constructed surrounding social issues with their beliefs and values and how they identified with the social problems and even to review their social roles in their community.

From the aforementioned studies, while teacher's self-created DS is able to capture students' attention and concisely present course content for better comprehension, having students to self-create and publish their digital stories could enhance learning motivation level and research, organisation and higher-order thinking skills. By working through the DST process, students consistently display their understanding and interpretation of the subject matter, evaluating the images, narration to be used, organising the story structure with the combination of the audio-visual effects. A combination of literacy skills are been optimised to transform the data and information at hand into usable and understandable knowledge (Robin, 2008). This runs in tandem with Lowenthal's (2009) review. The author presented a concise summary of the commonly cited educational benefits of DST. This student-centred approach may also be able to engage students, empower them (especially those marginalised students) with a voice and evoke both cognitive and affective aspects of learning.

Nevertheless, DST advocates, like Banaszewski (2002, 2005), Ohler (2006) and Hartley and McWilliam (2009), advised educators to place focus on the story rather than the technology, as students often get overwhelmed with the use of technology and over-

emphasise on the effects than the story, causing their stories to turn out to be weak. Their point of view can be substantiated by the creation steps suggested by the Lambert (2010) and Kajder (2004). As seen from Table 3, the process of DST requires the digital story creator to construct the story before incorporating the technology component. In addition, to effectively leverage DST for educational uses, the approach needs to be closely tied to the curriculum goals and core content to avoid the pitfall of turning the lesson into a mere video-making session, which may be a pedagogical challenge for teachers (Hofer & Swan, 2006; Lowenthal, 2009; Ohler, 2006). Another practical and realistic issue mentioned by Hofer and Swan (2006) and Lowenthal (2009) is time constraint. Creating DS take considerable time, yet school teachers often face pressure to "cover" content to prepare students for examination. Therefore, to conduct a DST session, teachers need to be prepared for time commitment.

Despite the various researches on the educational benefits and uses of DST, there seems to be a lack of studies on the ways to incorporate the mentioned approach in the area of moral education, thus establishing the niche of this research study which proposes to leverage on DST as a form of pedagogy to bring about an ICT-integrated moral education. DST too could offer a viable way to cultivate values in students and shape their characters. DST engages the students cognitively when they recall or reflect on their experiences or personal problems. As students enact their experiences or present their life challenges in visual images, they engage in self-reflection, reviewing and justifying their values, choices and actions again. Each DS creation step adds another layer of meaning that students have to elucidate. Story plots related in the forms of images and voices enhance comprehension, making abstract concepts like moral values to be easily understood (Watson, 2003).

The rich media also make digital stories to be emotionally engaging and students would be more likely to show empathy. The creation process of personal stories personalise learning, thus making learning more meaningful to the students and triggering their intrinsic

motivation. Publishing DS online will enable students to engage in collaborative learning and sharing in the online communities. Students could witness and show empathy to the sufferings of or share joys with others, increasing their social sensitivity to social matters. While they are involved in the discussion of others' digital stories, they would take on a wider perspective for moral reasoning as they are presented with different views from the global audience. This will help them to move out of the egocentric stage to become more considerate. In addition, the approach of DST could train the students to be equipped with multiple literacy skills to face the 21st century challenges. These skills include social skills, for example interpersonal and intrapersonal skills, and academic-related skills, for instance problem-solving, writing and technology skills (Robin, 2008).

Chapter 3 Research methods

The research design adopted the Smith and Ragan's (2005) instructional design framework with the foundation of the literature review to systemically design, develop and evaluate the digital storytelling (DST) integrated moral education curriculum unit. The instructional design framework comprises three phases, namely analysis, strategy and evaluation, which run in an iterative manner. Multiple sources of data are collected for analysis, including mainly qualitative and some quantitative data. The former consists of interview transcripts, journal entries and documents analysis, while the latter comprises expert review survey and lesson feedback surveys.

This chapter contains five sections. The first portion provides a clear and detailed description of the research context, followed by the ethical considerations in the next section. The third section illustrates the research procedure adopting the Smith and Ragan's (2005) instructional design model, with the data collection details. The ways the collected data would be analysed are elaborated next. The chapter finally concludes with the validity issue.

3.1. Research context

The research context section first provides a brief overview of the Singapore primary education system, then describes the primary school participated in this study. After which, this section introduces the participating level of students involved in the research and the role of the researcher in this study.

3.1.1. Brief overview of the Singapore primary education system

The Singapore primary education is a six-year compulsory education, with primary 1 to 4 as the foundation stage to lay the foundation for learning, and primary 5 and 6 as the

orientation stage to prepare for the secondary level of education (Ministry of Education Singapore, 2011a). The primary school curriculum consists of three subject disciplines, namely (1) languages (English and Mother Tongue languages), (2) Mathematics and Sciences, and (3) Humanities and the Arts (Social Studies, Arts and Music), and at the core of the curriculum framework is life skills which are taught through Co-Curricular Activities（社團活動）and subjects like Physical Education, National Education, Health Education and Civics and Moral Education (CME). While English and Mother Tongue languages, Mathematics and Science are core examinable subjects, the rest are non-core non-examinable subjects. The Mother Tongue languages and the CME are taught by the Mother Tongue languages teachers (Chinese, Malay and Tamil teachers) and the others are taught by the respective subject teachers in English language.

The primary school students face two key milestones along their primary education journey, which are the Subject-based Banding Examination（分科分級能力考試）at primary four and the Primary School Leaving Examination（小六離校會考）at primary 6. Based on the Subject-based Banding Examination results, the primary 4 students are offered a combination of standard or foundation level of the core subjects, which they will study in their primary 5 and 6 education years. By the end of the six years of education, the primary 6 students will sit for the Primary School Leaving Examination and choose the secondary school they wish to be posted to according to the results.

The Singapore primary school runs on a term and semester basis. Each academic year, starting in January and ending in mid-November, consists of four school terms of ten weeks each and two semesters of two terms each. In the academic year of 2012, the school calendar runs from 03 January to 16 November. After each term of ten weeks, there are school holidays. School holidays after Term one and three are of a week each, while school holidays after Term two and four are of four and six weeks respectively. Table 4 displayed the 2012

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academic year for the Singapore primary schools. Semestral assessments take place in Term two and four respectively, and depending on schools, certain schools may conduct term tests in Term one and three.

Table 4

The 2012 Academic Year Calendar for Singapore Primary Schools

Semesters	Terms	School terms	School holidays
Semester 1	Term 1	03 January to 09 March	10 March to 18 March
	Term 2	19 March to 25 May	26 May to 24 June
Semester 2	Term 3	25 June to 31 August	01 September to 09 September
	Term 4	10 September to 16 November	17 November to 31 December

Adopted from "*School terms and holidays for 2012*," by Ministry of Education Singapore, 2011b. Retrieved from http://www.moe.gov.sg/schools/terms-and-holidays/2012/. Copyright 2011 by Ministry of Education Singapore.

3.1.2. Participating school

The participating school, established in year 2000, is a neighbourhood primary school (一般鄰里小學) in Singapore, and is the school where the researcher was posted to from June 2007 to February 2010. In year 2012, the school employs 107 full-time teachers, of whom thirty teachers are teaching Chinese Language (CL), and Civics and Moral Education (CME). There are a total of 1766 students in the school, with an ethnic composition of Chinese (80.6%), Malay (10.9%), Indian (6.3%) and others (2.2%). The total number of students in the primary 5 level is 335, with an ethnic composition of Chinese (76.1%), Malay (14%), Indian (6%) and others (3.9%). The total number of classes in the school is fifty. In the primary 5 level, there are nine form classes (級任班) and seventeen Mother Tongue classes (母語班). The classes are named after values, and among which integrity, responsibility, respect, perseverance and care are the ones the school uphold.

The school has four computer labs with forty-one computers in each lab. One of the computer labs is an iMac hub, usually used for music composition, art creation and video-editing purposes. In addition to the stationary computer labs, the school has invested in a mobile computer lab with thirty laptops, allowing teachers to conduct ICT-integrated lessons in or outside of classrooms. Other than the iMac hub which runs on the Mac operating system, the rest of the computer labs run on the Windows XP system and were installed with the Microsoft Office 2007. During the course of the field trial in March 2012, the school underwent an upgrading phase of the ICT resources, improving the operating systems of the computers to the Windows 7 Enterprise and the Microsoft Office to the 2010 version.

3.1.3. Student participants

Primary 5 students were selected to participate in the formative evaluation stage of the instructional design for practical and realistic reasons. According to the ministry and participating school baseline ICT standards, the primary 5 students should be equipped with the skills to operate basic word processing, presentation slides, spreadsheets, Wikipedia and Internet search engines. Thus, the primary 5 students were chosen for the research as they process the prerequisite ICT skills needed for making of digital stories (DS), such as creation of presentation with images and text, voice recording and uploading of files onto the Internet. In addition, for realistic reason, the primary 5 students are chosen as the primary 4 and 6 students are facing crucial phases in their primary school education; while the lower primary students of the participating school may not have the required ICT skills, the primary 4 batch is under pressure of the subject-based banding examination (分科分級能力考試) and the primary 6 seniors are preparing for their Primary School Leaving Examinations (小六離校會考). Hence, students in the primary 5 level are deemed as the most suitable participants for the research.

Based on the primary four CL results and the students' preferences, the primary 5 CL students are accordingly grouped to attend three different modular curriculums: (1) bridging course (導入課程), (2) school curriculum course (校本課程) and (3) enrichment course (深廣課程). Majority of the students are allocated in the school curriculum modular structured class, indicating that their CL competence is of average, above their counterparts in the bridging class but below those in the enrichment class. Thus, the selected student participants are from a primary 5 class taking the school curriculum course.

3.1.4. Role of the researcher

The researcher is a qualified in-service teacher with four years of teaching experience, teaching the CL and CME subjects. She had taught in the participating school from June 2007 to February 2010 and had held the positions as the CL level coordinator and the ICT level representative. During the course of research, besides designing and developing the new CME curriculum, the researcher had taken over the CME periods to personally conduct the field trial with the participating class. In other words, the researcher was directly involved in the natural setting to gather data. The researcher served as the main data-collection instrument, immersing in the research context to observe and conduct the research as a participant-as-observer. Her position as a researcher and her intention to conduct research in the class was made known via consent forms to the student participants and their parents for ethical reasons.

3.2. Ethical considerations

To maintain the ethical conduct and integrity of the research, the researcher is responsible to obtain informed consents from the research participants and institution, maintain professional relationships with the participants and not compromise the participants' interests and build confidentiality in the research (Creswell, 2009; Johnson & Christensen,

2008). Permission was first obtained from the school principal and the Mother Tongue Head of Department (母語科主任) to conduct the research in the school. A consent letter (see appendix 1) was submitted to the school. The consent letter included a brief proposal stating the research purposes, method, participants to-be-involved and a brief description of the designed curriculum unit. The CL teacher of the participating class had also verbally agreed to allow the researcher to take over the CME periods from 30 January to 30 March 2012 to conduct the field trial with the participating class. Verbal consents were obtained from the teachers who were selected to participate in the needs analysis and formative evaluation interviews. Besides gaining their agreement to participate in the interviews, their permissions to have their interviews to be recorded in the audio format were also given. They were also informed that their identities would not be revealed, codes would be used during the report writing process, and confidentiality of the information from the interviews was promised.

To protect the interests of the student participants, a parent's consent form was issued to each student to seek permission from both the students' and their parents for the student's involvement in the research. The consent form for the students involved in the one-to-one evaluation process (see appendix 2) and the one for the students involved in the field trial phase (see appendix 3) both briefly introduced the researcher's academic background, stated the purposes of the research, and explained the ways the students would be involved in the research process and the ways collected data would be used. It also mentioned that the students' anonymity was safeguarded and codes were used to identify the student participants in the report writing. Students were allowed to withdraw from the research at any time. In addition, the contact information of the researcher was left for the parents for any enquiry. Before the students brought the consent forms home, the researcher personally read through and explained the letter to the student participants. Parents' consents were obtained before the start of the one-to-one evaluation process and the field trial.

3.3. Research procedure

The new curriculum unit was systematically designed using the Smith and Ragan (2005) instructional design system approach. Instructional design is a systematic process to plan an instruction in order to achieve a learner-centred, effective and efficient instruction (Dick, Carey & Carey, 2005; Smith & Ragan, 2005). Through the iterative process of analysis, design, evaluation and revision, the product of the instructional process may become highly practical and workable. The approach ensures the congruence among the lesson objectives, activities and assessments, improving the effectiveness of instruction and quality of learners' outcomes.

The Smith and Ragan (2005) instructional design model comprises the (1) analysis, (2) strategy and (3) evaluation phases, which runs in a dynamic and iterative manner. The analysis stage involves the needs assessment, learner environment, learner and learning task analysis to determine the needs for development of new instruction and to identify the goals and direction for the instructional design. Based on the analysis results, the instructional designer designs and develops the learning content, the instruction procedure, instructional materials and assessment modes. The evaluation phase sifts out the weaknesses in the instruction for further revision and determines whether the objectives of the instruction have been achieved. According to Smith and Ragan (2005), the model may not be followed in a linear sequential order; an instructional designer may modify the sequence according to the circumstances and needs. The instructional design model that is used in this study is available in Figure 6, and the instructional design process with the data collection methods are elaborated in the following sub-sections.

3.3.1. The analysis phase

Instructional analysis was conducted to provide insights to the current situation, suggest resolutions to address the present problems and offer recommendations for the development of the digital storytelling (DST) integrated CME curriculum unit in this study. The analysis was carried out from four aspects: (1) the instructional goal analysis, (2) the learning content analysis, (3) the learner analysis and (4) the learning environment analysis.

Analysis

Instructional goal analysis
1. MOE syllabus

Learner analysis
1. Capabilities

Learning content analysis
1. Existing curriculum
2. Assessment methods

Learning environment analysis
1. School resources
2. Current teaching and learning situation

Strategy

Design of curriculum unit based on:
1. Wiggins and McTighe (2005) backward design model
2. Lickona's (1991, 1993, 2001) character education framework
3. Lambert's (2010) seven steps to digital storytelling

Development of instructional materials

Evaluation

Design reviews
1. Checklist

Expert reviews
1. Survey form

One-to-one evaluation
1. Evaluation log

Field trial
1. Students' work
2. Researcher's assessment
3. Interviews

Revision of instruction

Figure 6. The instructional design model for the digital storytelling-integrated moral education curriculum unit

Instructional goal analysis. The CME syllabus set by the Ministry of Education (MOE) was analysed to facilitate in the identification of learning goals and objectives for the curriculum in this study. The CME syllabus contains the core values that the nation advocates, and provides the directions and frameworks to which the values could be inculcated in the schools in Singapore. An analysis on the MOE created CME curriculum syllabus may help to ensure the instructional goals and objectives in the newly designed curriculum in this study not to deviate from the nation goals and objectives.

Learning content analysis. The learning content analysis examined the availability and appropriateness of the existing curriculum and learning resources, and the validity of the available assessment methods. The current CME textbook, teacher's guide file, MOE provided pictorial and media resources and the school CME rubrics were then analysed to identify the pros and cons of the existing resources which could serve as considerations or suggestions for the new curriculum in this study.

Learner analysis. The learners' capabilities, in terms of their ICT, critical thinking, MT literacy and oral skills, were examined to find out if they were equipped with the necessary skills. The learners' conduct was examined to identify the core value that needed to be emphasised or strengthened. The information was learnt via the interviews with the four participating school's teachers.

Learning environment analysis. The learning environment analysis involved the review of the participating school's existing ICT infrastructure. Apart from the researcher's observation information obtained from previously working in the participating school, four teachers of the participating school were also interviewed to find out about the availability and accessibility of the school facilities. The teacher interviewees also provided insights to the current teaching and learning situations of the CME subject, to find out the strategies currently used and the responses of the learners to those strategies. A DST workshop expert

was engaged in an interview to provide insights to the DST development in Singapore and the DST workshop situations.

In this analysis phase, besides the documents such as the MOE CME syllabus and MOE supplied resources, semi-structured interviews were conducted to supplement the document analysis. A DST workshop expert and four teachers of the participating school were interviewed between December 2010 and January 2011. Due to the geographical distance between the researcher and the interviewees, the interviews were carried out via synchronous communication tool, Skype, instead of the face-to-face interviews. Every interview was audio-recorded with the interviewees' permissions, and was later transcribed. Predetermined interview questions were constructed and emailed to the interviewees before the interviews for their preview, and additional questions were posed when necessary to probe in-depth into their replies and to ask for clarifications. The interviews lasted between one and 1.5 hours.
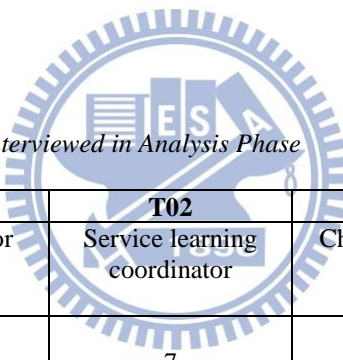
The DST workshop expert, who was interviewed by the researcher, is one of the founders of the Digital Storytelling Asia organisation which spearheaded the DST movement in Singapore. The organisation conducts DST workshops and organises talks to promote DST in the South East Asia region. The DST workshop expert was a digital storyteller since year 2007, and she started conducting DST workshops in March 2009 and since then had carried out more than ten workshops. Most of the workshops were catered to the adults. She had experiences collaborating with a primary school to conduct two DST workshops with primary 5 students to facilitate their English composition writing skills. The DST workshop expert was interviewed mainly on her experiences of conducting workshops with the students. The detailed interview questions were available in appendix 4.

The teacher interviewees are both CL and CME teachers, with more than five years of teaching experience and three of them holds a leadership position in the school. While the ICT coordinator is able to provide detailed information on the school's ICT infrastructure,

initiatives and effort, the service learning coordinator who is in-charge of the moral and character development programmes of the school, is most familiar with the current CME curriculum, resources and initiatives. As the CME subject is taught by CL teachers, the CL coordinator and the experienced CL teacher are able to provide information on how the Chinese language could affect or complement the CME teaching and learning practice. Table 5 summarised the teaching profiles of the teachers being interviewed in the needs analysis stage. The teacher interviewees were interviewed on the following topics: their usage of the available ICT and CME resources, the current teaching and learning approaches and challenges, the effectiveness of the current assessment modes and the students' characteristics. The interview questions for the teacher interviewees were attached in appendix 5.

Table 5

Background Information of Teachers Interviewed in Analysis Phase

Codes	T01	T02	T03	T04
Positions	ICT coordinator	Service learning coordinator	Chinese language coordinator	Experienced Chinese language teacher
Number of years in current school	6	7	8	6
Number of years in teaching CME	6	7	8	6
Levels of CME classes taught in year 2011	4 and 5	4 and 5	3, 4, 5 and 6	4 and 5

3.3.2. The strategy phase

In the design of the curricular content, the researcher referred to the Wiggins and McTighe (2005) backward design model in order to create a constructivist learning experience. The authors suggested a three-stage design approach, starting with stage one of "identify the desired results" followed by stage two of "determine acceptable evidence" and stage three of "plan learning experience and instruction". Lickona's (1991, 1993, 2001)

conceptual framework for character and moral education was incorporated in each stage to engage the students in the mind, heart and hands.

Stage one – identify the desired results. Based on results of the needs assessment, the curriculum unit goal was first identified and established. The essential questions and lesson objectives were formulated to include the cognitive, affective and behavioural aspects of moral life.

Stage two – determine acceptable evidence. In the backward design model, the assessment stage precedes the planning of the learning activities so that the design is more coherent to and focused on the desired learning outcomes (Wiggins & McTighe, 2005). Assessment of the students' moral development was constant and multi-dimensional, with the students formatively assessed through diverse ways in every lesson. In addition, the researcher was not the one assessor; the students were also engaged in self- and peer assessment.

Stage three – plan learning experience and instruction. The planned learning activities were closely linked to the assessment to achieve congruence and alignment with the learning objectives throughout the curricular design process. While the students learnt by doing, they were constantly and simultaneously being assessed. In planning the learning activities, Wiggins and McTighe's (2005) WHERETO elements were taken into consideration in order to achieve engaging and effective lessons. The acronym WHERETO illustrates the characteristics of a good curriculum plan:

W – Where and why. The essential questions, objectives and evaluation criteria are made known to the students so that they understand the purposes of the lesson unit and the aspects that are worth learning.

H – Hook and hold. The learning activities are able to attract and hold the students' attention throughout the unit.

E1 – Equip. The lesson unit equips students with the necessary skills, knowledge, experiences and tools to meet the objectives and goals.

R – Rethink, reflect and revise. Opportunities are provided for the students to rethink the big ideas, do self-reflection and revise own work along the learning process.

E2 – Evaluate. Students are given opportunities, in terms of peer and self-assessment, to be involved in the evaluation process.

T – Tailored. The lesson unit meets the students' needs, interests, learning style and capabilities.

O – Organised. The lesson unit is organised and sequenced to optimise the teaching and learning effectiveness.

In addition, Lambert's (2010) seven steps to digital story making were weaved into the learning activities to guide students to create digital moral stories. Through the backwards design, the researcher aimed to avoid the "twin sins" of "coverage" and "activity", and created student-focused lessons that truly facilitated in students' understanding and learning (Wiggins & McTighe, 2005). After the design process, the instructional materials, such as lesson plans, checklists, presentation slides and rubrics, were developed.

3.3.3. The evaluation phase

The main purpose of formative evaluation is to determine the strengths and weaknesses in the designed and developed instructional materials so as to correct the errors and to improve the effectiveness of the instruction (Dick, Carey & Carey, 2005; Smith & Ragan, 2005; Tessmer, 1993). Smith and Ragan (2005) suggested four phases of formative evaluation to improve instructional design, and these four stages include design reviews, expert reviews, learner validation and ongoing evaluation. The design reviews are conducted early during the design process but prior to the development of the instructional materials to

ensure the design outputs response satisfactorily to the needs analysis results. Upon the development of the instructional materials, experts are engaged to review the intrinsic and technical quality of the instruction. The appeal and effectiveness of the instruction could be further improved with learners' opinions included in the evaluation process. The learner validation comes in the form of one-to-one evaluation, small-group evaluation and field trials. When the instruction is implemented to the target learners, ongoing evaluation can be conducted for the subsequent revisions of the instruction. Given the time and resources that the researcher had, the instructional materials in this study were formatively evaluated through (1) design reviews, (2) expert reviews, (3) one-to-one evaluation and (4) field trial. The four evaluation methods were summarised in Table 6 and further elaborated in the following paragraphs.

Table 6

A Summary Table of Formative Evaluation Methods Used

Evaluation Methods	Participants	Data collection
Design reviews	• Researcher	• Design review checklists
Expert reviews	• Content expert • Instructional design expert • Learner specialist	• Expert review survey forms
One-to-one evaluation	• Three students of low, average and high Chinese Language proficiencies respectively	• Evaluation logs
Field trial	• A class of 20 students of average Chinese Language proficiency • Researcher • Three form teachers and one Chinese Language teacher	• Students' work • Students' self and peer assessment results • Researcher's assessment results • Post-curriculum survey forms • Interviews with students • Interviews with teachers

Design reviews. The design reviews serve as a form of self-evaluation, whereby the instructional designer evaluates one's own design (Tessmer, 1993). The phase occurs early during the design process so that the design outputs remain accurate at the early stage of the instructional design. Upon the completion of the analysis phase, the existing problems were

identified for rectification. With reference to the Smith and Ragan (2005) literature and the analysis aspects undertaken in this study, a design review checklist table (see Table 7) was constructed for the researcher's reference while proceeding with the design process.

Table 7

Design Review Checklist Table

Review aspects	Review criteria
Learners' needs	1. There is adequate understanding of the learners' prior knowledge and skills. 2. There is adequate understanding of the learners' learning needs.
Instructional goal	1. The goals meet the real instructional needs. 2. The goals are in alignment with the MOE and school goals. 3. The learning objectives are clearly written to include the cognitive, affective and behavioural aspects of the moral life.
Instructional procedure	1. The learning activities and assessments are congruent to the instructional objectives. 2. The teaching strategies scaffold the learners through the DST steps and achieve moral development at the same time. 3. The assessment process is constant and multi-dimensional.
Instructional media and environment	1. The ICT resources needed for the instruction are available. 2. The selected ICT applications are economical to carry out the DST process. 3. There is adequate understanding of the learning environment.

Expert reviews. After the development process but prior to the implementation of the new curriculum unit into the instructional context, the instructional materials were reviewed by the experts for feasibility, appropriateness, congruence, accuracy and completeness with the use of the expert review survey form (see appendix 6). The survey used a 4-point Likert scale, with the rating scale defined as the following: 4 as "strongly agree, 3 as "agree", 2 as "disagree" and 1 as "strongly agree". The survey form contains closed-ended questions that review the instructional materials from the four aspects of congruence, content, design, and utility and feasibility (Dick, Carey & Carey, 2005), and an open-ended questions for additional comments.

A content expert, instructional design expert and learner specialist were involved in this evaluation stage, and their background information was presented in Table 8. The content expert was engaged to evaluate the accuracy and completeness of the instruction, while the instructional design expert critiqued the instructional strategy aspect, evaluating the

congruency criteria. The learner specialist, familiar with the target learners, could evaluate the feasibility and appropriateness of the instructional materials. Based on the comments and suggestions given by the experts, further revision and improvement was made.

Table 8

Background Information of Experts in Evaluation Phase

Codes	Experts	Profiles	Specialisations
E01	Content expert	• Professor cum chairperson of the National Chiao Tung University, Institute of Education	• Internet ethics and literacy • E-character development • E-learning
E02	Instructional design expert	• Associate Professor of the National Chiao Tung University, Institute of Education	• ICT integration • Instructional design • Mobile learning
E03	Learner specialist	• Mother Tongue Head of Department of the participating school • CL and CME teacher with eleven years of teaching experience	• Language teaching • Classroom management • Educational leadership

One-to-one evaluation. A one-to-one evaluation was then conducted as a form of learner validation to identify and rectify the obvious problems in the design and to obtain the learner's initial responses based on the evaluation criteria of clarity, impact and feasibility (Dick, Carey & Carey, 2005; Smith & Ragan, 2005). The learner's review may further furnish and complement the experts' evaluation information from the learner's perspective to measure the instructional materials' learning effectiveness (Tessmer, 1993). Three primary 5 students of low, average and high CL competencies respectively took part in the one-to-one evaluation, which was conducted via face-to-face interaction. The basic profiles of the students were presented in Table 9. Only SR01 had been taught by the researcher when he was in primary 1. The students were chosen by their respective CL teachers. They were perceived by their CL teachers to be more expressive, better able to contribute their thoughts to the research and had expressed their willingness to participate in the research when being approached by their CL teachers.

Table 9

Basic Profiles of Student Participants in One-to-one Evaluation Phase

Codes	Year 2011 Semestral assessment 2 CL results (Total 100 marks)	CL curriculum course enrolled in	CL competencies	CME grades
SR01	86.5	Enrichment	High	A
SR02	69	School curricular	Average	A
SR03	50	School curricular	Low	A

The one-to-one evaluation session took place in the computer lab during the students'
CME periods and lasted forty minutes. The researcher ran through the materials with the
student twice. The first round allowed the student to have a brief understanding of the content
and the lesson sequences. The second round was an interactive process; the teacher-researcher
went through the materials with greater details and probe the student's responses using the
guiding questions in the one-to-one evaluation log (see appendix 7). Based on the student's
evaluation information, the instructional materials were revised for the field test.

Field trial. In a field trial, the instruction materials are used in a real instructional
environment with a large enough sample of the target learners to determine the effectiveness,
implementability and learners' acceptance of the instruction (Dick, Carey & Carey, 2005;
Smith & Ragan, 2005; Tessmer, 1993). The field trial was conducted in the primary school
that the researcher used to teach in, and was administered to a primary 5 CL class assigned by
the participating school. Instead of acting as an observer, the researcher was directly involved
in the field trial to personally carry out the instruction the researcher had designed and
developed.

Twenty student participants, from the participating CL class, were involved in the
research, under the agreement of the respective class' CL teacher and with the parents'
consents. This CL class composition is made up of sixteen students from three different form
classes. There are six male students and fourteen female students in the CL class. Ten of the

student participants had been taught by the researcher for two months in the year 2010. Though the student participants are emplaced in the school curricular course, the class overall is of mixed ability in CL. The class' year 2011 semestral assessment two CL scores range from the lowest score of 56 to the highest score of 79.5 and have a mean score of 69.5. Nineteen of the student participants achieved an 'A' for their year 2011 CME grade, while one achieved a 'B'. The twenty participants were grouped into four groups of five, with each group comprising student participants of high, average and low CL competencies so that each group could be on par in terms of language capabilities. The six boys separated into the four groups. The group compositions are presented in Table 10.

Table 10

Group Compositions of Participating Class

Groups	Number of girls	Number of boys	*M* of CL results	*SD* of CL results
Group 1	3	2	68.6	7.45
Group 2	4	1	70.0	6.52
Group 3	4	1	69.3	8.09
Group 4	3	2	68.9	3.29

Before the start of the field test, the researcher sat in the participating class' CL lesson from 16 to 27 January to observe and get familiar with the students. This would help to gain the student participants' trust and co-operation, and particularly for those who had not been taught by the researcher before, to get comfortable with the presence of the researcher (Creswell, 2009; Johnson & Christensen, 2008). Time was also spent to settle the administrative matters, such as obtaining the students and parents' consents for the students' participation in the research project. The field trial spanned over two months and centred on the value of respect. It began on 30 January 2012 and ended on 26 March 2012. Excluding the common test week and March school holidays week, the student participants attended a total

of seven weeks of lessons in the same computer lab, with three lesson periods of ninety minutes each week. The lessons were mostly held on Mondays, from 8.30am to 10am. Table 11 specifies the dates of which the field trial was administered.

Table 11

Administered Field Trial Time Schedule

Dates in 2012	Curriculum unit
30 January 06 February	Lesson unit 1: We are one!
13 February 14 February	Lesson unit 2: Think twice before we act.
20 February 05 March	Lesson unit 3: It all makes a difference.
19 March 26 March	Lesson unit 4: We are considerate.

The field trial was conducted in the computer lab located on the second level of the school building, which was the same floor as the student participants' classroom, so as to facilitate the students' movement to and fro their classroom. Furthermore, all the computers in this computer lab are readily equipped with a set of headphones and a webcam. Figure 7 showed the layout of the computer lab where the field trial was conducted. C1 refer to the computer terminal meant for teachers' use and it is attached to the projector. C2 to C41 are computer terminals for students' use and the shaded areas in Figure 7 refer to the computer terminals used by the student participants. The common area is a space where students can gather as a class and sit down to listen to teacher's instructions. Figure 8 presented the photograph taken from the rear corner of the computer lab that was used during the field trial.
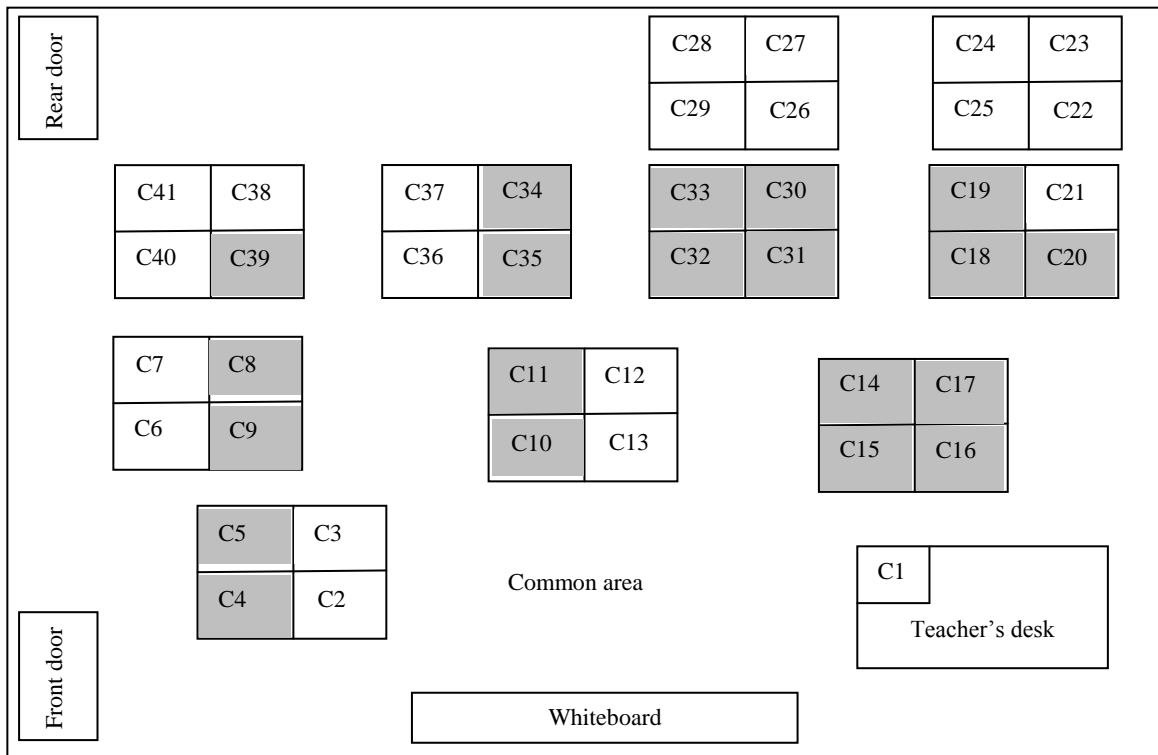
Figure 7. The layout of the computer lab used for field trial
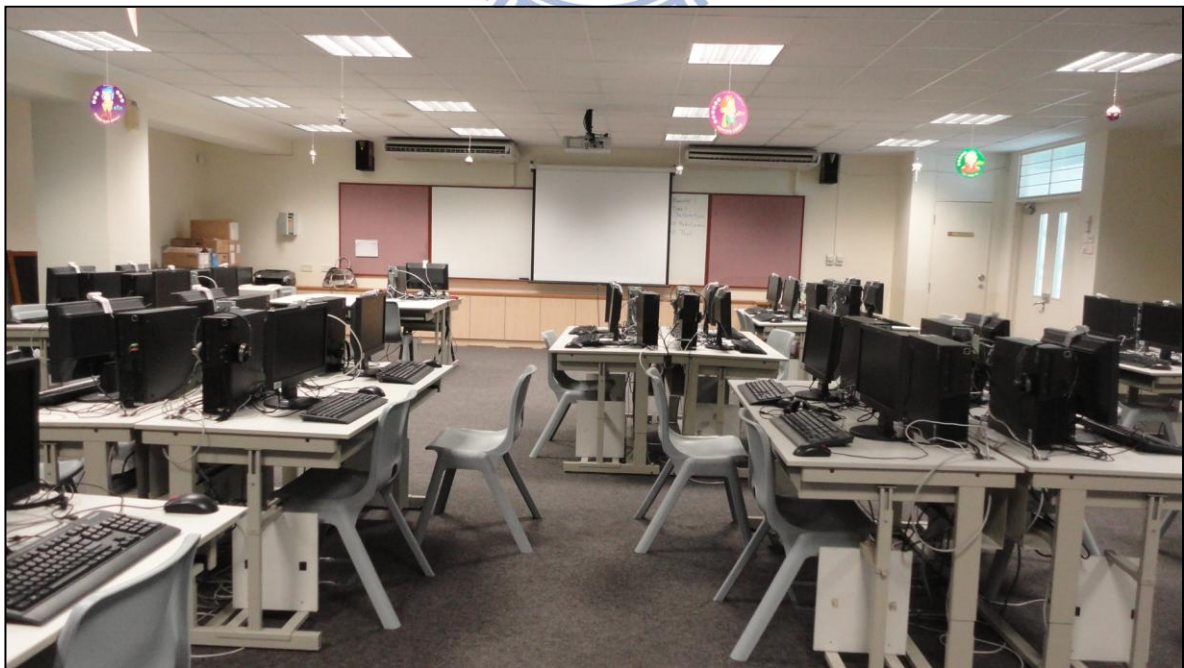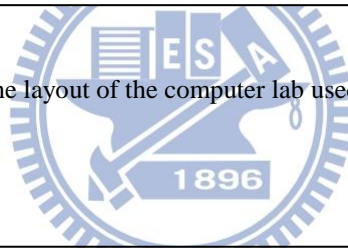
Figure 8. Photograph of the computer lab used for field trial

To formatively evaluate the instructional effectiveness of the curriculum, qualitative and quantitative data on the learners' performance and attitudes were collected. As the researcher was directly involving in the field trial, direct observation and interaction with the learning environment could be carried out, to have a clearer and more complete picture of the natural setting. In other words, the researcher played the role as a participant-as-observer. Systematic observation enables the researcher to document and reflect on the classroom interaction and events as the way they occurred in the natural setting and bring new perspectives to the already familiar situations (Burns, 1999). Field notes written alongside the observation process recorded the classroom settings, non-verbal information and students' interaction process to support later interpretation to answer the research questions. A teacher journal was also kept. The journal not only contained the narrative accounts of the teaching and learning events retrieved from the field notes, but also the researcher's feelings, interpretations and reflections, which played a part in data analysis and monitoring the researcher's bias. Photographs were taken to document classroom activities and actions as part of the monitoring and evaluation process. These visual images captured the classroom setting, interaction, teaching and learning process and quality that could be used to extend later analysis and discussion and deconstruct memories as the researcher engaged in journal and report writing. The photographs could also be integrated into the reporting and presentation of the research.

The student participants' multi-media work products, such as the mind-maps, storyboards, digital stories and photographs, and self, peer and researcher assessment outcomes of collaboration process were gathered for analysis as part of the formative evaluation of the students' learning performance. The learners' self and peer assessment of their collaboration process used the same 4-point Likert rating scale but with six evaluation criteria adapted from the collaboration process scoring rubric which was meant for the

researcher's assessment. The scale runs from 4 as "excellent", 3 as "very good", 2 as "good" to 1 as "needs to improve". These evaluation aspects included (1) listening attentively and patiently, (2) speaking politely, (3) responding with encouragement, (4) contributing to group efforts, (5) providing opportunities for group-mates to contribute, and (6) fulfilling group role duty. The content quality of the student produced digital stories and the researcher assessment of the learners' collaboration process were assessed based on scoring rubrics with criteria categories rated in gradations of quality—"exemplary", "proficient", "satisfactory" and "needs improvement". The quality of digital reflection stories were assessed based on a scoring rubric with the criteria categories of moral knowledge of "considerate", moral judgement of scenario, and moral reflection of self, while the scoring rubric for the researcher assessment of learners' collaborative behaviours consisted of the evaluation categories of communication, relationship management, attitude and contribution.

To evaluate the student participants' perceptions towards the newly developed curriculum unit, the student participants completed the student feedback survey form (see appendix 8a) after the completion of the field trial. The survey form consisted of ten closed-ended questions regarding the student participants' perceptions on the learning content and overall learning experience. It was constructed based on a 4-Likert scale, ranging from 4 as "strongly agree" to 1 as "strongly disagree". One representative student participant from each group was then interviewed to gain greater in-depth understanding of the student participants' post-curriculum feedback responses. The four student interviewees were selected as they were more expressive and had expressed willingness to participate in the interviews. The interviews adopted a one-to-one semi-structured interview format. The researcher recapped the theme of each lesson unit to the student interviewees before the start of the interview. The questions asked are to prompt the student interviewees to elaborate on the responses they had chosen in their post-curriculum survey form. The actual interview questions were listed in appendix 8b.

Every interview was audio-recorded with the student interviewees' permissions, and was later transcribed. The interviews were conducted face-to-face and took place on 31 March 2012 at the void space next to their classroom. Each interview lasted within fifteen minutes.

In addition, the three form teachers (級任班導師) and the CL teacher of the participating class were also interviewed to further substantiate the formative evaluation results. The CL teacher teaches the student participants the core subject of CL and the form teachers spend long hours with them each day as they teach two core subjects (English, Mathematics and/ or Science). Their basic teaching information can be found in Table 12.

Table 12

Basic Teaching Information of Teachers Interviewed in Formative Evaluation Phase

Codes	Positions	Subjects taught	Duration of teaching form class
FT01	Form teacher	Mathematics, Science	3 months
FT02	Form teacher	Mathematics, Science	3 months
FT03	Form teacher	English, Science	3 months
CLT01	Chinese Language teacher	Chinese Language, Civics and Moral Education	3 months

It is presumed that the form teachers and CL teacher are in an advantageous position to observe the changes and growth of the student participants and are able to provide information on the student participants' behavioural performance outside the CME lessons. The semi-structured interview was conducted face-to-face in the staff room on 31 March 2012, and each interview session lasted about thirty minutes. The list of interview questions (see appendix 9) was emailed to the teacher interviewees beforehand for their preview. The teacher interviewees were asked on topics concerning their students' behaviours during lessons, and changes in students' attitudes and behaviours over the academic term.

3.4. Data analysis

The data collected are generally qualitative and from multiple sources; nevertheless, quantitative data were also gathered to complement or extend the findings. The qualitative data collected include interview transcripts, documents and multimedia materials, while the quantitative data comprise the surveys and assessment forms.

In a qualitative research, the data collection and analysis phases are ongoing throughout the investigation (Bogdan & Biklen, 2007; Burns, 1999; Creswell, 2009; Johnson & Christensen, 2008). The processes of data collection, analysis and reflection interrelate and recur throughout the entire research process; hence, upon the start of data collection, analysis of the data was also undertaken simultaneously and repeatedly. The raw data was sorted into different types, such as students' multi-media products, one-to-one evaluation log, journals, interview transcripts and photographs, to facilitate and ease the analysis process. To safeguard the privacy and protect the interests of the research participants, their identities were concealed with a source code. Table 13 refers to the codes of the data sources.

Table 13

Data Source codes

Codes	Descriptions
T01	Represents teacher interviewee 1 involved in the needs analysis phase
D01	Represents digital storytelling workshop expert 1 involved in the needs analysis phase
E01	Represents expert reviewer 1 involved in the expert review phase
SR01	Represents student 1 involved in the one-to-one evaluation phase
G1S1	Represents student participant 1 in Group 1
G1DS_G1S1	Represents comments in Group 1's digital story made by Group 1's student participant 1
FT01	Represents form teacher 1 involved in the formative evaluation phase
CLT01	Represents Chinese Language teacher 1 involved in the formative evaluation phase

The collected quantitative data included the expert review survey, the digital reflection stories evaluation outcomes, the learners' self, peer and researcher assessment of weekly collaborative process, and the student feedback survey. The SPSS 18.0 statistical tool was

used to calculate the descriptive statistics, such as the means and standard deviations, and inferential statistics for the collected quantitative data.

To find out if the student participants had improved over the weeks of lessons from the researcher assessment of the student participants' weekly collaborative process performance, the one-way repeated measures analysis of variance (ANOVA) was conducted. The one-way repeated measures ANOVA analyses whether there is significant difference in the participating class' means between each assessment time for each evaluation category. A post-hoc comparison analysis, t-test with a Bonferroni adjustment, was then used to determine the pairs or combination of means that differ significantly. The null and alternative hypotheses include:

H_0: There is no significant difference in each evaluation category means between each assessment week.

H_1: There is significant difference in each evaluation category means between each assessment week.

After the systematic collection and analysis of the data, the findings and outcomes were written with the support of examples from the data. The report described the research context, outlined the findings and interpretations with data evidence, and suggested how the findings could contribute to the future improvement of practice and future research area. The report was then presented and shared with interested parties, such as the research community, participating school and teachers.

3.5. Quality of the qualitative research

Validity is an essential indicator for the quality of a qualitative research, as it determines whether the research findings and interpretations are accurate, trustworthy and credible (Creswell, 2009; Johnson & Christensen, 2008). Being directly involved to teach the

student participant during the field trial, the researcher was able to spend a prolonged time to immerse in the research field to gain the student participants' trust and develop in-depth understanding of the context to facilitate in the rich and thick description of the research context. The prolonged engagement in the research setting also provided the researcher to check and test researcher bias, as well as to engage in persistent observation to identify routines and atypical occurrences. Thus, the immersion in the research field may aid to establish accuracy and credibility in the findings. It also enables the teacher-researcher to collect various forms of data for triangulation.

Triangulation is one of the commonly used ways to enhance the quality of a qualitative research. Multiple sources of data, such as field notes, students' works, photographs, interview with both teachers and students, and existing documents, were obtained to develop rich and less subjective findings. Triangulating the different variety of data can help to cross-check the findings, increasing the trustworthiness of the research. The various sources of data may also facilitate the teacher-researcher to construct rich and thick description of the context to enable readers to gain a clear understanding of the research settings, process and findings. A reflexive journal was kept by the researcher to actively engage in self-reflection to check for researcher biases. During the research process, the researcher regularly recorded the events, observations, feelings, and interpretation and constantly reflected on the recorded details to check for researcher bias. The advisor of the researcher was engaged to review the accuracy and adequacy of the findings to foster the validity of the study.

In summary, a variety of strategies, such as prolonged participation in research field, triangulation, thick description of research context, keeping a reflexive journal and external auditing, were used to check the validity and quality of the study.

Chapter 4 Design and development of curriculum

The curriculum unit in this research systematically underwent the Smith and Ragan's (2005) instructional design model, which comprises the three iterative stages of analysis, strategy and evaluation. This chapter contains two sections. The first section primarily presents and discusses the results of the instructional analysis obtained via document analysis and interviews with four participating school teachers (T01, T02, T03 and T04) and a digital storytelling (DST) workshop expert (D01). With the challenges and considerations inferred from the analysis results, the new curriculum unit was then designed and developed as elaborated in the second section.

4.1. The instructional analysis

The section includes the results and discussion of the instructional goal, learning content, learner, and learning environment analyses. The instructional analysis could offer reminders to take note and viable recommendations for the later stage of design and development of the new curriculum unit.

4.1.1. Instructional goal analysis

The MOE CME syllabus (see appendix 10) determines the general direction and scope to the CME curriculum in the government schools in Singapore; thus reference to the MOE CME syllabus had been made in order to identify the instructional goal for the new curriculum unit and to ensure that the curriculum goal and objectives are aligned with the nation goals and values. The syllabus is designed based on the six core values of the nation, namely respect, responsibility, integrity, care, resilience and harmony. Lickona's (1991, 1993, 2001) three dimensions of moral life is used as the syllabus conceptual framework (see figure

9) to nurture students morally in aspects of mind, heart and action. As Lickona (2001) reasoned "Character doesn't function in a vacuum; it functions in a social environment." (p.249), the syllabus framework includes concentric circles that represent the different social contexts to be framed within which. The central circle begins with self, then extending outwards to family, school, community, nation and the world. The syllabus adopts the spiral curricular design, requiring each level of students to repeatedly learn and apply each core value within every social context as they progress from primary one to six.
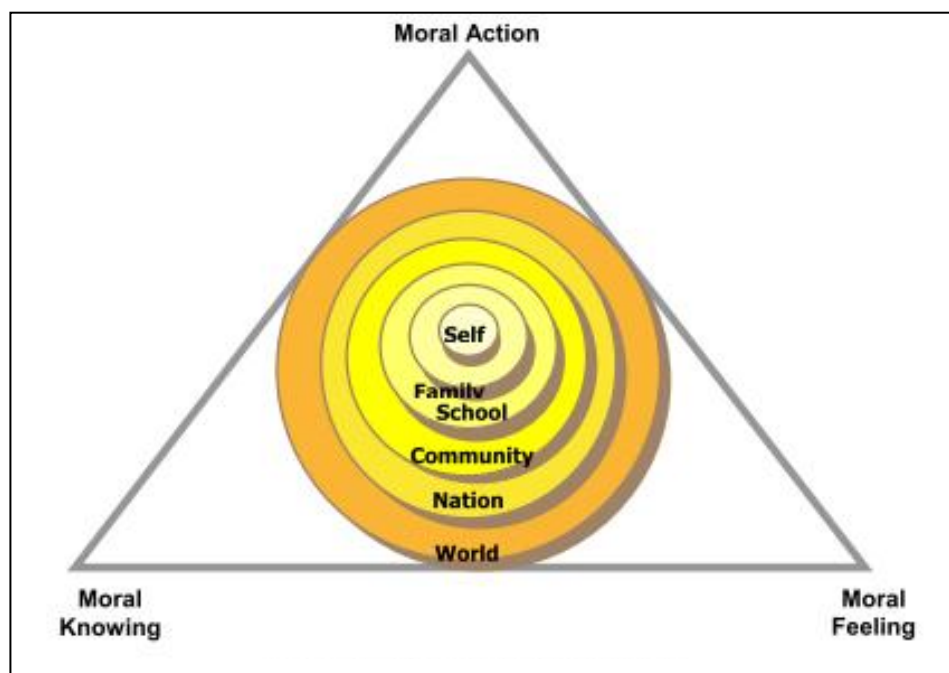
Figure 9. The MOE CME syllabus framework. Reprinted from "*Civics and moral education syllabus primary 2007*," p.A-4, by Curriculum Planning and Development Division, 2006. Retrieved from http://www.moe.gov.sg/education/syllabuses/aesthetics-health-and-moral-education/files/civics-and-moral-education-primary-english-2007. Copyright 2006 by Curriculum Planning and Development Division.

The CME lessons are conducted by the Mother Tongue (MT) teachers, and a total of 1.5 hours of curriculum time per week are allocated for the primary five students to attend CME lessons. The syllabus suggests student-centred approaches to moral education, such as discussion, perspective-taking and experiential learning; however, it lacks the ICT approach other than a brief mention of video-watching, as such the need for an ICT-incorporated

curriculum is identified. In addition, constant and multi-dimensional formative assessment modes are encouraged to guide students in their moral development. These include portfolio, journal-writing, self-reflection, peer evaluation and project work, some of which were included in the new curriculum unit in this research.

4.1.2. Learning content analysis

The MOE provided instructional materials and the school CME assessment plan were examined as part of the learning content analysis. The available instructional materials include the CME textbook, teacher's guide file, pictorial and media resources, among which the CME textbook and teacher's guide file were extensively used by all the interviewed teachers, while the picture cards and media resources were supplementary resources being used as deemed fit. Though suggesting various assessment modes in the syllabus and providing the instructional resources, the MOE did not provide a structured assessment plan for schools to adopt. Thus, the CME assessment rubric created by the participating school was used to be analysed in this research. Elaboration on the analysis of the current available curricular materials and the school assessment tool is presented in the following paragraphs. Table 14 presents a summary on the pros and cons derived from the learning content analysis and consideration points that could serve as reminders or suggestions for development of the new curriculum.

CME textbook. The textbook (see appendix 11) was revised in the year 2009, published by the Panpac Education, approved by the MOE and is the common textbook used by all government primary schools in Singapore. The textbook is a combination of textbook and activity book. The six core values of the nation form the six main units in the textbook. To arouse the students' interest and to trigger discussion, the moral scenarios or case studies are illustrated in vibrant colours and closely relate to the students' life experience. Presentation of certain moral situations is alike to comic with images and dialogues. A variety

Table 14

A Summary Table of Learning Content Analysis Results

	Support	**Inadequacies/ Challenges**	**Considerations**
CME textbook	• Illustrations in vibrant colours, alike comic strips • Moral scenarios relate to students' life experience • A variety of activities	• Limit expression of thoughts in written form • Sequencing and linkage problems between and within units	• Provide other forms of expression modes • Focus on one core value and one theme throughout different contexts • Moral scenarios close to students' life
Teacher's guide file	• Detailed lesson plans • Additional content information or activity instructions provided in appendix	• Not written in the format of "tuning in", "activities" and "conclusion" • No time allocated for suggested activities • Planned lessons range from two to five periods	• Write lesson plans in format teachers are familiar with • Specify timing for activities • Plan lessons in standardized block of three lesson periods
Pictorial resources	• Consist of drawn illustrations and photographs • In a suitable size to be distributed for group discussion • Have accompanying discussion questions	• Not in a favourable size to be used for class discussion • Not available for every unit	• Provide basic descriptions of pictures and discussion questions along with the pictorial resources • Prepare both hard and soft copies
Media resources	• Video clips available in the MOE website repository • Videos created in four languages and in different genres • Videos created for instructional use	• Video clips not well-categorised, affecting search process • Media resources are limited to video clips	• Familiarity with all the available resources is required • State clearly any links to supplementary resources
CME assessment modes	• Quick check via questioning and examination of students' work within the short curriculum time • Use of department CME rubric for semestral assessment of students' conduct	• Based on observation and interaction to grade students may run the risk of impression grading • CME teachers are the only assessor • Rubric is not clearly designed	• Have constant and multiple forms of assessments • Involve peers and other teachers as assessors

of activity sheets are available in the textbook to prompt the students' moral development. Some of the activities require students to engage in self-reflection while some promote peer evaluation. A few of the activity sheets contain mind-map templates for moral situation analysis, a few request students to jot down learning points after watching a video, and some others involve tasks to be completed with group efforts. Parents or guardians are also

encouraged to be involved in the students' learning process by leaving comments or words of advice in certain activity sheets. Despite the variety of differentiated activities available, most of which require students to express their thoughts in written form, which may pose a challenge to students who are weak in their Chinese language (CL). It is suggested that besides planning various activities to engage the students, the new curriculum should allow students to be able to express their moral thoughts in different ways and in their preferred languages.

Another weakness in the CME textbook includes the sequencing and linkage problems between and within the units. The units follow the sequence of how the core values are listed in the CME syllabus. Units on "respect", "care" and "harmony" are closely related and could be placed together. It is left to the teacher's discretion to teach the units in the sequence they deem fit. The sub-units are also not strongly interconnected, resulting in no smooth transition from one to another. For example, in the "respect" unit, the first sub-unit focuses on self-improvement, the next discusses about sportsmanship and the last one on attitudes towards guests. Transition from the first sub-unit to the last one could not be carried out smoothly.

Teacher's guide file. The teacher's guide file contains detailed lesson plans (see appendix 12) and complementary pictorial resources. Lesson plans of every sub-unit in the CME textbooks are provided. Learning objectives, required lesson periods, suggested activities, lesson focus and procedure are all clearly stated. Summarised descriptions of the moral scenarios are provided to facilitate a quick understanding of the lesson procedure as teachers need not keep referring to the CME textbook. The provision of specified discussion questions is a helpful aid to especially beginning teachers with weaker questioning skill. Along with the lesson procedure, there are reminder notes to inform teachers of sources of additional resources or alternatives to the suggested activities, and additional content information or activity instructions are attached in the appendix behind each sub-unit's lesson

plan. This serves as a reminder that the teacher's guide kit should be as complete as possible, to include detailed lesson plans and appendix of complementary resources, such as slideshow printouts, checklists and more.

Though the lesson procedure contains appropriate activities with clear instructions, detailed discussion questions and reminder notes, it is not written in the format that consists of "tuning in", "activities" and "conclusion" which is the common way teachers conduct lessons. In addition, the required lesson periods to complete a sub-unit may range from two to five and the lessons plans do not state how the time is allocated for each suggested activity. The curriculum time allocated for primary 5 CME lesson is three lesson periods of ninety minutes, indicating teachers may not be able to simply follow the procedure to conduct CME lessons; they may need to re-organise the lesson procedure in their desired format and gauge timing for the activities. This suggests that the lesson plans in the new curriculum unit could be planned in standardised blocks of three lesson periods, and written in the format teachers are familiar with, together with time allocation.

Pictorial resources. The pictorial resources (see appendix 13), drawn moral situations and photographs of real-life situations, come in the forms of A5 size picture cards and A4 size paper pictures. The former can be used for group discussion, while the latter is primarily used by the teachers to be projected on the screen to conduct class discussion. However, depending on the lesson unit plans, not every unit comes with these complementary pictorial resources. There are a total of ten picture cards for the units on the values of "responsibility" and "care", which may be sufficient to distribute to group for discussion purpose. Moreover, each picture card comes with accompanying discussion questions to guide students through the moral reasoning process. The descriptions and the instructional uses of the A4 size paper pictures are stated in the lesson plans. Though the picture cards may be handy for co-operative learning strategy, T02 and T03 surfaced concerns over the size of the picture cards when they

chose to use it for class instead of group discussion. They found the picture cards to be in an awkward size, which is not big enough for class view and not small enough to be used on the visualiser.

> Some of the picture cards are hard to show to the pupils, would be better if it's on software. (T02)
>
> 比如說一些 picture cards 的話，它都是要我們進行一些分組活動，所以如果有時間限制的話，我們要給同學看的話，那些卡大又不是很大，小又不是很小，所以就要做一些調整，或讓學生坐的距離比較近一點才比較容易看得到。(T03)
>
> Take for example the picture cards, they are meant for group discussion activity, however, due to time constraints, we would choose to use them for class discussion. Yet, the cards are neither big nor small enough, there is a need to make some adjustments, or allow students to sit closer so that everyone can see the cards. (T03, translated from Chinese transcript)

From the analysis of the pictorial resources, it is advisable for the new curriculum to be prepared with soft copy of the pictorial resources, besides having the hard copy, so that they can be easily projected on the screen for class view when needed. In addition, the provision of a basic description of each picture may prompt better understanding of the illustrations and the accompanying guiding questions may facilitate students' discussion process.

Media resources. CME video clips are available in the eMedia Edumall website (http://emedia.edumall.sg) (see Figure 10). Only authorized personnel, such as the MOE teachers with given login names and passwords, is able to access the resources. As the website is a repository of video and audio resources by the Educational Technology Division, there is a wide selection of video resources catering not only to the primary school level, but also secondary school level and for professional sharing among teachers. The CME video clips are available in English, Chinese, Malay and Tamil languages, and they are created in different genres, such as documentary, interviews, enactment of real-life stories and fictitious stories. As the video resources are meant to meet instructional purposes, some contain pause moments,

enabling teachers to stop to conduct discussion sessions. Certain video clips are created at least five years ago, thus the resolution may be poorer when displayed on full screen mode.

Figure 10. The MOE eMedia Edumall website. The website contains a repository of audio and video resources created by the Educational Technology Division for instructional use. Retrieved from http://emedia.edumall.sg/ cos/o.x?ptid=566&c=/emedia/evideo&func=browse_main&type=subs&main_id=716. Copyright 2009 by Ministry of Education, Educational Technology Division.

Teachers could browse or search for video clips by categories (communication, environment, instructional, Nation Education, values and so on) or subjects (CME, languages, Humanities, Mathematics, Science and so on). The video clips are further sub-categorised according to the languages used in the videos and the target levels (lower and upper primary, lower and upper secondary). However, based on observation, the basic information of the video clips (see Figure 11) mainly contains the synopsis; the values involved in the clips are not obviously stated and the resource information does not match the clips to the specified chapters in the CME textbook in which clips could be used. Teachers may have to watch

through the many video clips to decide their suitability and appropriateness. Consequently, teachers may not have a clear idea where the specified video clips for each unit are located, and have the impression that video clips are not available for certain lesson units.

Figure 11. A video clip with its resource information on the MOE eMedia Edumall website. Retrieved from http://emedia.edumall.sg/cos/o.x?c=/emedia/evideo&uid=&ptid=566&func=prop2&id=7278. Copyright 2009 by Ministry of Education, Educational Technology Division.

T04 commented that teachers would have to be familiar with the repository in order to quickly find the needed appropriate video clips. Such circumstance reminds that familiarity with all the available resources would enable teachers to handle the resources more efficiently and any links to the supplementary resources needs to be clearly stated so that teachers would be able to source for those resources effortlessly.

> The main thing is need to be very familiar with the resources, video clips, because not all the topics that are given contain video clips. So you must be really familiar. (T04)

T04 gave feedback about the insufficient ICT resources, causing teachers to spend much time and effort to source or create their own ICT resources. Digital resources provided by the MOE are limited to video clips, indicating that efforts to promote ICT integration in CME lessons are lacking. This highlights the need and niche of the new curriculum unit in this research to go beyond video-watching to create an ICT-enriched learning environment for the CME lessons.

> ICT resources provided by MOE are insufficient and extra effort needs to be put in to source for the resources needed. Resources such as videos, powerpoint should be given by MOE instead of teachers having to source themselves online or create themselves. (T01)

CME assessment modes. As CME is a non-examinable subject, the MOE has not provided an assessment plan for school's reference; schools have the flexibility to decide on the assessment modes to check the students' moral development and conduct. In the participating school, ongoing assessment during the instructional process and summative assessment per semester are both conducted to access the moral development of the students. According to the teacher interviewees, informal assessments in the forms of oral questioning and examining of students' work in the CME textbooks were usually used to check students' understanding by the end of a CME lesson. Given the short curriculum time, such assessment methods allow the CME teachers to have a quick check on students' moral knowing aspect.

> Pupils are able to respond to your questions with adequate answers based on what they have learnt in this lesson. Pupils are able to quote examples of what they should do and what should not be done. (T01)

> Open discussion. It is difficult for the teachers to have a full assessment given that there are only two or three periods per week, especially if falls on public holiday will be fewer lessons. (T02)

> 主要通用提問，有時候給他們做一些反思，有些是在他們活動本子上的，就有一些表要他們反思說，必如說我們在做「關懷」，你認為你應該關懷誰，透過寫或畫你想關懷誰。(T03)

Mainly through questioning and sometimes through reflection. Certain activity sheets in their CME book require them to do reflection. Taking example of the unit on "care", the students will draw or write the people they should care for. (T03, translated from Chinese transcript)

提問。比方説，「誠實」這課，他們能夠說出什麼樣的行爲是誠實的行爲，如果你不誠實的話，會引起什麼樣的後果，對其他人有什麼影響。(T04)
Questioning. For example, on the unit of "honesty", they should be able to identify honest behaviours, and explain the consequences for being dishonest and how it affects the others. (T04, translated from Chinese transcript)

In terms of the summative assessment, the department-created CME rubric (see appendix 14) is used, and as T01, T03 and T04 mentioned, teachers based on their observation and interaction with the students to evaluate them. Such assessment was done twice a year when a CME grade was needed to be reflected in the students' academic progress card per semester. With reference to the CME rubric, the teachers recalled from what they have observed during and after the language and CME lessons to grade the students. This may run the risk of impression grading which seems subjective and contain prejudice.

Through following a rubric of assessment by observing and grading them on their daily behaviour and how they display the 4 essential areas of "responsibility", "well-mannered", "helpful", "group discussion" as stated in the rubric. (T01)

學校的 eportal 有 rubric，有分「responsibility」、「attitude」、「helpful」、「group discussion」，每一塊是十分，所以老師就根據他們平時的觀察就給他們打分，就會有 range，幾分到幾分是 A、B、C，會給等級。(T03)
The rubric is available in the school eportal. The criteria are categorised into "responsibility", "attitude", "helpful" and "group discussion" and each worth ten marks. Teachers will base on their observations of the students' daily behaviour to grade them along the range of A, B or C. (T03, translated from Chinese transcript)

我就觀察他平時那些行爲，就知道他那些行爲是對還是錯。觀察他的行爲，他說出來的話。(T04)
I'll observe his daily behaviour and the things he said to determine his conduct. (T04, translated from Chinese transcript)

The CME rubric measures four dimensions: responsibility, attitude towards others, helpfulness and group discussion. The categories do not clearly reflect the aspects of the students' moral life nor specify the core values that the students will be assessed. Among the

four key categories, "attitudes to others" and "helpfulness" are one of the aspects of "respect" and "care" values. The category of "group discussions" appear irrelevant viewing from the naming aspect, and the criteria listed ("able to identify the correct values" and "able to distinguish right from wrong") are ambiguous. Group discussion is a classroom strategy and the criteria examples given above are the desired outcome of moral education. The rating of "good", "very good" and "excellent" is differentiated by the time counts ("occasionally", "most of the times" and "at all times") the students display the behaviours listed in the criteria sections in each dimension. In the other words, the students are assessed based on how often they display the desired behaviour, yet it seems that the CME teachers are the only ones processing the assessment. The CME teachers' assessment results may become questionable, as teachers may not be always present to observe and record the students' behaviours. Students may also behave differently in different contexts and in front of different people, such as other subject teachers, parents and peers. Thus, one of the considerations for the new curriculum unit includes having multiple forms of assessments, such as checklist, rubric, reflection, self-assessment, peer assessment and assessment by other teachers.

4.1.3. Learner analysis

The learner analysis section examines the target learners' capabilities to find out the skills they were equipped or lacking to handle the new curriculum. Through the interviews with the school teachers and the DST workshop expert, a general understanding of the students' IT, CL literacy, CL oral, critical thinking skills and conduct were generated. A summary table of the analysis results is available in Table 15.

Table 15

A Summary Table of Learner Analysis Results

	Support	Inadequacies/ Challenges	Considerations
IT skills	• Equip with basic IT skills • Quick to acquire IT skills	• Limited opportunities to practise skills	• Provide opportunities to fuse IT skills into learning process
CL literacy skills	• Able to construct simple story with the basic structure	• Language proficiency limits written expressions • Weak in creativity • No experience in script writing for digital story	• Provide templates • Refer to CME textbooks or the Internet for idea sources • Brainstorming in groups
CL oral skills	• Able to carry out basic conversation in Chinese language	• Tendency to use English language or a mix of languages to converse	• Not penalise students for language mistakes • Allow students to use the language they prefer to express their thoughts
Critical thinking skills	• Able to do simple reflection	• Have difficulties critically reason and justify stands • Have difficulties engage in in-depth reflection • Expression of thoughts restricted by language proficiency	• Provide guiding questions • Use of mind-maps
Conduct	• Overall discipline in school is satisfactory	• Self-centred, less sensitive to surrounding people and issues • Unaware of their less respectful attitudes	• Focus on "respect" as the learning goal

IT skills. According to the school's ICT plan (see appendix 15), upon the level of primary five, students would have learnt to operate word processing, slideshow, spreadsheets and the Internet. During the primary four level CL lessons, students learn to do voice-recording using the online application of the VoiceThread (VT), to practise their oral skills. The VT (http://voicethread.com) is an online collaborative platform for users to share multimedia slide shows and leave comments. T01, who is the school ICT co-ordinator, mentioned that such IT skills are the standardised basic skills specified in the MOE ICT Baseline Standards and have to be taught in schools during arranged ICT lessons; however, he further emphasised that more opportunities needed to be provided for students to practise them.

> Generally, they are proficient as these are the common skills required by the MOE Baseline Standards. School carry out ICT lessons that teach pupils on these skills. Teachers should provide pupils with more opportunities to use these skills that they have learnt. (T01)

Similarly, the D01 stated that students in this digital era were familiar with ICT and were quick to acquire any ICT skills, but they needed the chance and environment to use their skills in a meaningful way.

> Actually the students are primed to do digital storytelling because they are all digital natives. I mean they are so familiar with handphones and everything so they are already very intuitive in learning. You just need to give them the right environment to use that in a useful way otherwise they will just use that to play games with their computers. (D01)

To summarise, the primary five students are equipped with the basic IT skills for DST, and the new curriculum justifies in giving them the opportunities to fuse their IT skills in their learning process.

CL literacy skill. The teacher interviewees adverted to a few weaknesses with regards to the students' reading and writing skills in CL. T03 found that the students' CL proficiency has affected their written expressions. When asked to complete the activity sheets in the CME textbook, the students face problems with the vocabulary words, and are less capable to construct grammatically correct and complete sentences in CL.

> 如果要讓他們一題題的寫下來就會關係到他們的表達能力，很多時候他們不懂怎麼把他們想的感受寫下來、寫成完整的句子或是很多字他們不會寫，所以就會有問題…（T03）
> The completion of questions through writing concerns their ability to express in written form. Most of the times, they do not know how to express their feelings in written form. There are many characters they do not know how to write and they have difficulties writing grammatical correct and complete sentences. (T03, translated from Chinese transcript)

In terms of story construction, T03 responded that the students are able to construct a simple short story with the basic structure of an introduction, content and conclusion in CL,

but their creativity thinking skills are weak. T01 and T02 echoed T03's view; they too perceived the students to be lacking in imagination and creativity to construct stories due to their limited life experiences and confined social circle.

> The lack of story ideas as their personal experience might not be sufficient. They have very confined social circle and this might hinder their developing of story ideas. (T01)
>
> Lack of imagination due to their limited life experiences. (T02)
>
> 開頭、內容到結尾應該還可以吧。如果你的對象是五年級的話，我覺得應該還可以。我覺得要給他們一個範圍，篇幅比較短，簡單一點的話，可能做得到…但是我們是認為他們的創作能力很弱。(T03)
> If your target learners are primary five students, they are able to write a story with the structure of introduction, content and conclusion. They may be able to write if the scope is set and the story is short and simple. However, we think that their creativity skill is very weak. (T03, translated from Chinese transcript)

Though the students are able to construct a story with the basic structure, they may not have the experience of creating a script for digital story. According to D01, creating a digital story is different from writing a story on paper and the story structure may differ depending on the lesson objectives. She suggested providing templates to scaffold students in formulating their stories.

> Definitely there is a difference in writing a digital story than writing an essay…the structure really depends on what story you want to do with them, what you want to achieve…You really have to guide them, sometime you don't give them a lot of choices…we actually gave them a template…it was almost like filling in the blank, like "When I grow up, I want to be a blank." so then they will fill up that part. That was very helpful as it gave them anchor to tell me how to move their stories. (D01)

To overcome these challenges, the new curriculum could include the co-operative learning strategy to encourage students to brainstorm and gather ideas together. In addition, students could refer to various sources, such as the CME textbooks or the Internet, for more moral situation examples. The topic scope is defined and assisting templates are provided.

CL oral skill. The CME lessons are conducted in MT languages, yet students are less proficient in their CL as compared to English Language. T01 and T03 viewed that the students are able to converse in CL, but they have the tendency to use English Language or a blend of languages to express themselves. If the new curriculum required them to use CL in the correct and accurate manner, time and preparation is needed.

> Generally, pupils are able to read and speak in their Mother Tongue language. They are able to converse with their friends and teachers in school. However, as English is their common home language, pupils might not have a deep knowledge in terms of Chinese vocabulary. This might hinder their speaking of good, proper Chinese language. (T01)

> 口語能力，如果不需要全用華語的話，就沒問題；如果不在意他們的語言的話，英文、華文啊，可以參雜語言或用英文的話是沒有問題，或者那種 broken 的，他們可以講得出，聽的人會辛苦一點，會變成很 informal。如果你要他們正經八百的，發音都要很標準，那就要給他們事先的準備。(T03)
> The students will not have problems if they are not required to entirely use Mandarin. They are able to converse better using a mix of languages, in English or broken English. It may be very informal and hard on the listener. Preparation is needed if you request them to speak with correct pronunciation. (T03, translated from Chinese transcript)

The language barrier may hinder the students' performance in the CME lessons as they may not be able to fully and clearly express their views in CL. However, it is worth to take note that such circumstance may not imply that the students have low level of moral knowledge and judgement. Hence, students should not be penalised for language mistakes and the new curriculum could consider to allow students to express themselves in the languages they are more proficient in and comfortable with.

Critical thinking skills. Students, used to the transmission-and-acquisition style may have grown to be passive and less reflective over time, thus they may be less capable to engage in reflective and critical thinking to spark discussions. From the teaching experience of T01 and T03, the students may be aware of the right and wrong, but they may have difficulties critically reason and justify their stands. Their ability to critically comment about the moral values embedded in the moral situations is lacking, defeating the purpose of moral discussions.

我覺得我們的小學生他們還沒有能力針對道德方面去評價。他知道那個做法是對還是錯的，但是你進一步去發問為什麼錯，為什麼對，他可能就講不出來了。 (T01)
I think our primary school students still do not have the ability to critically comment about moral issues. He knows whether a matter is handled in the right or wrong way but when you take a step further to ask for the reason, he may not be able to explain. (T01, translated from Chinese transcript)

其實我們的學生比較死板、膚淺，所以討論的話，我是覺得要有深度地討論時不太可能，他們的答案都千篇一律。他們可能也不會問出很有深度的問題，回答的人也沒有辦法會答出很有深度的答案。(T03)
I think our students are more rigid and superficial in their thinking. Thus, they have difficulties engaging in in-depth discussion. Their replies will tend to be similar. They may not be able to ask any in-depth question and those replied may not be able to response critically. (T03, translated from Chinese transcript)

T03 and T04 had differentiated opinions to the students' ability to engage in self-reflection. On one hand, the former perceived that the students are accustomed to the closed-ended survey format, thus they may not process the ability to engage in in-depth reflection which requires them to reason, infer, interpret and elaborate. On the other hand, the latter believed the students are capable of doing reflection, but their expression of thoughts may be restricted by the languages they are requested to use.

他們不太懂怎樣去 reflect，我們有做 reflection 的話，有時候我們會給他們選擇，比如說：「這麼做，你開心嗎？開心、不開心、neutral。」They are very used to this kind of survey form of reflection. That's why 我們每次填「other suggestions/ comments」都是nil。(T03)
They are unclear how to do reflection. Sometimes, when we conduct reflection session, we provide them with options, for example "are you pleased with what you have done? Yes/ no/ neutral." They are very used to this kind of survey form of reflection. That's why the "other suggestions/ comments" section is always nil. (T03, translated from Chinese transcript)

我們要他們做反思時，不是要他們講就是寫出來，可以用英語讓他們寫、讓他們講，對他們會容易一些…但如果要用華語來講，他們就會講得稍微少一點。我相信他們會做反思，因為有時學校在進行某一些東西都需要學生們做一些反思，所以他們都會做，可能我們就需要先告訴他們反思的方向。(T04)
The reflection is either in written or spoken format. It will be easier for them if they can use English to write or verbally express their reflection…However, they will tend to speak less in Mandarin. I believe they know how to do reflection, because sometimes they are asked to do reflection after certain school activities. Nevertheless, we still need to set a direction for them to reflect. (T04, translated from Chinese transcript)

To enhance the students' critical thinking skills, the new curriculum could specify focus topics and guiding questions to guide the students through the thinking process. Instructional strategy such as mind-mapping could help them to analyse moral scenarios and clarify their values in a systemic manner.

Conduct. According to the teacher interviewees, the overall discipline in the school is satisfactory, but they had identified "respect" as the core moral value that is still lacking in the students. T01 and T04 mentioned that students nowadays are more self-centred and less sensitive to the surrounding people and issues. T03 particularly pointed out these students are unaware of their less respectful attitudes towards seniors and elderly. Thus, the core value of "respect", both a nation and school value, could be the focus of the new curriculum.

Respect, social responsibility or awareness. Pupils nowadays are more pampered and therefore self-centered as a result they are less concerned of the things happening around them that they could do to help the society. (T01)

主要是尊重啦，他們不太懂得要怎樣的語氣跟長輩講話、跟老師講話或者是正確的態度，因為這個年代長輩跟孩子之間也會朋友、朋友這樣，我就是這樣跟朋友說話啊，所以他們不懂那個分寸，身分有點模糊。甚至我們有時覺得他們應該要認真一點、要尊重一點的時候他們不會，但是他們自己也不知道啦。(T03)
Mainly "respect". They are not certain how to use the appropriate attitude and mannerisms to communicate to seniors. This is because nowadays the way the seniors and children interact is alike to friends, thus they do not uncertain of the boundaries. Sometime, we feel that they should be more serious or respectful, but they do not realise so. (T03, translated from Chinese transcript)

學生一般來講，他們可能就比較自我為中，所以有時就忽略了他們同伴同學之間的相處，所以要尊重他們的朋友。可能一部分的學生，就對老師來說，比方說那些代課老師，他們要學會怎麼尊重代課老師，而不是只有單單學校裡面的老師。(T04)
They may be more self-centred, thus they tend to be less sensitive to their peers. They should learn to respect their peers. Some students should also learn to respect not only the school permanent teachers but also the relief teachers. (T04, translated from Chinese transcript)

4.1.4. Learning environment analysis

This section involves the analysis of the school's ICT infrastructure and the current teaching and learning situations. It would be necessary to be aware of the ICT facilities of the school in order to determine the kind of resources available to support the new curriculum. An

understanding of the ways the CME lessons were conducted highlights the areas for improvement and emphasises the need for the new curriculum. Table 16 shows the summary of this section.

Table 16

A Summary Table of Learning Environment Analysis Results

	Support	Inadequacies/ Challenges	Considerations
School ICT infrastructure	• Availability of updated ICT resources	• Inaccessibility of ICT resources	• Get permission from the school to gain access to the resources
Current teaching and learning situations	• Student enjoy role-playing the most	• Different response levels to different topics • Lacklustre response among upper primary students during class discussion • Student's MT language proficiency levels affect comprehension and expression • Limited types of teaching strategies used • Lack of the use of ICT • Time constraints; use of CME lessons for MT language teaching	• Use of co-operative learning strategy to heighten participation level; teacher as facilitator • Remove language barrier • Incorporate DST into CME lessons • DST-infused lesson is time-consuming; need to compress DST elements

School ICT infrastructure. As presented in the previous chapter of "research method", the participating school is a young school with relatively sound and updated ICT infrastructure in place. The school is equipped with four computer labs, among which include an iMac hub and a mobile computer lab. In the school library, there are also twenty computers available for students' free access. The computers are upgraded to the Windows 7 Enterprise operating system and the Microsoft Office updated to the 2010 version. All the computers are connected to the Internet. In all the classrooms and computer labs, there are also a desktop computer, visualiser and projector for teacher's instructional use. To maintain the school ICT hardware, two technical assistants are employed. There are also two ICT training assistants who provide assistance to teachers or personally conduct software courses to students. In each

class, two students are trained as ICT leaders to aid teachers in handling technical problems during lessons. In terms of the technical aspect, the school should be able to support an ICT-integrated curriculum.
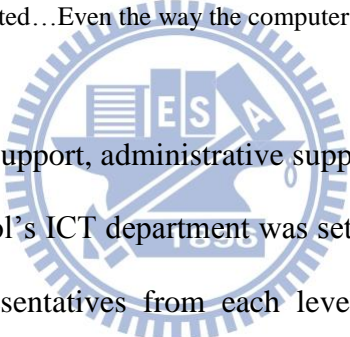
Besides the availability of the ICT resources, the accessibility of which would also affect any ICT-infused lessons. Due to security considerations, staff biometric card is required to scan-open the doors and gain access to the computer labs. In addition, a staff username and password are needed to enter to the computer system. Permission from the participating school or help from the teachers are required to gain access to the ICT resources. The timetabling schedule also reduces the accessibility of the ICT resources. T03 pointed out that the entire level of students are having MT or CME lessons at the same timing, thus if there is a need to use the computer labs, the classes would have to be scheduled to use them. Furthermore, the progress of the classes may be different; those slower would require more sessions or they may not be able to complete the curriculum as planned. At times, other levels and other subject classes may wish to use the computer lab at the same timing too. Nevertheless, the school has its portal where teachers could log in to view the availability of the computer labs and make reservations. Thus, it is advisable to make reservation of the computer lab or other ICT resources in advance to ensure the new curriculum could be conducted as scheduled.

如果說要上電腦室，比較麻煩的就是電腦不夠，因為上華文或公民課的時候，是好幾班一起上，所以可能在安排個別班進去的時段就比較麻煩。如果要進行這個，有些班就速度快，有些班就來得慢，需要多幾堂課…可能安排不到那種時間，不然就是電腦不夠那麼多班級，就沒有辦法在規定時間內完成。(T03)

The number of computers is not enough for all the classes. The whole level is having Chinese or CME lesson at the same time, thus the classes need to be scheduled to use the computer lab. This will be troublesome. Moreover, the progress of some classes may be faster, some slower and may need more sessions. However, it may be hard to schedule time for the slower ones, thus they may not be able to complete the curriculum in time. (T03, translated from Chinese transcript)

Apart from the availability and accessibility problems, D01 reminded that the arrangement in the computer lab would affect instructional process and progress, as students would get easily excited and distracted by the computers in front of them. While it may not be possible to make changes to the physical arrangement of the computer lab, adjustment could be made to the seating arrangement of the students and the way the lesson is conducted. For example, students could gather at the open space in front of the projector screen to concentrate on listening to instructions and watching demonstration before they proceed to work on the tasks on the computers.

> For instance this computer lab we were using, the computers were facing the walls, all along facing the wall. Then in the center, a group of them were sitting around computers. So what happen when you were demonstrating how to do the technical parts, because they are facing the walls, they get very distracted…Even the way the computer lab is very important. (D01)

Other than the technical support, administrative support is available to support an ICT-integrated curriculum. The school's ICT department was set up in year 2009, with an ICT co-ordinator and six teacher representatives from each level. The ICT department provides directions, proposes and spearheads the ICT integration initiatives in the school. The department had proposed all core subject (Languages, Mathematics and Science) departments to have a structured ICT integration programme by weaving ICT into the subjects' Schemes of Work (教學程序表). However, for non-examinable subjects, such as Arts, Social Studies and CME, the integration of ICT learning activities is yet to be officially included in the respective Schemes of Work. Nevertheless, T01, the ICT co-ordinator, had expressed his support for the DST-integrated CME curriculum during the interview.

> 如果我是學生，我會喜歡這種上課的方式。它可以是一種專題作業，看你怎麼 blend into curriculum。它可以是一種訓練學生高思維的平臺，which they are lacking, 而且我們現在要的是 self-directed learning, 而且它有那個 collaboration 協作，就是我們要

的…we use this to provide the opportunity to display moral values, to educate them the moral values. (T01)
If I'm the student, I'll like this type of lesson. It can be a project, depending on how you blend it into the curriculum. It can be a platform to enhance students' higher order thinking skills, which they are lacking. The collaboration helps to promote the self-directed learning…we use this to provide the opportunity to display moral values, to educate them the moral values. (T01, translated from Chinese transcript)

Current teaching and learning situations. The common classroom strategies that the teacher interviewees used in their CME lessons include class or group discussion, role-playing and storytelling. They would also capture teachable moments to emphasise the moral values to the students. The students enjoyed role-playing the most, however, their response level might differ during discussion session. According to T03 and T04, the students have different level of responses to different topics. They respond more enthusiastically to topics, such as "honesty", "integrity" and "care", which are closely related to their life experience, while face difficulties in discussing intellectual property and environmental issues. However, due to their limited life experiences, they may not be able to empathise or engage in perspective-taking to understand the given moral situations; hence much teacher guidance is required.

如果是比較簡單的，像是「正直」，他們一般都能說出自己的感受，但是如果是講到「知識版權」啦、或比較難的課題，他們就給的答案就膚淺一點，所以就要老師一步一步引導他們。 (T03)
If it is easier topic like "integrity", they are able to express their feelings, but it is a more difficult topic like "intellectual property rights", their replies will be superficial and they require teacher's step-by-step guidance. (T03, translated from Chinese transcript)

我是覺得可能因為成長的環境不一樣，不是每一件事在裡面討論的事件他們都會遇到，所以他們就不能夠感同身受…可能我跟他們講人家很窮，窮到沒有得吃，他們說：「怎麼會沒有得吃，不要吃這些，就吃另外一些食物啊」。 (T04)
Maybe because they grow up in a different environment, they have not experienced some of the situations mentioned in the textbook and are unable to empathise with the character. For example, when I tell them people are too poor to afford any food, they reply, "How is it possible to have no food? They can eat something else if they don't like these." (T04, translated from Chinese transcript)

Apart from the nature of topic affecting the participation level, T04 found that students in the upper primary tend to be less interested in the moral scenario discussions, and those

who participate regularly are the vocal and expressive one. The students' participation level may be affected due to the way the teacher manages the discussion. As T03 stated, teachers would provide a standard answer after the discussion session, compromising the value of discussion and discouraging the students to openly voice out their views again. To resolve the problem, co-operative learning strategy could be incorporated in the new curriculum to encourage all or most of the students to participate and engage in active learning, while the teacher serves as a facilitator.

比較負面的就是學生會覺得老師每次要跟我們討論的結果又有一個規範的答案，就覺得…唉，討論做什麼，好像沒有言論的自由。(T03)
On the negative side, the students will feel that this is no freedom of speech and doubt the purpose of discussion since a standard answer will be given after a discussion. (T03, translated from Chinese transcript)

多數就是那些比較有看法，有想法的，就會經常舉手發言，然後那些比較靜的就會坐在那裡。如果你提問的話，他就說：「喔，我的看法跟他類似。」可能低年級和中年級就還好。到了高年級，他們的興趣就不會在那裡，他們就會說：「哎呀，這個我們曾經看過。」(T04)
Usually, those with more opinions will be more vocal, while those who are quieter will sit aside with not much response. When asked, the quiet ones will say, "My opinion is similar to his." This is not so obvious in the lower primary level. The upper primary students are less interested and will say, "We have seen this before." (T04, translated from Chinese transcript)

The CME curriculum is conducted in the MT languages, but the students' CL proficiency level affects their ability to comprehend the moral content and accurately express their views. As T01 remarked, the students' vocabulary bank is limited; they may not know several technical terms in CL, hindering them from adequately express their opinions. To tackle this problem, T03 and T04 either had the class to discuss and write a standard answer together, or allowed the students to freely express but not penalised them on the grammatical mistakes.

They have difficulty in expressing their views on certain CME topics as the vocabulary used for certain topics such as recycle, protecting the environment, requires them to know many specific terms in Chinese. Though they may have lots of opinion, they are unable to express

accurately in Chinese…Sometimes, pupils can understand the CME values better in English. (T01)

一般來講，我們都會一起討論一起寫，這是比較普遍的做法，要不然的話就是讓他們不會寫的字用漢語拼音寫，或是我們在批改時不要去介意他們語文的表達，或是不要寫完整地句子，寫到重點的話就可以讓他們通過…(T03)
Usually, we'll discuss and write together. Otherwise, we do not penalise them for grammatical mistakes or wrong expressions and mark them correct once the main point is spotted. (T03, translated from Chinese transcript)

做活動本的時候，因為我們都是用華文，一樣是他們表達方面，可能需要一番討論，然後由老師總結他們的想法，把幾個學生的想法列在白板上，他們再寫下來，記錄在活動本。(T04)
The activities in the CME textbook are to be completed in Chinese language, but the students faced problems expressing in Chinese language. Thus, after discussion, teacher will summarise their thoughts and write a few answer on the whiteboard for them to record on the textbook. (T04, translated from Chinese transcript)

From the outlook, the teaching methods seem student-centred; however, from the way the lessons are actually conducted, the lessons are still fundamentally teacher-centred. The class discussions are primarily teacher-led, followed by the teacher summarising the discussions and providing standardised answers. This would discourage the students from critical thinking and expressing their own views as they see little purpose in the discussion process since the teachers would be providing the answers eventually. Students' participation then becomes lacklustre. In addition, the teaching strategies that the teachers are using currently are limited and there is a lack of the use of ICT in CME lesson. The DST-integrated CME curriculum in this research could inspire teachers with a potential pedagogy to conduct a more student-focused CME lessons.

An ICT-infused lesson may tend to be time-consuming. Time constraint is a practical and realistic issue that teachers face when integrating DST into lessons (Hofer & Swan, 2006; Lowenthal, 2009). A DST workshop usually lasts twenty-four hours, according to D01; however, the students only attend one and a half hours of CME lesson each week. The three lesson periods may also further be split into an hour of two periods on a day and thirty minutes of one period on another day. In the other words, the students would not have the

continuous three CME periods to focus on developing their digital moral stories. Nevertheless, if both the CL and CME lessons are conducted by the same teacher, the teacher has the flexibility to arrange the lesson time slots. Furthermore, T01 and T04 had reflected that teachers may use CME lessons to teach CL in order to finish the syllabus and to prepare their students for examinations, further reducing the amount of time for CME lessons. It appears that CME being a non-core subject has taken a backseat to the examinable subject, CL. There would be time issue and there is a need to compress the DST elements so that moral values could be efficiently taught to the students via DST in the limited available time.

> I think we had about ten hours…The normal workshop is three days and it is eight hours per day, so that's twenty-four hours…So we had to really re-adjust what we are really going to teach and we drop a lot of the normal things we teach in class and just focus on the essential. (D01)

> As CME is considered a core subject, teachers teaching CME might use the lesson for the teaching of CL instead. (T01)

> 我們一個星期公民課三節一個小時半，有時候都是拆開來，一天兩節課一天一節課，所以真正能做這個活動的時間真的很難排。然後，華文的課程是很趕的，有時候都會吃進公民的課，所以要做這活動需要更多時間。(T03)
> Each week, there is a one and a half hour of three CME periods. They are split into one day of two periods and one day of one period, so it is hard to schedule for an ICT-based activity. Moreover, the CL syllabus is very rushed, so sometimes CME periods are taken for CL lessons. (T03, translated from Chinese transcript)

4.2. The strategy phase

The need for an ICT-integrated CME curriculum was identified from the instructional goal and learning environment analyses which revealed the lack of the ICT approach to the CME curriculum. Furthermore, the learner and learning content analyses called for more opportunities for students to practise their IT skills and other platforms for them to better express their thoughts. The teacher-oriented teaching methods gradually strife students' participation and their ability to engage in active and reflective learning, which may then affect their moral development. Such situation appealed for a student-centric approach to

bring about meaningful and effective learning experiences. These inadequacies surfaced in the analysis phase justified the need for an ICT-integrated curriculum and highlighted the niche of the DST-incorporated curriculum unit. Based on the instructional analysis results, the design and development of the new curriculum unit worked to build on the existing support and avoid or rectify the identified problems with the help of the consideration points. This portion of the chapter describes the design and development processes of the DST-integrated CME curriculum unit.

4.2.1. Design of curriculum unit

To achieve a constructivist and student-oriented learning experience, Wiggins and McTighe's (2005) backward design model was adopted in the planning of the curriculum unit. This model is a three-pronged curricular design approach, aimed to help teachers to avoid the "twin sins" of "coverage" and "activity" (Wiggins & McTighe, 2005). "Coverage" refers to the situation of teacher attempting to teach as much syllabus content as possible in the limited curriculum time, regardless of whether students have grasped the basic concepts or consolidated their understanding. "Activity" refers to an activity-packed curriculum which fails to meet the learning objectives; in other words, students are engaged in various hands-on activities but they do not manage to acquire the targeted skills or deepen their understanding via these activities. To create student-centric curriculums and lessons that truly facilitate students' understanding and learning, the authors advocated the curricular design to begin with identifying the learning goals and objectives ("identify the desired results"), follow by the assessment modes ("determine acceptable evidence") and finally the planning of learning activities ("plan learning experience and instruction").

Lickona's (1991, 1993, 2001) conceptual framework for character education was incorporated in every stage to nurture students in all three domains (moral knowing, feeling

and action) of moral life. While the backward design model offered the design standards and approach to the planning of the curriculum unit, Lickona's framework framed the curriculum content for the moral development of the students. Furthermore, Lambert's (2010) seven procedural steps to DST chained the lesson units together, facilitating the smooth transition between each lesson unit. The seven steps include owning your insights and emotions, finding the moment of change, seeing, hearing, assembling and sharing your story. While teaching strategies were planned to accomplish the DST steps, the DST pedagogy guided the sequencing of the learning activities and the classroom strategies in each lesson unit. The design of the new curriculum unit is further elaborated below and the DST-integrated CME curriculum unit plan is presented in Table 17.

Table 17

A Digital Storytelling Integrated CME Curriculum Unit Plan

Stage 1 – Desired results	
Established goals: **Goal**: A person demonstrates respect when he believes in one's self-worth and intrinsic worth of all people. **Sub-goal 1**: Students will be able to understand the need to be considerate to others and demonstrate consideration to others	

Essential questions:
 	
   1. Moral knowing
• What does it mean to be considerate to others? **(knowledge of moral value)**
• What behaviours are considered as considerate or inconsiderate? **(moral awareness)**
• Why is it necessary to be considerate to others? **(moral reasoning)**
• How do I know if I have or have not demonstrated consideration to others? **(self-knowledge)**
 	
   2. Moral feeling
• Am I a considerate person? **(self-respect)**
• Why should I be considerate to others? **(conscience)**
• How do I feel when I am treated with consideration or inconsideration? **(empathy)**
 	
   3. Moral Action
• How can I treat others with consideration? **(competence)**
	1. Students will **understand**…
	• To be considerate is to take into account of others' feelings, needs, rules/ laws and circumstances and to treat the person the way he/she would like to be treated. **(knowledge of moral value)**
	• The reasons for the need to be considerate **(moral reasoning)**:
	  - Everyone has different thoughts, needs and feelings
	  - Our decisions and behaviours will affect others
	  - To build and maintain harmonious relationships
	
	2. Students will **feel**…
	• The need to be considerate **(conscience)**
	• The worth of others to be treated with consideration **(empathy)**
	
	3. In their collaborative learning groups, students will be **able to**… **(competence)**
	• Treat each other with consideration by:
	  - speaking politely

	- listening attentively and patiently
	- supporting others with positive comments
	- contributing actively
	- helping each other out

Stage 2 – Assessment evidence

1. Moral knowing

- Mind-map – Using a structured format to analyse a moral situation, students take different perspectives and contemplate the consequences and make moral decision to resolve the situation.
- Reflection story – Students define "considerate" and apply to a given moral scenario and their moral knowledge is evaluated with the use of a rubric.
- Peer reviews of group work products – Each student assess the weekly group products based on the checklist or rating scales given.

2. Moral feeling

- Moral scenario storyboard – Students role-play the characters in the given moral scenario, take photographs and develop into a complete story with a resolution to the scenario's problem.
- Reflection story – Students self-reflect on whether they are a considerate person, their considerate and inconsiderate behaviours and ways to improve.

3. Moral Action

- Group work – Students work in groups to practice their social skills and their moral competency is assessed with the use of a rubric.
- Self-assessment – Students self-assess their moral competency after each group activity.
- Peer assessment – Students assess their group-mates' moral competency after each group activity.

Stage 3 (Learning Plan)

Sequence of teaching and learning experiences:

Lesson unit 1: We are one!
1. Present the teacher self-made digital story to attract students' attention to moral scenarios in the story and trigger thoughts. **H; Sharing your story**
2. Focus on the moral scenarios of DS for class discussions to lead students to the essential questions. **W**
3. Class discussion of group roles and rules. **E1, O**
4. Group discussion of the moral scenarios on the CME textbook, with regards to the lesson objectives, group rules and roles **E1**
5. Each group voice-records the discussion results in the VoiceThread and listens to other groups' product. **E1**

Lesson unit 2: Think twice before we act
6. Teacher explains lesson activity (mind-mapping) in relation to lesson objectives. **W**
7. Each group integrates the three given scenarios into a story and develop a story mind-map, and then develop a scenario into a problem mind-map. **E1, O; Owning your insights**
8. Each group shares and explains their mind-maps on the VoiceThread. **E1**
9. Students self-assess and peer assess in the VoiceThread at the end of group activity. **E2**
10. Students critique the assigned group's mind-maps. **E2**

Lesson unit 3: It all makes a difference
11. Teacher explains lesson activity (role-playing) in relation to lesson objectives. **W**
12. Each group develops a story mind-map from a moral scenario. **E1, O**
13. Students role-play to experience the thoughts and feelings of the characters in the story, and take photographs of the scenes. **E1, R, T; Owning your emotions, Finding the moment of change**
14. Select the photographs of crucial scenes to develop into storyboard. Add transcripts to the storyboard and voice-record the story in the VoiceThread. **E1, T; Seeing your story, Assembling your story**
15. Peer review of stories. Teacher evaluates the multi-dimensionality and depth of the story with a rating scale.**E2**
16. Students self-assess and peer assess in the VoiceThread at the end of group activity. **E2**

Lesson unit 4: I am considerate.
17. Recap of essential questions and unit objectives. **W**
18. Every student work independently to develop a DS illustrating (1) their understanding of "being considerate", (2) application of understanding to a moral scenario and (3) a self-evaluation. A task list is given to provide guidance. **E2, R, T; Integration of DST steps**
19. Peer review of the digital reflection stories. **E2**

Note. W-where and why, H-hook and hold, E1-equip, R-rethink, reflect and revise, E2-evaluate, T-tailored, O-organised

Stage one – Identify the desired results. Based on the learner analysis, "respect" was identified by the teacher interviewees as the most critical yet lacking value in students. It is also a core value of the nation and the school. Thus, the curriculum unit focused on nurturing students in the moral value of respect. The researcher took reference of the "respect" goal stated in the MOE CME syllabus and had zoomed in to focus on the sub-goal of "being considerate", in order to establish the goal for the curriculum unit. The formulated essential questions and learning objectives addressed the cognitive, affective and behavioural aspects of moral education.

Stage two – Determine acceptable evidence. Instead of planning learning activities, the second stage in the backward design involves the planning of assessment methods that measure whether the desired results are achieved (Wiggins & McTighe, 2005). The authors offered a range of assessment methods (questioning, observation, quiz, student's work, tasks and projects) varying from scope, time and complexity to collect evidences of learning outcomes. In this curriculum, the students were formatively assessed on the qualities of each moral domain through diverse ways. For example, mind-maps provided a structured format to assess the students' moral reasoning, perspective-taking and decision-making when handling a moral issue, while the moral scenario storyboards illustrated the students' affective aspects. Collaboration gave students the opportunities to demonstrate their moral competency. The CME teacher was no longer the only one assessor; students were involved in the weekly self-assessment and peer assessment.

Stage three – Plan learning experience and instruction. In this stage, the learning activities planned should be closely linked to the assessment in order to achieve the desired results, creating a coherent curriculum unit plan. Lambert's (2010) DST procedural steps were incorporated to guide the sequence of learning experience. Teaching strategies and learning activities are selected to fulfil the steps. To create engaging and effective lessons, Wiggins

and McTighe's (2005) "WHERETO" elements were taken into considerations and the details are described below.

W – Where and why. Every lesson unit began with the teacher specifying the lesson objectives and evaluation criteria, along with the instructions of lesson activity. In lesson unit one, the teacher used the self-made digital story to guide students to the essential questions and the learning objectives. In the last lesson unit, these essential questions and learning objectives were recapped before the students worked on self-reflection.

H – Hook and hold. The teacher's self-made digital story with the personal touch could capture students' attention and the teacher could then easily lead the students to focus on the moral topic. To maintain their attention, students engage in collaborative learning. This strategy allows them to interact with their peers and empower them to take responsibility for their own learning and moral development. Role-playing, an activity which students enjoy, was included. Providing students with the opportunities to practice ICT skills, in terms of photo-taking, creating storyboards using presentation slides and voice-recording on the VT, stimulate their learning motivation and maintain their interest in the lessons.

E1 – Equip. Working in groups helps to create a mini moral community where students share labour fairly, inter-dependently solve problems and develop social skills. Learning activities like role-playing enable students to empathise the role-played character and mind-mapping facilitate students' perspective-taking and moral reasoning processes. The DST process integrates multiple skills, like the ICT and oral skills, language and arts literacy. The creation of mind-maps and storyboards involve critical thinking skills, such as analysis, synthesis and evaluation. Students could develop on the moral dimensions and acquire the 21st century competencies concurrently.

R – Rethink, reflect and revise. Role-playing requires students to put themselves into other's shoes to feel and view issue from others' perspective in order to personally experience

how others would like to be treated. This encourages students to rethink about their usual self-centred way of viewing issues. The creation of the digital reflection story allows students to demonstrate their development in the moral cognitive facet.

E2 – Evaluate. Using the rating scales forms and task list, each group could assess the content of their own work and other groups' work. Each group could also keep track of the group's progress on the VT as all the products are uploaded to the platform. Students evaluate their own and their group-mates' performance in the co-operative learning process via the self and peer assessment tools, so that they could improve on their performance in the next group work session.

T – Tailored. Instead of being a passive learner, students take accountability to their own learning experience by collaborating and assessing each other's group work performance. Mind-mapping encourage students to work through moral problems to derive a resolution on their own efforts. Participating in role-playing appeals to the students' interests and enable them to personally experience the situation the moral scenarios' characters are in. Inclusion of the students' photographs in the storyboards gives them a personal touch to the stories.

O – Organised. Each lesson unit focuses on one moral aspect and one major activity. The DST procedural steps not only guide the sequence of the learning experiences and ensure the link between each lesson unit was close-knitted, but also enable students to create their stories in a systematic manner. The group rules and roles serve as the social conventions that the groups have to adhere to in order to work cordially together. Mind-maps provide a structured approach for students to organise their thoughts efficiently. Examples, task-lists and evaluation tools render students guidance to their tasks.

4.2.2. Development of curriculum unit

Based on the curriculum plan, detailed lesson plans, instructional and assessment materials, such as digital story, mind-maps, task-list, rating scales and rubrics, were developed. In addition, the VT accounts were created for teacher and individual groups use and sharing. There are four lesson units in the curriculum unit, with each anchored to a moral dimension. Each lesson plan specifies the lesson objectives and procedure along with the assessment methods and time allocation for each activity. Every lesson is conducted in a block of three periods of CME curriculum time. This segment describes the focus of each lesson unit and explains the accompanying resources created to support each lesson.

Lesson unit one: We are one! The first lesson unit (see appendix 16a) serves as an orientation to the curriculum for the students, with the major learning focus on collaborative learning. To tune the students to the curriculum goals and to introduce the students to DST, a teacher self-made digital story (see appendix 16b) is first shared. As the co-operative learning strategy would be used throughout the curriculum, students should be aware of the expected socially agreed rules and behaviours. Presentation slides (see appendix 16c) were created to facilitate teacher in leading the students through the group rules and roles. The group rules were formulated in alignment with the moral behaviour objectives, addressing the areas of communication, relationship management and participation. The four rules were written in simple and short phrases so that students could remember easily. To encourage students to take accountability of their performance, they would self- and peer-assess using the self and peer assessment rating scale forms (see appendix 16d) after every group activity. Teacher evaluates the students' collaboration efforts through class observations with the use of the rubric (see appendix 16e). The criteria were developed based on the group rules and curriculum objectives. To help students to see the purposes of the group rules and roles, students discuss the two disparate moral scenarios (see appendix 16f), in relation to the group

rules and lesson objectives. The scenarios depict the ways the characters co-operated in their groups on a project and the consequences. The two moral scenarios were scanned from the CME textbook and made available in soft copies.

Lesson unit two: Think twice before we act. The main objective of lesson unit two (see appendix 17a) is to develop students in the moral cognitive dimension. The DST pedagogy is implemented in lesson unit two and three to systematically develop students in the moral aspects and to equip them with the DST techniques at the same time. Mind-mapping provides a structured format to organise students' moral thinking process. In their groups, students choose from the given moral scenario illustrations (see appendix 17b) to create a story mind-map with story content that appeals to their life experiences. This step involves the element of "owning your insights". In "finding the moment of change", students select a moral scenario that they consider as thought-provoking to work on. They then develop the problem mind-map to show how they walk through their thoughts to reach the resolution. Story and problem mind-maps examples (see appendix 17c) and mind-map checklist (see appendix 17e) were provided to scaffold students' learning process. The examples illustrate the ways students could structure their mind-maps and the checklist lists the content requirements.

Lesson unit three: It all makes a difference. The moral affective component, particularly the moral quality of empathy, is the focus of lesson unit three (see appendix 18a). In their groups, the students first role-play their moral scenario and take photographs of the role-played scenes. The photographs are evidences of students' learning process and provide a way to "seeing your story". The students go through the steps of "hearing your story" and "assembling your story" as they develop storyboards and finally voice-record to form a digital story. The teacher's storyboard (see appendix 16b) is a sample to show the students. A storyboard rating scale (see appendix 18c) is used to evaluate the storyboards and it also

reminds the students of the elements that should be included when they are doing their storyboards.

Lesson unit four: I am considerate. The final unit (see appendix 19a) concludes the curriculum with the emphasis on reflection. Students have to use their DST techniques to create a digital reflection story, demonstrating their understanding of and self-reflecting on the theme of "being considerate", and applying their moral knowledge to a moral scenario (see appendix 19d). A task-list (see appendix 19b) was created with the listed content requirements to guide the students in their content creation. The moral scenario was selected for the CME textbook, and was scanned and made available in soft copy. A rubric (see appendix 19e) was developed for teacher to assess the moral cognitive and affective aspects that students had addressed via their digital reflection stories.

Chapter 5 Formative evaluation of curriculum

During the process of the instructional development, formative evaluation was conducted to identify the weaknesses and problems in the instructional materials so that revision could be made to improve the feasibility and effectiveness of the instruction (Dick, Carey & Carey, 2005; Smith & Ragan, 2005; Tessmer, 1993). Smith and Ragan (2005) advocated the four stages of design reviews, expert reviews, learner validation and ongoing evaluation to the formatively assess the designed curriculum. In this research, the digital storytelling (DST) integrated Civics and Moral Education (CME) curriculum underwent the design review, expert review and learner validation. Due to the limited time and resources, the ongoing evaluation was not performed. The chapter presents and discusses the results of the design reviews, expert review, one-to-one evaluation and the field trial process.

5.1. Design reviews

The design review process should begin in the early stage of the instructional design, so that the instructional designer could self-evaluate and verify the design against its requirements and identify issues early before the curriculum is fully developed (Tessmer, 1993; Smith & Ragan, 2005). After the instructional analysis, the problems and challenges were identified and consolidated in to the problem rectification checklist (see Table 18). The design of the DST-integrated curriculum unit was checked against the checklist to determine if the identified problems had been rectified. Majority of the inadequacies had been tackled, leaving the issues on accessibility of information and communication technology (ICT) resources and curriculum time not totally resolved at the design stage. The following paragraphs elaborated on the reasons for the unresolved problems and suggested possible resolutions which could aid to rectify the problems at a later stage.

Table 18

The Problem Rectification Checklist Results

Aspects of analysis	Identified problems	Rectification results
Learning content analysis	1. The transition between units may not be carried out smoothly.	＋
	2. Lesson plans are not written in the format that teachers may follow accordingly.	＋
	3. Limited instructional resources are provided.	＋
	4. Assessment methods may not accurately measure the learners' learning outcomes.	＋
Learner analysis	1. There is a lack of opportunities for students to practise their ICT skills.	＋
	2. Students' expression of thoughts is restricted by their language proficiency level.	＋
	3. Students are weak in their critical thinking skills.	＋
	4. Students tend to be self-centred and unaware of their less respectful attitudes.	＋
Learning environment analysis	1. The ICT resources may not be accessible.	－
	2. The teaching strategies used may not be able to effectively maintain students' attention span.	＋
	3. The teaching strategies used are limited.	＋
	4. There is time constraint issue.	－

Note. "＋" represents problem has been rectified and "－" represents problem has not been rectified.

As an attempt to minimise the time constraint issue, the field test was planned to be carried out in the first school semester when the teachers had less pressure with their core subject syllabus, and thus less likely to require the CME lessons for the core subjects teaching. However, as Hofer and Swan (2006), Lowenthal (2009) and the DST workshop expert D01 had adverted, digital story-making is a time-consuming process, and since the students had no prior experience in DST, they might require more than the stipulated time to complete organised tasks. Hence, the time issue might not be totally rectified at the design stage. Depending on the actual instructional situation, further adjustments to the time allocation and number of activities could be made. There was also a need to negotiate with the teacher of the participating class to arrange for a block of three CME lesson periods, and this negotiation could not be made till the participating class was identified at the later stage.

Though it was found that the participating school had a relatively sound and updated ICT infrastructure with the necessary ICT resources required for the curriculum unit in this research, permission from the participating school was required to gain access to the required

resources. This permission came in the forms of reservation of the computer lab, biometric card to scan-open the computer lab doors, passwords to log in to the school computer systems, and authorised borrowing of the school cameras. During the design stage, the researcher could design the curriculum unit with the knowledge of the types of the ICT resources available in the participating school, but to gain access to the real ICT resources, help from the teacher of the participating class would need to be enlisted during the field test.

The overall design of the curriculum unit was also reviewed against the design review checklist to check if the design criteria have been fulfilled. The curriculum design was evaluated from the aspects of learners' needs, instructional goal, instructional procedure and instructional media. Table 19 shows that all of the requirements had been met, except the criterion on the understanding of learners' capabilities of which the reason would be further explained in the following paragraph.
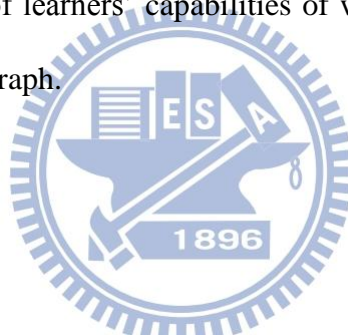
Table 19

The Design Review Checklist Results

Design review aspects	Review criteria	Review results
Learners' needs	1. There is adequate understanding of the learners' prior knowledge and skills. 2. There is adequate understanding of the learners' learning needs.	－ ＋
Instructional goal	1. The goals meet the real instructional needs. 2. The goals are in alignment with the MOE and school goals. 3. The learning objectives are clearly written to include the cognitive, affective and behavioural aspects of the moral life.	＋ ＋ ＋
Instructional procedure	1. The learning activities and assessments are congruent to the instructional objectives. 2. The teaching strategies scaffold the learners through the DST steps and achieve moral development at the same time. 3. The assessment process is constant and multi-dimensional.	＋ ＋ ＋
Instructional media and environment	1. The ICT resources needed for the instruction are available. 2. The selected ICT applications are economical to carry out the DST process. 3. There is adequate understanding of the learning environment.	＋ ＋ ＋

Note. "＋" represents criterion has been fulfilled and "－" represents criterion has not been fulfilled.

The capabilities of the student participants would affect the management of the instructional materials and activities. Though the interviews with the school teachers had provided an understanding of the general batch of students, the capabilities of the student participants remained unclear as the researcher had yet to come into contact with the student participants to verify their capabilities. For example, as according to the school ICT plan, the students had been trained to operate slideshow when they were in primary three, but they might remember vaguely of the application when they reached primary 5. Thus, a quick analysis on the student participants' prior knowledge and skills needed to be done before the start of the lesson, and time should be allocated for a quick revision on the operation of the application.

In sum, results from the design review process revealed that the design of the DST-integrated CME curriculum had addressed most of the identified problems and had fulfilled the intended design requirements. Nevertheless, there were certain aspects (time management, accessibility of ICT resources and understanding of the student participants' capabilities) which had yet to be fully resolved or achieved at the initial stage of instructional design.

5.2. Expert reviews

After the curriculum unit was developed, three experts were engaged to evaluate the instructional materials using the expert review survey form (see appendix 4). The evaluation process involved a content expert E01, an instructional design expert E02 and a learner specialist E03. The survey form was formulated to evaluate the congruence, content, design and utility and feasibility of the new curriculum unit. It was constructed using a 4-point Likert scale, ranging from 4 as "strongly agree" to 1 as "strongly disagree". The results from the expert reviews were summarised in Table 20 which consists of the mean scores to each specified evaluation aspect.

Table 20

Expert Reviews Results

Evaluation aspects		M	SD
Congruence	1. The learning activities align with the learning objectives.	4.0	0
	2. The instruction is appropriate for the target learners.	4.0	0
	3. The curriculum meets the target learners' needs.	4.0	0
	4. The evaluation methods meet the learning objectives.	3.7	.58
Content	5. The learning activities are able to arouse target learners' interest.	4.0	0
	6. The learning content is accurate.	4.0	0
	7. The learning activities are of the appropriate difficulty level for the target learners.	4.0	0
	8. Learning contexts are relevant to target learners' life experiences.	3.7	.58
Design	9. The curriculum objectives are clearly presented.	4.0	0
	10. Adequate resources are designed and developed for instructional use.	4.0	0
	11. Instruction procedure is clearly and logically presented.	4.0	0
	12. The evaluation methods accurately measure the target learners' performance.	3.7	.58
Utility and feasibility	13. The instruction can be implemented as it was designed.	4.0	0
	14. Time estimates for completion of the instruction are accurate.	3.3	.58
	15. The target learners will be able to attain the objectives of the instruction.	4.0	0
	16. The target learners will learn from the unit.	4.0	0

Note. N=3, 4=Strongly agree, 3=Agree, 2=Disagree, 1=Strongly disagree

The results show that each evaluation aspect's mean score is above three, which is between "strongly agree" and "agree", indicating the three experts acknowledged the curriculum unit had met the design standards in all the categories. Among all, the aspect on accuracy of time estimation to complete the instruction received the lowest mean score (*M* = 3.3, *SD*=.58). E02 reminded that there was a need to ensure that students had the IT competencies to complete various ICT-integrated activities in time. As the time issue had been constantly raised up in the analysis and review stages, besides understanding student participants' capabilities, there was a need to reconsider the time estimation and the number of learning activities planned in each lesson. While the time estimation listed in the lesson plans served as guide, the researcher could exercise time management to suit the students' progress in the real teaching and learning situation.

> 要能確定學生有足夠的資訊科技的使用能力，能夠在時間內完成指定的任務，如錄音、上傳投影片、觀看其他組的作品、互評等。(E02)
> Need to ensure that students had adequate IT competencies to be able to timely complete the assigned tasks, such as voice-recording, uploading of slideshow, viewing other groups' work, peer reviewing and more. (E02, translated from Chinese transcript)

In the categories of congruence, content and design, all the criteria achieved a mean score of 4.0 each, except criteria 4, 8 and 12 with a mean score of 3.7 each. The overall results of these categories show that the experts agreed that the curriculum was congruent and coherent, with complete and logically designed instructional materials. In addition the learning content and activities were accurate, appropriate and relevant. Nonetheless, the experts had given comments or suggestions to certain parts of the curriculum unit.

In terms of congruency, E03 perceived that the role-playing activity could guide the students to attain the MOE education goals, but questioned how the voice-recording activity in lesson unit one (see appendix 16a) could be linked to the next lesson unit or be aligned with the MOE education goals. As mentioned in the previous chapter, lesson unit one was an orientation for the students. Arranging the students to voice-record their discussion results on the VoiceThread (VT) served as a warm-up activity to remind students how to operate the VT. Students could also practise their oral skills as they could listen and re-record till their desirable standards. The recording could be an evidence of learning retained online and made available for the class at anytime and anywhere.

> For unit one, what is the purpose of recording the decision results using VoiceThread? Is there a link in this process to another part of the lesson as a continuation of the pupil's digital story? If there is no linkage, then how is it different when we allow pupils to present their discussion results in class to build confidence and speaking skills, which is aligned to MOE 21st century competencies? The role play in unit two is a good way to strengthen the above mentioned competencies. (E03)

In the category on content, E03 had some doubts about the relevance of the learning context, commenting that not all the students had the experience of travelling on the public

transports. Such situation might be possible for students who came from affluent family backgrounds. Due to the lack of life experience in this aspect, they might not be able to fully relate to the given moral scenarios. Nevertheless, the collaboration process could allow students to interact and share their experiences. The planned learning activities could scaffold the students to analyse situations, take perspectives, make moral decisions and form their value systems to handle moral situations. E03's comments served as a reminder to survey the students about their public transportation usage experience, to avoid clustering students who lacked the life experiences of travelling on public transports into one group.

E01 stated that the overall design of the curriculum was more suited for students with higher Chinese language (CL) proficiency level. The researcher had considered that the students' language proficiency could affect their comprehension and expression, hence to remove the language barrier, the instructional materials were designed in English language and there were no restrictions to the languages the student participants should use during the field test. Therefore, the student participants remained as those with the average CL competency. Nonetheless, E01's remarks reminded the researcher to review the lessons which involved the use of the moral scenarios taken from the CME textbook and allocate time for the explanation of the content before conducting the learning activities, as the scenarios were written in CL.

> Not sure whether you have ensure that all the pupils in the target group have experience travelling on MRT, there may be pupils who only travel in car. (E03)

> The whole design seems more appropriate for above-average Chinese proficiency students. Therefore, participatory students' language proficiency should be considered carefully. (E01)

For the design category, E01 appraised that the design of learning materials could help to arouse the students' learning motivation. The materials were in vibrant colours and type-written in Sans-serif typeface, and the moral scenarios illustrations used in lesson unit two

were hand-drawn in comic style. The aesthetic presentation allowed the materials to be more eye-attracting to the young learners.

> The figures, charts, and graphs are well designed to motivate student to learn. (E01)

Though the experts had strongly agreed that the instruction procedure was clearly and logically written and adequate resources were provided, there were still areas for improvement. E02 had given suggestions to the specified parts of the lesson plans which were not written clear enough or would require more resources created. For lesson unit one, E02 questioned the use of self and peer assessment forms, as they were only introduced to but not used by the students in this first lesson. The lesson plan was then revised to allow students to try out using the self assessment form after the group discussion so that they could re-think about the discussed moral scenarios and self-reflect on their individual group work performance. In addition, a checklist (see appendix 16g) adapted from the self assessment form was created to guide the students through their group discussion process. With the checklist, students could be more focused on what they were supposed to discuss, and had a better idea the ways to analyse the given moral scenarios in relations to the group rules and essential questions.

> 學生只有聽老師解釋嗎？何時填自評與互評的表格？ (E02)
> Do student solely listen to teacher explaining the form? When do they use the self and peer assessment forms? (E02, translated from Chinese transcript)

After the discussion, students would record and view the results in the VT. E02 found the part on listening to various group's discussion results after voice-recording not clearly written and remarked that students could critique the results if time permitted. Taking into consideration of the limited time, the last activity was then changed to a class sharing session so that students could view the discussion results together, listen and comment directly.

意思是聽自己這一組的錄音嗎？還是聽其他組的錄音？有沒有要求學生互相給
comments？若時間足夠，給學生給意見及省思的活動會更好。(E02)
Does it mean the group listen to its own or another group's voice-recording? Are the students
requested to comments to each other? If time allowed, it will be better to include a critique or
reflection activity. (E02, translated from Chinese transcript)

To facilitate the weekly observation process, E02 suggested an observation form to be created as it was challenging to teach and observe concurrently. Taking the advice, an observation rating scale form (see appendix 17f) was developed. The researcher would focus on observing the students' behaviour during their co-operative learning process and based on the moral behavioural rubric (see appendix 16e) to complete the rating scale form.

如果研究者同時為教學者，最好設計一些觀察的表格，可以很快速記錄學生的學習狀
況，做為後續資料分析使用。(E02)
If the researcher has a dual role as a teacher at the same time, it is advisable to create some
observation forms, in order to quickly record students' learning situations for later analysis
use. (E02, translated from Chinese transcript)

Pertaining to the lesson procedure instruction "Students self-assess and peer assess in the VT at the end of group activity" in the lesson plan four of unit three (see appendix 18a), E02 found it ambiguous, questioning if it referred to the assessment of the collaboration process or the evaluation of the various groups' products. This ambiguity might be caused because the previous lesson procedure instruction requested students to complete their group work with transcripts and voice-recording, followed by the instruction on the self and peer assessment. The latter instruction might be misunderstood as requesting students to evaluate other groups' work. E02 further queried about the provision of self and peer assessment forms, as they were not clearly stated in the teaching resources portion. There was a need to make sure the lesson procedure in every lesson plan was written clearly.

自評與互評是評什麼呢？評合作的過程還是成品？有自評與互評的表格嗎？是 week one 的表格？還是要再設計新的表格呢？(E02)

Are the "self assess and peer assess" referring to the evaluation of the group work process or the group's product? Are the assessment forms available? Are the ones provided in week one? Or will there be another newly created one? (E02, translated from Chinese transcript)

The expert reviews prompted some revisions to the curriculum resources, including the editing of the lesson plans and the creation of additional resources. The required revision work was listed as the followings:

(1) revised time-activity arrangement in each lesson plan;

(2) checked and re-wrote the lesson procedure statements in a more accurate manner;

(3) edited certain events of instructions in the lesson plans, for example including teacher's explanation of the CME textbook's moral scenarios in lesson unit one and four, adding in the self-assessment exercise and changing the listening activity to a class sharing session in lesson unit one (see appendix 16a).

(4) developed moral scenario checklist for lesson unit one (see appendix 16g);

(5) developed an observation rating scale form for weekly observation use (see appendix 17f);

More revisions were done upon the completion of the one-to-one evaluation which is discussed in the next section.

5.3. One-to-one evaluation

Apart from the researcher's self-evaluation and the reviews by the experts, the curriculum unit was also validated by the learners. During the one-to-one evaluation process, the learners could identify and clarify the obvious problems in the design of the curriculum which the researcher and experts might have overlooked (Tessmer, 1993). Furthermore, the learners' initial reactions in response to the feasibility and appeal of the curriculum unit were collected (Dick, Carey & Carey, 2005; Smith & Ragan, 2005). Three primary 5 students (SR01, SR02 and SR03), with high, average and low ability in CL respectively, were

participated in the one-to-one evaluation. Based on the student reviewers' responses together with results from the expert reviews, the instructional resources were revised before they were used in the field test. The following paragraphs presented and discussed the student reviewers' responses to each lesson unit.

For lesson unit one, the student reviewers commented on the digital story (DS), the group rules and roles, and the assessment methods. With regards to the appeal of the digital story (see appendix 16b) created by the researcher, all the three student reviewers found it clearly presented and interesting. SR03 had a deep impression of the story part on the two secondary girls arguing about the priority seats, finding the girls' conversations amusing. SR02 pointed out that the DS was focused on the topic of priority seats, implying the content of the DS could be easily understood. SR03 had remarked that he did not recognise the words "priority" and "ponder" but from the flow of the story and the pictures, he was able to understand the meaning. In other words, the words used in the DS were of an appropriate level to the primary five students. When asked to identify the moral situations from the story, SR03 gave the example of the "two secondary girls". Among the three moral situations embedded in the DS, the "two secondary girls" example was the obvious one which all the three student reviewers first identified. SR01 was able to identify another moral situation which was the part on the young girl asking her father whether she was allowed to sit on the priority seat. None of the student reviewers pointed out the moral issue on whether the main character should give up the seat to the father, despite the slide on the main character pondering about the seat-giving issue was available to emphasise the moral issue. The performance of the participants indicated that the target learners might lack the moral awareness to identify all moral issues embedded in the DS. Such condition highlighted the instructional need of the CME curriculum unit in this research, and reminded the researcher to

focus on the specified slides of the moral situations if the students were unable to identify them off-hand.

Without much explanation of group rules and roles by the researcher, SR01, SR02 and SR03 were able to understand and explain them after looking through the slides (see appendix 16c). After the researcher had gone through slides, the three student reviewers were able to repeat the group rules and roles to the researcher. This implied the group rules and roles were written in a simple and clear manner that learners could easily understand and remember. However, the word "facilitator" needed to be replaced with a simpler synonym, such as "planner", as the three student reviewers did not understand the word. SR02 and SR03 had also commented that they did not recognise a few vocabulary words, like "sarcasm", "ample" and "dutifully", in the self and peer assessment forms. Thus, the word "sarcasm" was removed, while the words "amply" and "dutifully" were replaced by "enough" and "truly".

When asked about the experience of using the VT, the student reviewers had vague impressions of the application. While SR02 could not recall using the application, SR01 and SR03 recognised the VT and remembered using it once or twice for oral practice during their primary 4 CL lessons. They added that they knew the VT could be used for voice-recording but they had no idea of the other functions. Though the VT application was introduced to the students in primary 4, they lacked the opportunities to practise and get familiar with it. The student reviewers' responses indicated that there was a need to recap the basic operations of the VT with the target learners. In response to the amount of time needed to complete both the self and peer assessment forms via the VT, the student reviewers gauged fifteen to twenty minutes, exceeding the planned amount of time. Viewing that the students might be unfamiliar with the VT and they might require more time to complete the assessments, there could be an option to complete the assessments using the hardcopy forms.

The student reviewers were asked to evaluate the clarity of the messages conveyed by the moral scenario illustrations, their ability to create mind-maps using the Powerpoint application and the amount of time needed for the mind-mapping activity in the lesson unit two. It was found that the student reviewers had some difficulties interpreting certain moral scenarios illustrations (see appendix 17b) without the prior explanation to the pictures. This might be because the illustrations might not be well drawn enough to clearly depict the embedded messages, or the students lacked the imagination or moral awareness to discern the moral issues depicted by the illustrations. The three student reviewers could understand moral scenario four, as it was clearly drawn with a boy witnessing a girl being bullied by a bully. However, all three of them could not decipher moral scenario one. They were able to identify the moral issues in the moral scenario two and three as they had been used in the DS in lesson unit one. Nevertheless, SR03 had more interpretations to the two scenarios. SR03 thought that in moral scenario two, the girl should give up the priority seat to the man as he was carrying many bags, and in moral scenario three, the girl standing was asking the other girl to stand up from the priority seat as she was not supposed to sit on the priority seat. SR03 was also able to "read" the moral scenario five and six. As compared to SR01 and SR02, SR03 was better able to decipher the illustrations, reflecting that the target learners would differ in their visual literacy skill. Hence, there was a need to include the descriptions along with the moral scenario illustrations and explain them when the lesson unit two was conducted during the field test.

Regarding the mind-mapping activity, SR01, SR02 and SR03 raised concerns about their abilities to construct the mind-maps using the Powerpoint application. SR01 knew what a mind-map was and the way to construct one but he emphasised that he could only do it on paper. He mentioned that he had no idea how to insert the shapes and type the words in the shapes to create the mind-maps, but he could enlist help from his group members since it was

a group task. Nevertheless, he emphasised it would be easier to construct the mind-maps on paper. In contrast to SR01, SR02 and SR03 possessed the IT skills but they had either vague idea of mind-mapping or had not done a mind-map before. After looking at the mind-maps examples, SR03 believed he could create one using the Powerpoint application, while SR02 had less confidence and emphasised the need of teacher's help. Taking into consideration that the target learners might lack the IT skills or the knowledge of mind-map, mind-map templates (see appendix 17d) were created to guide the students through the activity.

SR01, SR02 and SR03 also gave feedback that the amount of time for the construction of two mind-maps was inadequate. SR02 requested at least forty minutes while SR01 and SR03 stated an hour. To deal with the time issue, the story mind-mapping activity was removed and the learners would concentrate on analysing the assigned moral scenarios using the problem mind-map templates. In lesson unit three, the students developed a storyboard from the problem mind-map they created in unit two. Along with the adjustment made to the learning activity, the lesson plan for unit two and three (see appendix 17a and 18a), the mind-map checklist (see appendix 17e) and storyboard rating scale form (see appendix 18c) were amended. Instead of using the storyboard of the lesson unit one's digital story, another sample storyboard (see appendix 18b) also created to show the students the way to develop a storyboard from the problem mind-map.

The three student reviewers had less comment on lesson unit three. They found the learning activities fun and manageable, and the rating scale form was helpful in telling them the aspects to take note in their role-playing process and in their storyboards. SR03 suggested besides using the photographs, images from the Internet or the ClipArt in the Powerpoint application. The use of images was limited to the photographs taken by the learners and the available pictures from the ClipArt. Images from the Internet would be restricted to avoid the copyright infringement problems.

The evaluation focus of the final lesson unit was on the creation of digital reflection story and the moral scenario on bullying. All the three student reviewers thought that the instructions in the task-list was clearly written and told them what to include in the reflection story; however, they indicated doubts about creating the story by themselves and would prefer to work in groups. It appeared that the task of creating a digital reflection story through individual efforts was perceived as too challenging. Acknowledging the student reviewers' feedback, the activity was altered to one that required collaboration efforts but still retained a part for individual self-reflection. The students would collaborate to work on their understanding of "considerate", the application of their understanding to a moral scenario and the construction of the whole digital story. However, when required to reflect on self as a considerate person and to express appreciation to group-mates, students would wrote their individual reflection content to show their moral self-knowledge and moral affections. A template (see appendix 19c) was created to guide the students in the content development. The lesson plan (see appendix 19a), the task-list (see appendix 19b) and the digital reflection story rubric (see appendix 19e) were amended to reflect the changes.

The student reviewers were requested to comment on the moral scenario (see appendix 19d) used in lesson unit four and it was found that all three of them had neglected the cultural aspect involved the moral situation, even though they were able to distinguish between the right and wrong in the situation with some moral reasoning. They were able to reason that the Thai girl was upset as she was being bullied and the classmate who bullied her was inconsiderate and not respectful to her. However, they were unable to relate to the Thai culture to fully explain the strong reactions of the Thai girl. SR01 and SR02 perceived the Thai girl to be inconsiderate too for making a big fuss. They thought she could approach her teacher to solve the problem instead of having her parents to go to school to pick her home, and thought that the action of the classmate messing up her hair was not a serious offense.

While the former opinion provided a viable solution to the moral situation, the latter one reflected the students' ignorance of the Thai culture, thus affecting their moral judgement. The student reviewers' performance implied that guidance was needed to be provided so that the target learners could better analyse the moral scenario.

Overall, the three student reviewers expressed their interest to attend the ICT-integrated CME lessons. SR02 commented that such lessons would provide her the opportunities to learn more, not only from the CME textbook, but also IT skills, such as to operate the slideshow and the VT. However, she emphasised on the need of teacher's assistance and guidance. Similarly, SR03 stated that the ICT-integrated CME lessons seemed enjoyable as there were hands-on activities and he would be able to learn IT skills and interact with his peers, but he added that the tasks had to be done in groups. The student reviewers' responses reflected that the DST-integrated CME curriculum appealed to the students and would arouse their learning motivations. Nevertheless, it seemed that the activities might be challenging or that the students might not be familiar to the active learning style and they might still require much scaffolding.

The one-to-one evaluation results called for the following revision work:

(1) revised the lesson plans (see appendix 16a, 17a, 18a and 19a);

(2) revised the checklist (see appendix 17e), rating scale forms (see appendix 16d and 18c), task-list (see appendix 19b) and rubric (see appendix 19e);

(3) developed the sample storyboard (see appendix 18b), mind-map templates (see appendix 17d) and digital reflection story template (see appendix 19c).

Upon the completion of the revision of the instructional materials, the curriculum unit was administered in a real instructional situation to evaluate its effectiveness, implementability and feasibility.

5.4. Field trial process

A field trial is another form of learner validation in the process of formative evaluation, in which the developed instructional materials are tried out in a real instructional setting, and learners' performance and attitudes were collected for evaluation (Dick, Carey & Carey, 2005; Smith & Ragan, 2005; Tessmer, 1993). A class of twenty primary 5 students with an average CL competency had participated in the field trial for a period of seven weeks, from 30 January to 30 March 2012. Throughout the field trial, the student participants worked in their four groups of five. The field trial was conducted by the researcher who designed and developed the instructional materials. This segment describes the process of conducting the DST-integrated CME curriculum unit as a field trial.

5.4.1. Lesson unit one: We are one!

The objective of lesson unit one was to orientate the student participants to a DST-integrated CME curriculum and the collaborative learning strategy. The first lesson began on 20 January 2012. A brief survey was then conducted to find out about the student participants' ICT capabilities and their experiences of taking public transports. It was found that all the student participants had taken a public bus or the Mass Rapid Train (MRT) before, thus there was no need to rearrange the groups, and there were no worries that the students would not be able to relate to the learning context in the subsequent few lessons of the curriculum unit. However, the student participants seemed to be lacked in the ICT skill, which was a problem that had surfaced in the one-to-one evaluation, and the lesson plans had been amended to include a quick revision time for the VT and Powerpoint applications. Eleven student participants had seen the VT but only four indicated that they had used it before for voice-recording and remembered how to operate the application. Despite having learnt the basic operations of the Powerpoint application in primary 3, twelve out of the twenty student

participants raised their hands to indicate they remembered how to operate the Powerpoint application, such as inserting images, textbox and shapes.

Due to the late arrival of the student participants and because the teacher instruction session took ten minutes longer than intended, only fifteen minutes was left for activities. Hence, the researcher decided to postpone the group activity to the subsequent week and had the student participants to try operating the VT by completing the self-assessment form uploaded in their group VT accounts. The student participants were required to recall their past collaborative work experience and assess themselves with respect to the group rules in the new curriculum unit. They were asked to log in to their respective group VT accounts and to complete the self-assessment form using their own identities. However, technical problems arose as no two persons could log in to the same VT account concurrently, even if they were using two different identities in the same account. Thus, they were constantly being logged out of their group VT accounts and were unable to proceed with the activity.

As the first try-out of the VT was unsuccessful and the student participants missed the initial collaboration chance with their group-mates, the lesson unit one was continued on 06 February 2012. Again, the student participants were late for ten minutes as their teacher did not end the lesson on time. As the field trial was conducted in the beginning of a new academic year and the student participants were assigned to their groups by the researcher, they might not be familiar with their group-mates' personalities, strengths, weaknesses and working styles. Thus, this first collaboration activity could serve as an "ice-breaking" opportunity to aid the student participants in reconciling their differences and building rapport within their groups.

A few problems were observed as the student participants collaborated in their groups. The student participants were standing and crowding around the one computer their groups were working on. As the six boys were distributed to four different groups, they might be

feeling uncomfortable working with three or four other girls, thus they appeared to be left out and unable to assimilate into the groups. Another problem was the groups spent quite some time reading the moral scenarios, and the researcher had to go to each group to narrate the scenarios and explain the task again. The student participants had an attempt with the use of the VT, by completing the moral scenario checklist and voice-recording their opinions to the open-ended questions. Group 1 was able to voice-record their discussion results to the open-ended questions but they did not save their answers to the checklist part. Group 2 had completed the checklist, but their voice-recording to the open-ended questions were not recorded as their microphone was not working. For Group 3, there were much distracting noises in the voice-recordings. In Group 4, the group member in-charge of the voice-recording of discussion results was uncomfortable with the recording of her voice and the group spent time negotiating who to help out with the voice-recording.

The student participants were then given fifteen minutes to self and peer assess their co-operative learning performance. A personal VT account was created for individual student participant and each of them had to log in to their own accounts to complete the self and peer assessment forms. Time was spent to switch on the individual computers and logging in to the VT account. While the student participants were doing the assessments on the VT, they expressed queries on why they could view their classmates' comments. Consequently, they lost track of their own comments. As the assessment forms were shared with all the student participants from the researcher's VT account, the comments were immediately published for public view, thus causing confusion. Some of the student participants had completed part of the assessment rating scales but none of them had done the voice-recording to the open-ended questions. Hardcopy forms were given for the subsequent lessons, so that all the student participants could complete the assessments in time.

5.4.2. Lesson unit two: Think twice before we act

The learning objective of lesson unit two was to train the learners in perspective-taking and moral decision-making through the use of the mind-mapping strategy. The lesson unit two was conducted on 13 and 14 February 2012, due to the unexpected school emergency exercise that took place on 13 February, affecting the progress of the research. The lesson on that day was left with barely forty-five minutes, which was insufficient to complete the planned activities in the lesson unit two.

The first thirty minutes of the lesson consisted of direct instruction conducted by the researcher. The lesson started with a presentation of the sample DS but as the VT was lagging, the researcher narrated the story and the related sample problem mind-map using the slideshow. The moral scenario illustrations and the mind-map templates were explained with a brief class discussion on the characters that were involved in the scenarios. The instruction session ended with a quick revision of the basic operations of the Powerpoint application and a demonstration of how the mind-map template could be retrieved from the group's email box. The student participants were given fifteen minutes to work on the mind-maps. They were more organised as compared to the previous lesson; they were seated down and focused on their tasks. Thus, the researcher was better able to observe the groups' collaboration process and complete the group work observation rating scale form.

The researcher seek agreement from the participating class' CL teacher to continue the lesson unit two for one lesson period of thirty minutes on the next day, 14 February, so that the student participants could complete the mind-maps. In this one lesson period, the student participants concentrated to complete the mind-maps and the collaboration process assessment forms. Figure 12 depicts the photograph of student participants working on the mind-maps in their respective groups. Due to the limited time available, they were not able to upload their group constructed mind-maps and proceed with the peer critique activity.

Figure 12. Photograph of the groups working on mind-maps (14 February 2012).

5.4.3. Lesson unit three: It all makes a difference

Lesson unit three was interrupted by the common test week, with the first part of the lesson unit conducted on 20 February 2012 and the later portion on 05 March 2012. The aim of the lesson unit three was to prompt the learners to take a step further from perspective-taking to empathy via role-playing and storyboarding to promote the value of "respect". As the lesson on 20 February required the use of digital cameras, the camera equipments needed to be borrowed from the school with the help of the participating class' CL teacher. However, the technical assistant in-charge of the safekeeping of the school cameras was on leave, causing the required equipments to be unavailable. The CL teacher eventually managed to borrow four cameras from the colleagues for this research.

The lesson on 20 February began with a class review of the mind-maps that the student participants had completed in lesson unit two. The responses of the student participants were lacklustre; the student participants, except the expressive ones, tended not to

speak up during the instruction session. The class' CL teacher was invited to assist in the photo-taking of the instructional process. The presence of the CL teacher with his camera caused a moment of commotion as the student participants tried to avoid the camera. However, the commotion ceased soon after when the researcher was explaining the lesson activity with a short demonstration by student participants. Figure 13 shows a role-play demonstration scene of a passenger pretending to sleep, ignoring the old lady who boarded the public train.

Figure 13. Photograph of student participants demonstrating a role-play scenario (20 February 2012).

For the first fifteen minutes of the role-playing activity, the student participants seemed to be disorganised and even asked if they were required to take photographs or video-record. Group 1 spent quite some time looking at the mind-map they did. Though they had decided on the roles they played, they were undecided which scene to role-play and take photographs. Group 2 were particular about the photographs they had taken and repeatedly taking the photographs of the same role-play scene. They later decided to make some acting equipment with expressions to complement their acting and help to enhance the message

depicted in the photographs. However, they spent too much time on equipment-making, leaving not much time for role-playing. Group 3 was uncertain how to perform the task; nevertheless, after the researcher provided guidance and suggestions, the group was able to manage the task. For Group 4, the two boys showed improvement in participating more, with one as the "cameraman" and the other as the "actor". The girls took the initiative to lead the group in managing the activity. Figure 14 presents the photographs of the groups working on the role-playing activity.

Figure 14. Photographs of student participants working on the role-playing activity (20 February 2012).

The time for this lesson was within control. As observed, the participation level was higher than the previous few lessons as every group member was involved in acting, photo-taking or equipment-making. Interaction level between the group-mates increased as they needed to communicate with each other regarding the ways to act and the photographs to be taken. The student participants seemed to enjoy the role-playing activity and made efforts to complete the learning task with the limited resources and limited number of "acting crews"

The second part of the lesson unit three was conducted on 05 March, after the common test week. Two student participants from Group 2 and 4 were absent. By this lesson, the student participants seemed to be accustomed to the learning style and the instructional procedure. Once settled down in the common space, the student participants were asking about their learning task for the lesson. This could be perceived as a form of anticipation and enthusiasm in the curriculum. The students were instructed to assemble their photographs taken from the previous lesson to develop a digital educational story that could be used to teach the lower primary juniors the basic moral value of respect. Through the curriculum had paused for a week, the student participants still had impression of the moral scenario they worked on. The researcher then demonstrated the way to have all the VT slides displayed in one webpage, rearrange the slides and delete unwanted slides. These were functions that the student participants had not learnt, but as observed from their collaboration process, they were able to operate the functions after the quick demonstration.

As the school was undergoing an ICT upgrading phase in March, the operating system of the computers was upgraded to the Windows 7 Enterprise and the students' password to log into the system had been changed. Some of the student participants seemed to be unaware of the password change, thus Group 2 and 3 faced problems logging into the computer systems. During the activity, the groups were quick to select the slides of photographs they wanted for their stories but they spent much time writing the script. Group 4 appeared to be handicapped

as the dominant group-mate was absent. The group spent more than fifteen minutes trying to rectify the errors in their mind-map, leaving less time for the construction of storyboard. The student participants were able to complete the storyboard construction but did not manage to voice-record and peer review their stories.

5.4.4. Lesson unit four: We are considerate

Lesson unit four was conducted on 19 and 26 March 2012, after the March school holidays. The purpose of the lesson unit was to prompt learners to reflect upon what they had learnt and construct a moral reflection story. On 19 March, one student participant from Group 3 was absent, and a new student joined the participating class for lesson. As the new student was not a participant of the research, he was requested to sit aside to watch and not participate in the learning activity.

In this lesson, each group was separated into two mini-teams, with one team to work on the comprehension of "considerate" while the other worked on moral scenario. As the Microsoft Office package installed in the school computers had been upgraded to the 2010 version, the student participants were unsure if they had saved the digital reflection story template they downloaded from their group email box. In addition, they were unable to work on the template immediately after downloading it as the presentation slides were in "protected view" and the student participants were unaware that they had to click on the "enable editing" function before they could make any amendments to the presentation slides. The student participants were able to complete the majority proportion of the assigned task within the time limit, leaving only one or two slides undone. They then saved their work, and emailed their work to the researcher using their group email account. However, it was found later that the mini-team in Group 2 who was in-charge of first part of the reflection story did not manage to save their work, thus the slides sent to the researcher was blank.

Lesson on 26 March was the final lesson of the DST-infused CME curriculum unit. The student participants collaborated as groups of five again to complete the moral reflection story. As Group 2 did not save the first portion of their reflection story, they were instructed to return to their seats to edit their slides first, while the researcher continued with the review of other groups' work. After the review session, the other three groups returned to their positions to proceed with the editing of their reflection content. With the experience from the previous lessons, the groups had no problems downloading, editing and saving the presentation slides. They were also more cautious that they saved their work during the process to avoid facing the same situation as Group 2 did.

After thirty minutes of editing of the reflection content, the student participants were requested to gather at the common area again to individually write their self-reflection on a piece of yellow paper. After which, a student participant, who could type the fastest, record the reflection comments onto the presentation slides, while the rest of the group-mates uploaded the first two parts of the reflection story and did voice-recording.

Before the start of the lesson, the researcher had a check scan of the availability of the ICT equipments and realised that only six sets of headset and microphone were attached to the computers, unlike the past few weeks when these required ICT equipments were readily available. Since the groups were doing voice-recording in groups and not individually, the few sets of ICT equipments were deemed as adequate. However, when the groups were doing the voice-recording, two of them encountered malfunction with the microphones. The researcher lent the mobile phone to Group 4 to do the voice-recording. Group 2 only voiced out their problem after the voice-recording activity, consequently only Group 2's reflection story did not contain a voice-recording. Figure 15 illustrates a group did voice-recording with the microphone.

Figure 15. Photograph of student participants doing voice-recording for their reflection slides (26 March 2012).

The final ten minutes were used for the sharing celebration of digital reflection stories. As the class had seen the first two parts of the stories in the beginning of the lesson, they were especially excited viewing the third section, particularly the group appreciation portions. The lesson concluded with the student participants to complete the post-curriculum feedback survey form and a token of appreciation was given for their participation in the research.

5.4.5. Summary of the encountered problems

The two common problems encountered throughout the field trial were the time constraints and minor technical hiccups. The student participants tended to arrive five or ten minutes later than expected every lesson, reducing the amount of time available for the lessons. The unexpected school emergency event had also caused slight disruption to the research progress. Furthermore, for the initial two lessons, the researcher used more than the allotted amount of time stated in the lesson plans to conduct the instructions, resulting in a reduction of time for the student participants to perform their learning activities; however, the time management situation improved as the researcher kept the time limit for direct

instruction within control for the subsequent lessons. Nonetheless, the time schedule for each lesson was still very tight as it was observed that the student participants required ten or fifteen minutes more than the stipulated time to complete the assigned tasks. As a result, the student participants were unable to carry out the planned peer review of the groups' products after the learning activities.

Though the student participants were unfamiliar with the VT and the Powerpoint application, they were quick to acquire the ICT skills with the short revision and guidance provided by the researcher before the start of and during the learning activity. However, minor technical problems that arose during the lessons added further strains to the already tight lesson time schedule and disrupted the smooth learning process. Especially during the period when the school was undergoing the IT upgrading phase, the student participants encountered problems with the logging in to the computer system, unfamiliarity with the new version of the Microsoft Office applications and unavailability of recording equipments, increasing time constraints for lesson activities.

In the real instructional setting, the instruction might not function as intended in entirety. Revisions were made to the curriculum design on the spot as according to the real situations so that the effectiveness of the original curricular design would not be over-compromised. Instead of peer reviewing, the activity was replaced with class sharing sessions which would take a shorter period of lesson time. In addition, to ensure all the student participants were able to complete the self and peer assessment of the collaboration process within ten minutes, they did the assessment using the hardcopy forms, instead of spending time to switch on individual computers, sign in and do the assessment on the VT.

Chapter 6 Learning outcomes

Qualitative and quantitative data, in terms of student participants' work, self and peer assessment of collaborative process, researcher's journal and interview transcripts, were collected to determine if the student participants' learning outcomes had achieved the desired learning objectives, so as to further measure the instructional effectiveness of the newly developed curriculum unit. The desired learning objectives of the curriculum involve the learners to be able to define "considerate" (*moral knowledge* and *awareness*), explain the reasons for being considerate (*moral reasoning*) to make the morally sound decisions (*decision-making*), to feel the need and worth to treat others with consideration (*conscience* and *empathy*), and to treat others with consideration (*moral competence*). This chapter reports and discusses the student participants' moral cognitive, affective and behavioural performance as they went through the Lambert's (2010) DST steps to acquire and perform some of the moral qualities as identified in the Lickona's (1991, 1993, 2001) moral life framework.

6.1. Moral cognitive performance

According to Lickona (1991, 1993, 2001), the moral knowing aspects include the facets of moral knowledge, awareness, reasoning, perspective-taking, decision-making and self-knowledge. These moral cognitive qualities were examined via the student participants' work, such as the constructed mind-maps, storyboards and final moral reflection digital story.

6.1.1. Moral knowledge and awareness

As observed from their constructed digital reflection stories, the student participants could clearly interpret "considerate" in their own words, implying that they may have comprehended and rephrased the taught definition to form part of their moral knowledge and

integrate into their own value systems. Their definitions also suggested ways to treat others with consideration, which would guide their behaviours. Thus, on average, they were graded as higher than proficient (M=3.25, SD=.43) in demonstrating their moral knowledge and awareness qualities (see appendix 20). All the four groups had mentioned the key words of "thoughts", "feelings" and "needs" which were emphasised in the taught definition.

Among the four groups, Group 3 was the only group who not only had their definition of "considerate" closely matched to the indicated definition in the lesson objectives, they had also reinforced their interpretations with related images (see Figure 16). The group had further included the word "like", appealing to the emotional obligation to be considerate and indicating the group of student participants' inherent desire for good. The selected images may contain implicit messages to the audience. The background image of a pair of hands holding a sparking heart shape might be inferred as the group's belief and love for good. It may also be interpreted as any desirable behaviour is in the one's hands and is dependent on the person whether to perform it upon understanding the moral value. The image of an elderly in the slide may imply that the group might perceive the need to be considerate and respectful particularly to the social group of elderly.

Figure 16. The definition of "considerate" slide in Group 3's digital reflection story

Other than understanding the meaning of the moral value, the student participants were requested to explain for the need and worth to perform the moral value. The reasons they provided may reflect the cognitive ways they used to convince themselves and the emotional obligations they felt to be considerate, which would later prompt the student participants to perform the moral behaviour of respect. Figure 17 shows each group's slide on their reasons for being considerate. Overall, the student participants viewed the building and maintenance of a harmonious and reciprocal relationship with surrounding people as a crucial reason to the need for considerate behaviours. By being considerate to others, the student participants perceived that others would elicit reciprocal responses in terms of respect, trust, good impression and happiness, implying that the student participants felt the worth of moral value lie with the encouraging responses of others towards them to form the favourable interpersonal relationships together. In other words, the student participants tended to value good interpersonal relationships as the basis for being considerate.
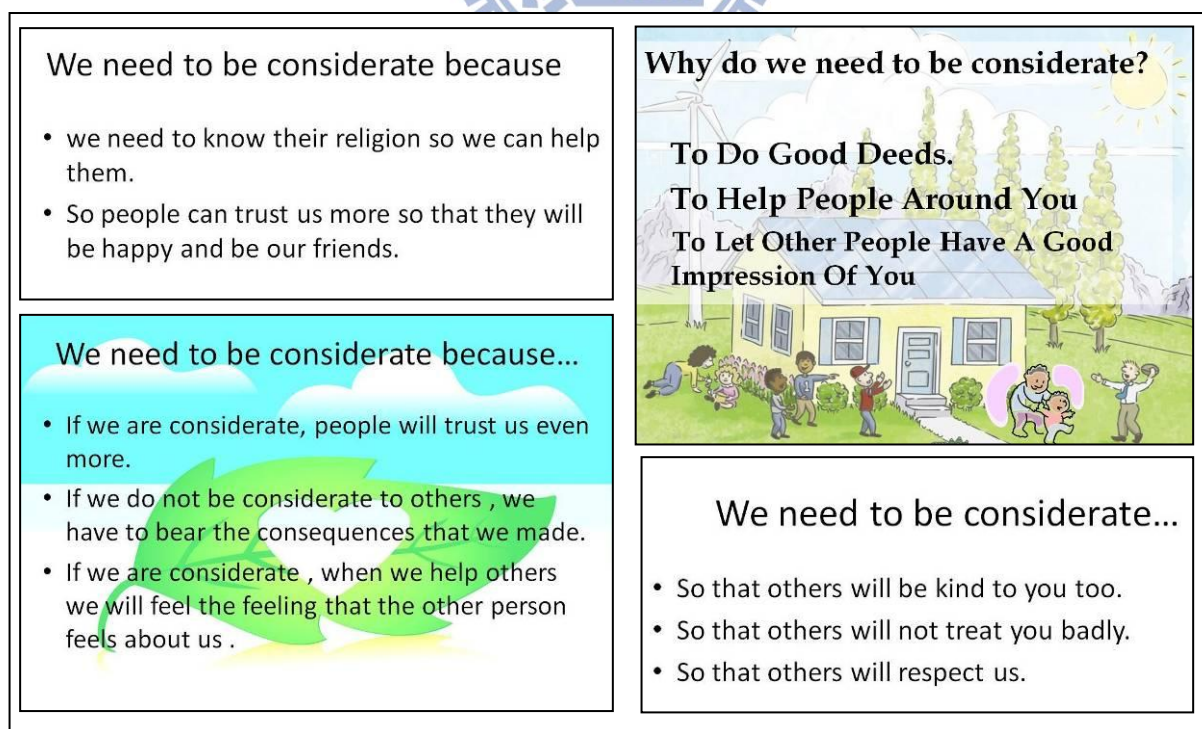

Figure 17. The four participating groups' slides explaining the reasons to be considerate.

The understanding of "considerate" was complemented by examples of considerate and inconsiderate behaviours within contexts, which demonstrated the student participants' level of moral awareness and how they made sense of the right and wrong in the social world. The provided examples by the student participants could be the behaviours that they were aware of through seeing, hearing, reading or personally experiencing them. Thus, they could be better able to identify with each other's examples during the class sharing session.

The one common example mentioned by all the four groups was the priority seat issue, as it was the first moral issue presented to the student participants since the first lesson, thus it may be imprinted the student participants' minds. Nonetheless, the groups had also provided other examples diversely contextualised in the home, school and public contexts. Among the groups, Group 1 had mentioned more than three examples of moral behaviours which took place in the MRT, library, toilets, school, food centre and shopping mall. Their ability to elaborate their understanding of the moral value with various examples in diverse contexts enabled them to achieve the "exemplary" grade for the moral knowledge criteria. Figure 18 shows the Group 1 provided examples which had not been mentioned by the other groups.

A considerate behaviour is	A considerate behaviour is
Helping the elderly or hungry people to find a seat at a hawker Centre.	Returning the library books after you had read them.
Reason: So they will not waste their energy walking around waiting for people to get out.	Reason: So that people can read the book that you have read and people can enjoy the books
An inconsiderate behaviour is	An inconsiderate behaviour is
Throwing wet tissue paper in the toilet wall.	Cut people's queue when buying something
Reason: the cleaner will have a hard time taking out the smashed tissue papers	Reason: This will not be fair for those people who have been queuing for very long time.

Figure 18. Examples of considerate and inconsiderate behaviours in Group 1's digital reflection story.

The reasons that followed each example may imply the way the student participants apply their understanding of the moral value to assist them to recognise and sift the moral situations in their surroundings to include those that involved the required moral value as examples in the reflection stories. The stated reasons may also reflect the primary first reasons the student participants might think of when explaining an identified example to be considerate or inconsiderate. As observed from the four group's reflection stories, most of the reasons the groups had stated involve the student participants taking the perspectives of others and considering for the general good for others, showing their ability to engage in perspective-taking and empathise others. Figure 18 shows not only the evidences of the student participants provided examples, but also the reasons explaining for the moral behaviours involved in the each example.

6.1.2. Moral reasoning and decision-making

Besides fostering critical and moral thinking, the mind-map learning strategy provides a structured format for students to make rational moral decision-making for the best solution through deliberate and sequential steps of weighing the viable options and considering the likely beneficial and harmful consequences (Lickona, 1991). This best solution is deemed as "the one that maximises the positive consequences and respects the important values involved" (Lickona, 1991, p.254).

During the lesson unit two's mind-mapping process, both Group 2 and 3 were generally able to consider the perspectives of the characters involved in the moral scenarios, though the points stated in their mind-maps were limited. The options they provided seem to be dichotomous, in terms of either they stopped the situations from happening or they ignored the situations; they might not have considered alternative solutions that could possibly resolve the situations. In addition, they had not considered fully the pros and cons of the options they

stated. Nevertheless, from the decisions they made to resolve the moral situations demonstrated that the two groups of student participants were aware of the moral issues involved in the scenarios, could clearly tell right from wrong and had understood the value of respect for others. The moral reason of "he is making the girl feel ashamed" indicated that the student participants in Group 2 could see the perspectives of and empathise the victim and viewed the bullying action as a violation to the basic moral value of respect. Group 2's mind-maps are presented in Figure 19.
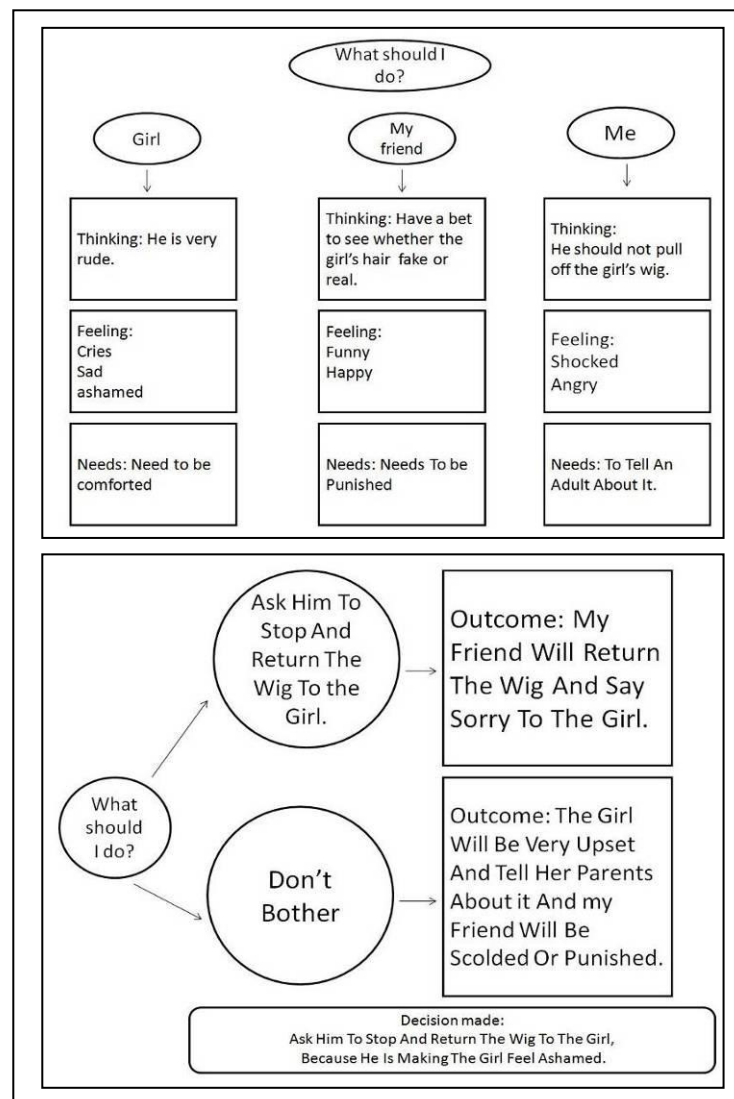
Figure 19. Group 2's mind-map to resolve moral scenario 4.

Similarly to Group 2 and 3, Group 1 was able to perceive the thoughts, feelings and needs of the characters involved in the moral scenario, however, they were unable to offer a viable solution to resolve the controversial issue of whether the elderly or baby is allowed to eat or drink on the public transit train. As shown in Figure 20, Group 1 had presented conflicting views in the decision-making portion. On one hand, they perceived that the elderly and baby should be allowed to consume or drink on the MRT; on the other hand, they thought the course of action would dirty the train. This implied that the student participants in Group 3 might be facing a dilemma, thus they were unable to clearly present their standpoint with convincing moral reasons. As according to Kohlberg's (1981) stages of moral development, Group 3 might be struggling between stage 4 of "law and order" and stage 5 of "individual rights". This could be because though they had taken the perspectives of the characters, they had not considered critically the reasons the social group of elderly and infants were singled out for discussion. Furthermore, they were aware of the law but they might not have thoroughly thought through the purpose of the law. As a result, they failed to offer a viable solution to the dilemma they brought up.
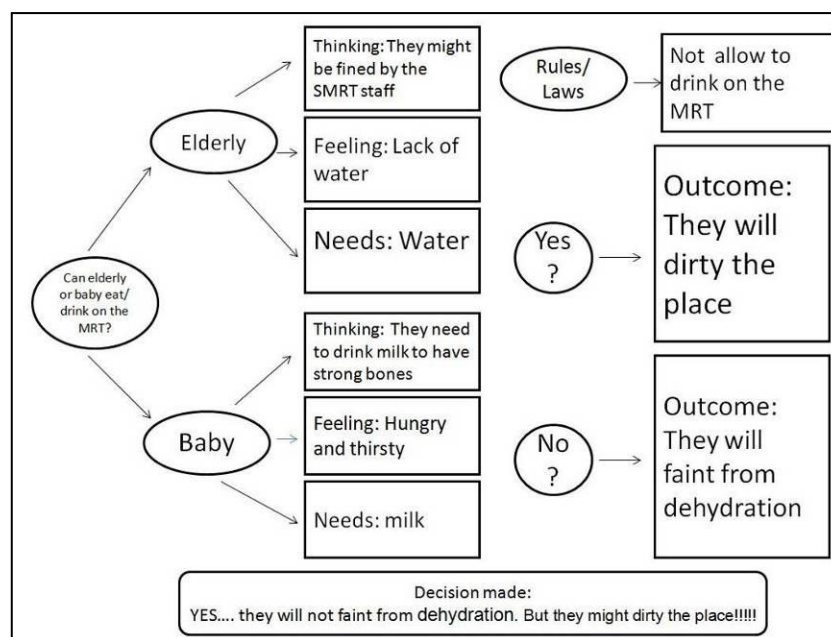

Figure 20. Group 1's mind-map to resolve moral scenario 1.

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Group 4 appeared to be confused with the moral controversial issue of whether young people should sit on the available priority seat. As viewed from the mind-map in Figure 21, Group 4 seemed to misunderstand or misinterpret the given situation, particularly on the part of the girl who sat on priority and giggling that she was reserving seat for the needy people, perceiving it as the girl's true intention for occupying the priority seat, instead of a sarcasm made. Thus, they failed to explain appropriately for the consequences of the options. In other words, they might be unaware of the moral issue in the scenario; hence they faced difficulties making the appropriate moral judgement to the issue.
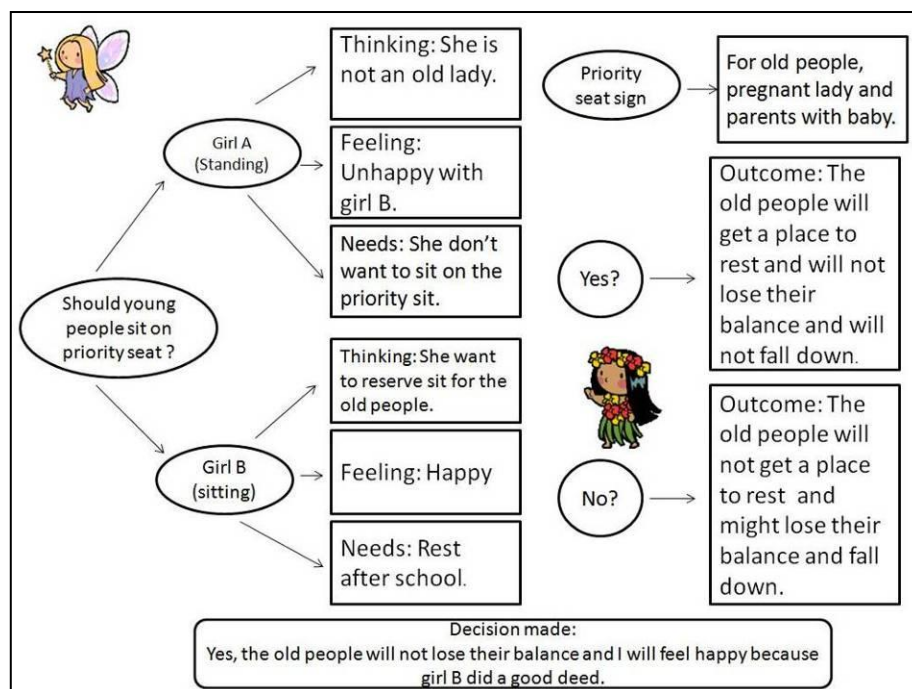

Figure 21. Group 4's mind-map to resolve moral scenario 2.

Moral scenarios 4 and 5 appeared to be obvious and straightforward for the student participants, thus they were able to decide the right course of action for the moral problems. However, they faced difficulties handling controversial issues or dilemmas as in moral scenarios 1 and 2. Subsequently, during the storyboarding process, Group 1 continued to be trapped in the dilemma they had raised in their mind-maps.

Based on the mind-maps constructed in lesson unit two, the student participants expanded the content to form moral stories. They assembled the taken photographs of their role-played scenes into a storyboard that was embedded with the moral value that the student participants intended to promote. In conveying the possible consequences, and concluding the story with the best solution that is consistent with moral values, Group 1 fared the worst among all the groups, as Group 1 did not complete their storyboard. They had merely mentioned the needs of the elderly and the infant but had not elaborated on the consequences of the characters consuming on the train, neither had they explained the reasons for the train staff's reactions. Similar to the problem the group faced during the mind-mapping session, they did not offer a resolution to address the dilemma (the elderly and babies should be allowed to drink on the train but they might dirty the place) they brought up in their mind-map.

As compared to Group 1, Group 4 managed to clear their confusion to address the moral issue appropriately with a best solution. Though their scripted story seemed slightly lacking in descriptive content, the storyline was complete and involved a twist in the main character's (Girl B) behaviour, creating spaces for moral discussions. Like Watson (2003) had mentioned, the abstract concept of the moral values that the students espoused could be presented in an easily understood and concrete manner via the constructed story. Group 4 first presented the undesirable behaviour of the character, and then created an event which prompted the character to later change her behaviour to a desired one. Group 4 might not have directly addressed the issue of whether young people should sit on the available priority seat, their story conclusion indicated that if one was to sit on a priority seat, one should know when to give it up, and could always find another seat later. Their resolution demonstrated the way they perceived the priority seat issue, and implied that they advocated the desired social behaviour, showing their love for the good. Figure 22 presents the excerpts of Group 4's storyboard. The original work consists of photographs of the student participants; however to

ensure the privacy and safety of the student participants, the storyboard images in this report were adapted with smiley faces to cover the features of the student participants.

Girl A wants Girl B to leave but she refuses.	The pregnant lady needs a seat but Girl B doesn't want to give her seat to the pregnant lady.
Girl B starts sleeping on the priority seat.	When she wakes up, she sees an old man losing his balance. She ponders if she should give her seat to the old man.
Girl B starts to give her seat to the old man who almost loses his balance.	Girl B moves to the seat opposite her.

Figure 22. Excerpts of Group 4's storyboard.

Apart from mind-mapping, storyboarding provided another opportunity for the student participants to review and identify with the characters' perspectives, by transcribing these elements into the story scripts and selecting the appropriate images that could enrich the story content by conveying the messages that had not been written in the story script. However, the student participants had relied heavily on the photographs to portray the characters' thoughts, emotions and reactions. Their written storylines seemed to be over-simplified and the story contents were lacking. This could indicate that the student participants might not have fully engaged in perspective-taking during storyboarding. Like Robin (2008) and Lowenthal (2009) had mentioned, the student participants' literacy skills were challenged as they attempted to transform the story-making materials into usable and understandable knowledge. At this stage, they might be preoccupied with sequencing the selected photographs and structuring the story outline, thus they might have neglected the written description in the story content.

The student participants had demonstrated from these initial mind-maps done in lesson unit two, that they had the ability to see the viewpoints of others, imagining how the thoughts, feelings and needs of others and taking into consideration of other factors such as the law, when facing a moral situations. However, while considering the possible outcomes of the available options, their thoughts tend to be superficial or from one dimension, they had not critically thought through the various beneficial and harmful consequences. Nonetheless, in the final lesson unit's mind-maps, the student participants seemed to show improvements.

To demonstrate their moral judgement, the student participants had to resolve a given moral scenario as part of the digital moral reflection story content in the final lesson unit. The scenario involved a bullying case and a solution the victim resorted to handle the situation. The mind-maps were more extensive than those in lesson unit two. The student participants were required to resolve the already occurred bullying case and offer a viable prevention resolution with long-lasting effects to stop the situation from happening again. Using the

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perspective-taking, moral reasoning and decision-making qualities, the student participants performed proficiently (M=3.25, SD=.43) in their moral judgement of the scenario and resolving the problem with relatively good solutions (see appendix 20). They could take into consideration of self and others' thoughts, feelings, needs and culture to suggest alternatives with the consequences to eventually offer reasonably sound solutions to the moral issues.

As compared to the previous mind-maps they did in lesson unit two, the student participants could consider more adequately the various possible thoughts, feelings and needs of the main characters by the time they did the mind-maps in the final lesson unit, indicating that the student participants may be more critically taking the perspectives from different angles. In additionally, due to the nature of the question posed ("How should Cha Ruoni and Shu Mei do to prevent the situation from happening again?"), the student participant had to put themselves in the both characters' shoes to think of the possible constructive alternatives that each character would adopt, instead of simply offering dichotomous resolutions.

The cultural factor was the key element that explained the strong reactions of the victim and determined the progress of the moral scenario. All the participating groups were aware of the culture influence and had factored the cultural consideration in their moral judgement of the moral issue. Group 1, 3 and 4 had chosen the resolution of informing the whole class of the victim's cultural concerns to prevent the same bullying problem from happening again. The choice of decision reflected that the student participants may have recognised the critical element that led to the moral problem was the ignorance or lack of respect for the victim's culture, thus the student participants prescribed the appropriate decision which was in consistent with the cultural value and moral value to resolve the issue, showing their sound moral judgement and critical decision-making. Figure 23 consists of parts of the exemplary mind-maps Group 3 had completed in attempt to analyse and resolve the moral problems in the given scenario.
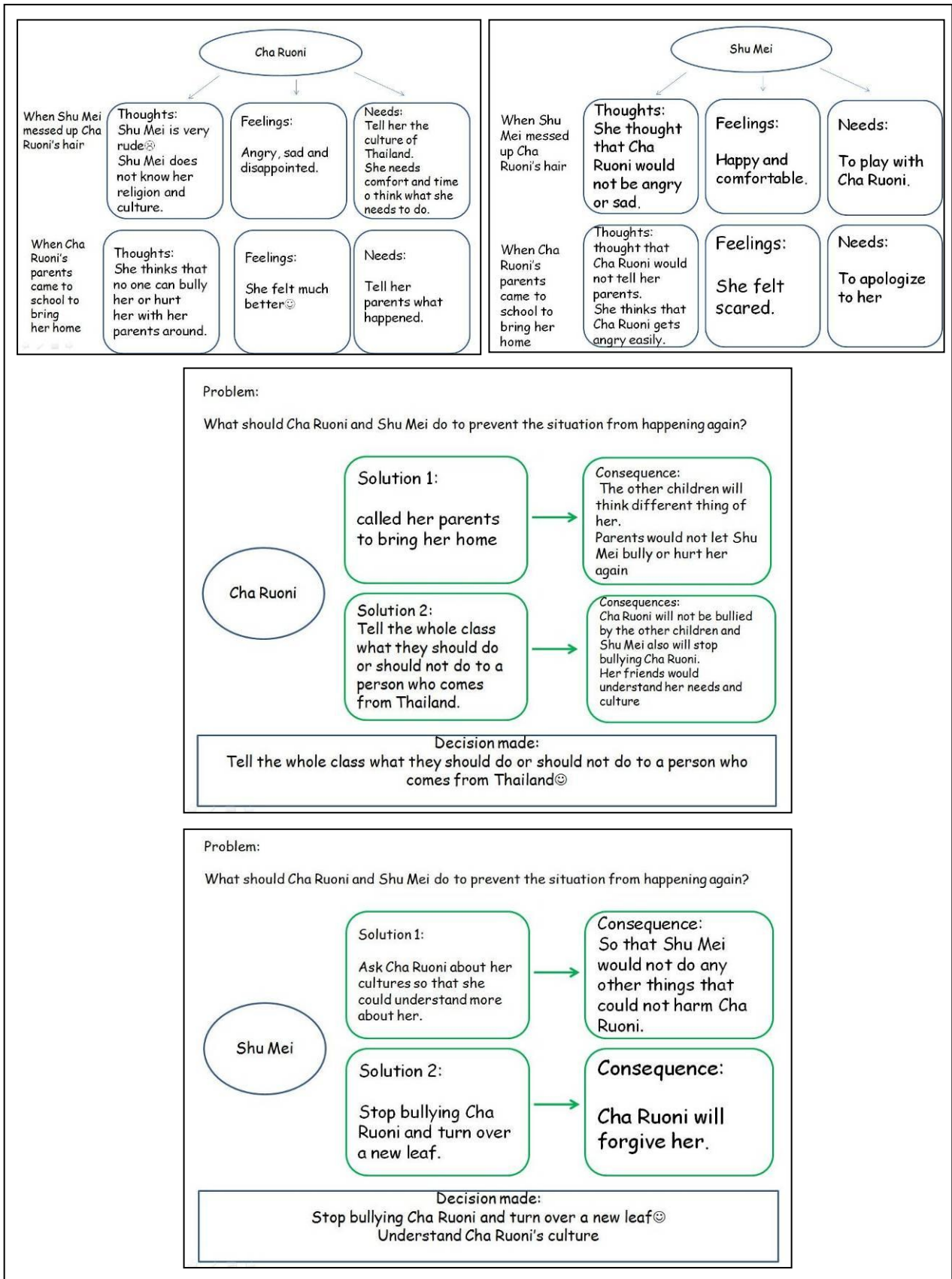
Cha Ruoni

	Thoughts:	Feelings:	Needs:
When Shu Mei messed up Cha Ruoni's hair	Shu Mei is very rude☹ Shu Mei does not know her religion and culture.	Angry, sad and disappointed.	Tell her the culture of Thailand. She needs comfort and time o think what she needs to do.
When Cha Ruoni's parents came to school to bring her home	She thinks that no one can bully her or hurt her with her parents around.	She felt much better☺	Tell her parents what happened.

Shu Mei

	Thoughts:	Feelings:	Needs:
When Shu Mei messed up Cha Ruoni's hair	She thought that Cha Ruoni would not be angry or sad.	Happy and comfortable.	To play with Cha Ruoni.
When Cha Ruoni's parents came to school to bring her home	thought that Cha Ruoni would not tell her parents. She thinks that Cha Ruoni gets angry easily.	She felt scared.	To apologize to her

Problem:

What should Cha Ruoni and Shu Mei do to prevent the situation from happening again?

Cha Ruoni

Solution 1: called her parents to bring her home → Consequence: The other children will think different thing of her. Parents would not let Shu Mei bully or hurt her again

Solution 2: Tell the whole class what they should do or should not do to a person who comes from Thailand. → Consequences: Cha Ruoni will not be bullied by the other children and Shu Mei also will stop bullying Cha Ruoni. Her friends would understand her needs and culture

Decision made:
Tell the whole class what they should do or should not do to a person who comes from Thailand☺

Problem:

What should Cha Ruoni and Shu Mei do to prevent the situation from happening again?

Shu Mei

Solution 1: Ask Cha Ruoni about her cultures so that she could understand more about her. → Consequence: So that Shu Mei would not do any other things that could not harm Cha Ruoni.

Solution 2: Stop bullying Cha Ruoni and turn over a new leaf. → Consequence: Cha Ruoni will forgive her.

Decision made:
Stop bullying Cha Ruoni and turn over a new leaf☺
Understand Cha Ruoni's culture

Figure 23. Excerpts of the mind-maps done by Group 3.

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6.2. Moral affective performance

Apart from having the moral intellectual qualities, one should feel the need and desire to perform the morally right conduct; and the emotional moral life include conscience, self-respect and control, empathy, loving the good and humility (Lickona, 1991, 1993, 2001). The moral affective qualities, particularly empathy, conscience and humility seemed to be observed from the role-playing and the student participants' individual self-reflection processes.

6.2.1. Empathy

Role-playing is a highly involving and enjoyable strategy that enables the students to go beyond the cognitive aspect to engage the affective dimension, by playing the role of the character to think, feel and react as how the character would possibly do, fostering the students' sense of empathy (Cooper, Burman, Ling, Razdevsek-Pucko & Stephenson, 1998; Day 2002; Lickona, 1991; Lockwood, 2009, Vitz, 1990). The photographs used in the student participants' storyboards were evidences which could illustrate the extent of the student participants' affective involvement and seriousness in character roles that they assumed. The images illustrated their attempts and efforts to express the character's thoughts, feelings or reactions as convincing as possible in order to elucidate the implicit messages in the still images.

As observed from the groups' storyboards, the story characters' feelings, thoughts, and needs were mainly elicited through the facial expressions, gestures in the still images instead of via the story script. Among the four groups, only Group 2 could most clearly present the emotions of the story characters in their story. The storyboarding process could engage the student participants cognitively and emotionally as they pieced up the fragments of thoughts into a coherent story structure, accompanied with the selected still images that add a layer of

implicit meaning to the story (Lambert, 2010). Both the quality of the role-played scene images and the story script complement and supplement each other to form the story content. In the excerpts (see Figure 24), besides the convincing facial expressions and body languages, the group had used sign boards drawn with emoticons and words of speech to reinforce the emotional messages. In the story script, the group had also mentioned emotion words like "crying", "upset", "laughing loudly", "shocked" and "angry", to further emphasise the emotional effects. The group's storyboard demonstrated the extent that the group had attempted to immerse in the roles to view their perspectives and empathise with the characters. In Figure 24, to safeguard the privacy and interests of the student participants, their facial expressions in the images were replaced with smiley faces.

| Then the bully started laughing loudly while the girl was crying. | Her angry parent scolded her and made her return the wig to her now! |
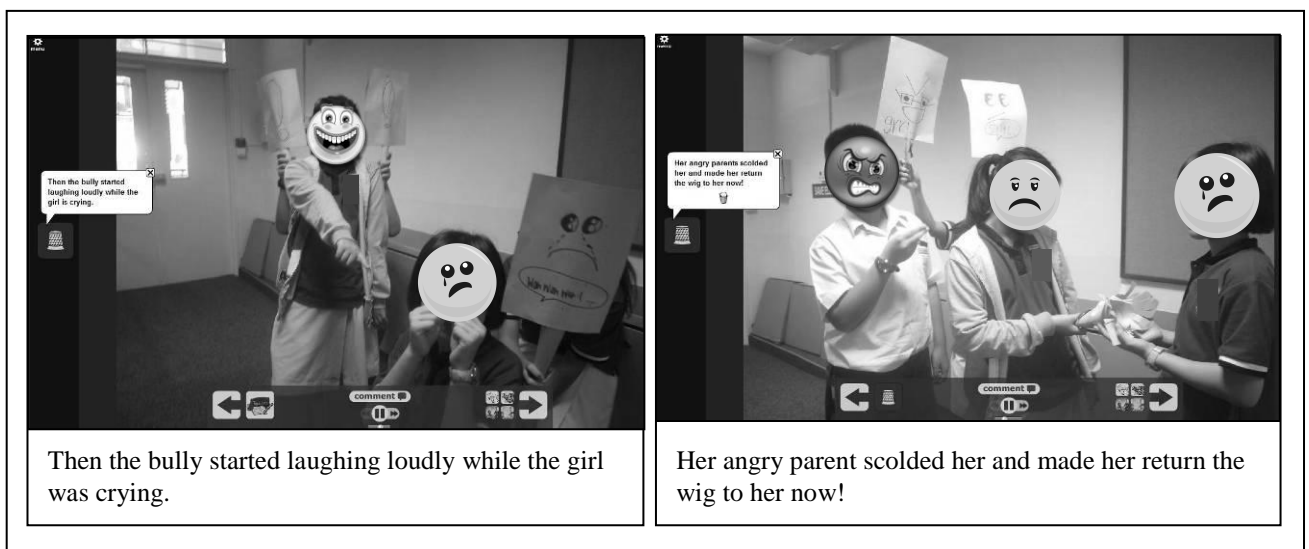
Figure 24. Excerpts of Group 2's storyboard.

As photographs and not video were taken, the student participants could not act out the play with open dialogues, but would have to use their creativity to demonstrate the characters' thoughts, feelings and behaviours with the use of facial expressions, hand gestures and sign boards. Thus, instead of an interactive role-playing process, the student participants appeared to be involved in a silent film screen shooting process. In addition, as the role-play was not

scripted, the student participants were instructed to refer to their mind-maps to act out the fragments of role-play scenes. On one hand, the restrictions might spark the creativity of the student participants to produce convincing still images that elicit the unspoken meaning in the images; on the other hand, they might hinder the student participants from fully immerse in the roles, thinking, feeling, behaving like the characters, and interacting with the other characters so as to completely act out a play. Consequently, this might reduce the impact of the role-playing method in triggering the student participants' emotional aspect of moral life.

6.2.2. Conscience and humility

In the digital reflection stories, the student participants were expected to self-report their reflection as honestly as possible and the reflection process involved the student participants' conscience to feel the obligation to act accordingly to produce their own truthful responses. During the self-reflection process, the student participants would have to recall and re-evaluate their past behaviours against their acquired understanding of "considerate" to reflect if they were a considerate person. In self-evaluating and self-reflecting their value systems, the student participants on the average seemed to be more than proficient (M=3.15, SD=.48) in their moral self-reflection ability, demonstrating their self-understanding, humility and conscience moral qualities (see appendix 20).

Fifteen out of the twenty student participants had expressed themselves as a considerate person at times, and five student participants affirmed that they were considerate. This may indicate that while the student participants had positive self-regard and valued themselves as a considerate person, most of them also recognised there would be times they did not behave as a considerate person. The student participants' responses may also show their self-knowledge of their own characters. While undeniably recognising their flaws, fourteen student participants further expressed the need to improve themselves, openly

showing their willingness and desire to seek improvement to become a more considerate person. This reflected the humility quality the student participants may possess. Instead of focusing on self, G1S4, G2S4 and G4S5 extended their understanding to the general population, perceiving that everyone should possess the virtue of considerate for the general good of the public. Their opinions may reflect their emotional attachment to being a considerate person and their love for the good.

> Everyone should be considerate otherwise everyone will be proud with no manners. (G1DS_G1S4)
>
> I want to be more considerate and I will do my best. Everyone should be considerate otherwise people need help nobody will help us. (G2DS_G2S4)
>
> Everyone should be considerate otherwise the world will be sad. (G4DS_G4S5)

Besides eliciting the student participants' desire to self-improve, having them to contemplate the methods would prompt them to put their emotional obligations into actions. In providing the ways to self-improve, the student participants' responses could be broadly categorised into three. The responses of the student participants imply that they may have developed a less egocentric mentality to become more considerate to others. The first category consisted of student participants who had relooked at their definitions of "considerate" to determine the aspects they would like improve on.

> Think about other's feeling, religion etc. (G1DS_G1S1)
>
> Respect people, think of their feeling and religion and their culture. (G1DS_G1S2)
>
> I can try to be more understanding to feel how other feel in a situation. (G2DS_G2S5)

The second category included student participants who chose to render help to people in need to train themselves to become more considerate. These student participants might

have associated "considerate" with "kindness" and viewed the helping of the surrounding people in need as a way to display their considerate behaviours.

> By helping people around me and think about other people's feeling. (G2DS_G2S2)
>
> I can be a better person by helping the people who need help and help them by letting them sit or help them carrying heavy things. (G2DS_G2S4)
>
> Helping those who need help like helping people who really need help to cross the road. (G3DS_G3S3)

The final category of student participants had stated specified examples in which they wished to perform. The examples they mentioned may reflect the inconsiderate behaviours they had performed in the past, and they would like to correct the past undesirable behaviours into desirable ones.

> I should let old, pregnant and young children to sit on buses and MRT. (G1DS_G1S4)
>
> Pay attention in class and do not interrupt people. (G3DS_G3S2)
>
> By helping my parents to do housework. (G4DS_G4S3)

6.3. Moral behavioural performance

Besides having the intellectual and emotional moral qualities, one would have to be able and willing to translate the thought and feeling into action, and cultivate the moral behaviour into a habit (Lickona, 1991, 1993, 2001). Through the weekly collaborative learning process, the CME curriculum aimed to develop the learners' moral competence gradually into habit, by providing the weekly time and practice for the student participants to master the participation skills and collaborative behaviours that should be in consistent with the target moral value of respect. The student participants repeatedly practised the social skills to treat their group-mates with consideration and reflected upon collaborative learning process

after each collaborative activity to determine the extent they had performed and acquired the skills. In conjunction to the curriculum objectives, the evaluation criteria on the scoring rubric included the categories of communication, relationship management, collaborative attitude and contribution to assess learners' moral behavioural performance in their collaborative process. The moral behavioural performance of the student participants were examined via the following few methods: student participants' self and peer assessment of group work process, the researcher's assessment and interviewed teachers' interview transcripts.

6.3.1. Self and peer assessment of collaborative process

Having the students to reflect and assess on their and peers' collaborative performance could aid to foster the students' accountability to their learning and sharpen their awareness of the core values and skills they could gain from the collaborative learning process (Lickona, 1991). Furthermore, the peer assessment results could be used to supplement and justify the findings from the self assessment mode. Thus, the student participants self and peer assessed after each group activity to engage in continuing reflection and evaluation on their collaborative process in accordance to the rules of cooperation and value of respect. The assessments were conducted for five times on 14 and 20 February, 05, 19 and 26 March 2012.

The evaluation aspects, adapted from the scoring rubric for teacher use included (1) listening attentively and patiently, (2) speaking politely, (3) responding with encouragement, (4) contributing to group efforts, (5) providing opportunities for group-mates to contribute, and (6) fulfilling group role duty. These six aspects were evaluated using a 4-point Likert scale, ranging from "4" representing "excellent" to "1" as "needs to improve". A paired samples t-test was conducted to compare the differences in the mean scores between the self and peer assessment results of the collaborative process. Table 21 presents the mean scores and standard deviations of each evaluation criteria of the self and peer assessments.

Table 21

Descriptive Statistical Results of Self and Peer Assessments

Variables	Self assessment		Peer assessment	
	M	*SD*	*M*	*SD*
Listen	3.43	.59	3.59	.27
Speak	3.54	.46	3.54	.35
Encourage	3.11	.66	3.09	.32
Contribute	3.37	.75	3.35	.42
Opportunity	3.35	.70	3.44	.33
Duty	3.32	.60	3.47	.42

Note. n=20

4=Excellent, 3=Very good, 2=Good, 1=Needs to improve.

The results in Table 21 have shown that the mean scores of each evaluation criterion for both the student participants' self and peer assessments ranged from 3.09 to 3.59, indicating that the participating class had achieved between "excellent" and "very good" for listening attentively and patiently, speaking with politeness, encouraging each other, contributing to group efforts, giving each other opportunity to contribute and fulfilling role duties. From the mean scores of the self and peer assessments, the scores the student participants had given for themselves seemed to be in consistent with those they attained from their group-mates. There seemed to be little discrepancy in the ways the student participants perceived their own collaborative performance from their peers' perceptions, further implying that they might behave as the ways they had self-reported.

On one hand, the high mean scores may imply that the student participants might have met the evaluation criteria and the curriculum objective of treating group-mates with consideration. On the other hand, there may be a possibility of overstatement by the student participants due to various circumstances. They might tend to be encouraging to their group-mates; even when a group-mate might not have performed the desirable behaviours, they might still grade the group-mate a "very good" so as not to degrade or offend each other. It could also be due to the limited time (ten minutes) given to the student participants for doing these assessments that they tended not to seriously think and do the assessment. In addition, as

the lessons were followed by the recess break, the student participants might tend to rush through the assessments so as to be able to go for their recess break slightly earlier or on time. As a result, they might repetitively tick on the same column on the forms or give the similar responses without much thought. Hence, the assessment results were largely concentrated in the "excellent" and "very good" grading levels. Nonetheless, these results could be cross-checked with the researcher's assessment results of the student participants' collaborative process.

6.3.2. Researcher's assessment of collaborative process

The student participant's self and peer assessment results, together with the researcher's assessment results could supplement and cross-check each other's findings, increasing the trustworthiness of the research. The scoring rubric consisted of four evaluation categories: communication, relationship management, attitude and contribution; and each category encompassed four grading levels (exemplary, proficient, satisfactory and needs improvement) with criterion descriptions. The student participants' performance was recorded on the observation checklist on the spot during the group activity sessions on 14 and 20 February, 05, 19 and 26 March 2012. The one-way repeated measures analysis of variance (ANOVA) was used to analyse if there is any differences in the participating class' means between each assessment time for each evaluation category. Table 22 comprises the descriptive statistical results of the participating class for each measuring category and each assessment time. The summary table of the one-way repeated measures ANOVA results was presented in Table 23.

Table 22

Descriptive Statistical Results of Student Participants' Collaborative Learning Process

Variables	Labels	Date	N	M	SD
Communication	A	14 Feb	20	2.90	.308
	B	20 Feb	20	2.95	.223
	C	05 Mar	18	2.83	.383
	D	19 Mar	19	3.00	.667
	E	26 Mar	20	2.95	.223
Relationship Management	A	14 Feb	20	2.10	.308
	B	20 Feb	20	2.10	.308
	C	05 Mar	18	2.17	.383
	D	19 Mar	19	2.37	.496
	E	26 Mar	20	2.55	.605
Attitude	A	14 Feb	20	2.50	.607
	B	20 Feb	20	3.15	.587
	C	05 Mar	18	2.67	.840
	D	19 Mar	19	3.21	.855
	E	26 Mar	20	3.35	.813
Contribution	A	14 Feb	20	2.35	.813
	B	20 Feb	20	3.05	.759
	C	05 Mar	18	2.44	.783
	D	19 Mar	19	3.11	.875
	E	26 Mar	20	3.25	.851

Note. 4=Exemplary, 3=Proficient, 2=Satisfactory, 1=Needs improvement.

Table 23

A Summary Table of One-Way Repeated Measures ANOVA Results

Variables	Source	SS	df	MS	F	Post-hoc test
Communication	Between subjects	4.047	16	.253		
	Results	.188	2.068	.090	.334	—
	Error	9.012	33.378	.270		
Relationship management	Between subjects	5.412	16	.338		E>A
	Results	2.518	2.798	.900	5.110**	
	Error	7.882	44.775	.176		
Attitude	Between subjects	32.353	16	2.022		D>C
	Results	7.835	4	1.959	7.952***	E>A
	Error	15.765	64	.246		E>C
Contribution	Between subjects	38.212	16	2.388		B>A
	Results	11.365	3.078	3.692	11.780***	D>A, D>C
	Error	15.435	49.250	.313		E>A, E>C

Note. **$p<.01$, ***$p<.001$

The participating class' mean scores for the communication category are 2.90 (*SD*=.308) in the 14 February lesson, 2.95 (*SD*=.223) in the 20 February and 26 March lessons, 2.83 (*SD*=383) in the 05 March lesson, and 3.00 (*SD*=.667) in the 19 March lesson. The one-way repeated-measures ANOVA shows that the mean scores achieved in these five

lessons are not significantly different, $F(16, 33.378)=.334$, $p=.727$, partial $\eta^2=.020$, thus the null hypothesis is not rejected. The results showed that the student participants consistently achieved better than "satisfactory" and close to "proficient" in terms of their communication skills throughout the field trial, indicating that the student participants treated their group-mates with consideration by often listened patiently and attentively to others, spoke with politeness even during disagreement and at times considered other's viewpoints during their cooperative learning process. The consistent results might also imply that the student participants might have developed the aforementioned behaviours into habits.

The means for the relationship management category are 2.10 ($SD=308$), 2.17 ($SD=.383$), 2.37 ($SD=.496$) and 2.55 ($SD=.605$) for the respective five lessons. The student participants generally performed slightly better than satisfactory in managing their relationships with their group-mates. As the researcher observed from the field trial, the student participants were able to work in their groups harmoniously without much arguments and would response to group-mates with smiles or simple encouraging words like "okay", "good" and "well done". The one-way repeated-measures ANOVA shows that the mean scores achieved in these five lessons are significantly different, $F(16, 44.775)=5.110$, $p<.01$, partial $\eta^2=.242$, rejecting the null hypothesis. A post-hoc t-test was performed and found a statistically significant difference between means E and A (E versus A: $t(19)=3.943$, $p<.001$, $d=1.105$), implying an improvement in the student participants' relationship management aspect from the first to last evaluation. The time and practice might allow the student participants to develop the bond between group-mates, tend to be more encouraging and appreciative and better able to manage dispute peacefully within their groups.

The participating class' mean scores for the attitude category are 2.50 ($SD=.607$) in the 14 February lesson and 2.67 ($SD=.840$) in the 05 March lesson, indicating the student participants' attitude to be between "satisfactory" and "proficient" which means the student

participants showed some positive interest and enthusiasm to the mind-mapping and storyboarding tasks. The participating class' attitude was found to be between "proficient" and "exemplary" in the 20 February (M=3.15, SD=.587), 19 March (M=3.21, SD=.855) and 26 March (M=3.35, SD=.831) lessons, implying the student participants often showed positive interest and great enthusiasm to the role-playing and the digital reflection story assignments. The one-way repeated-measures ANOVA shows that the mean scores achieved in these five lessons are significantly different, F(16, 64)=7.952, p<.001, partial η^2=.332, rejecting null hypothesis. Repeated-measures t-tests (using a Bonferroni adjustment, α=.05/4 =.0125) shows that the participating class had significantly better attitude in the 19 March lesson than in the 05 March lesson (D versus C: t(16)=3.497, p<.01, d=1.150); and in the 26 March lesson as compared to the 14 February lesson (E versus A: t(19)=5.101, p<.001, d=1.613) and 05 March lesson (E versus C: t(17)=4.123, p<.01, d=1.340).

For the contribution category, while the student participants performed between "satisfactory" and "proficient" in the 14 February (M=2.35, SD=.813) and 05 March (M=2.44, SD=.783) lessons, they perform between "proficient" and "exemplary" in the other three lessons (20 February: M=3.05, SD=.759; 19 March: M=3.11, SD=.875; 26 March: M=3.25, SD=.851). The one-way repeated-measures ANOVA shows that the mean scores achieved in these five lessons are significantly different, F(16, 49.250)=11.780, p<.001, partial η^2=.424, rejecting the null hypothesis. Repeated-measures t-tests (using a Bonferroni adjustment, α=.05/5 =.01) shows that the participating class had significantly more contribution in the 20 February lesson than in the 14 February lesson (B versus A: t(19)=4.273, p<.001, d=1.351); in the 19 March lesson as compared to the 14 February lesson (D versus A: t(18)=4.916, p<.001, d=1.575) and 05 March lesson (D versus C: t(16)=3.801, p<.01, d=1.250); and in the 26 March lesson as compared to the 14 February lesson (E versus A: t(19)=13.077, p<.001, d=4.135) and 05 March lesson (E versus C: t(17)=5.0, p<.001, d=1.624). The findings

indicated an improvement in the student participants' contribution efforts in the last two lessons. The student participants could perform the group roles' duties well, contributed much to group efforts and even provided opportunities for every group-mate to perform. Furthermore, they could coordinate with and helped each other to complete the given tasks together. Over the weeks of collaboration, it seemed that the student participants might have progressed in their ability to collaborate in an egalitarian way, with the dominant student participants providing more opportunities for the others and the less confident counterparts beginning to participate and contribute more, thus explaining the improvement in mean scores in the last two lessons.

The nature of the tasks given might have influence on the student participants' attitudes and contribution towards the tasks, which could explain the better than "proficient" results in the 20 February, 19 and 26 March lessons when they worked on the role-playing activity and the digital reflection story. According to the needs analysis results indicated in chapter 4, the target students enjoyed role-playing the most. Thus, the student participants demonstrated great interest and enthusiasm engaging in the role-playing activity in the 20 February lesson. Furthermore, as the planned role-playing activity required manpower to take up the different duties such as role-played characters, cameraman and equipment personnel, all the members in each group were enlisted to participate and contribute. The development of the digital moral reflection story required both group and individual efforts to produce the content, select the images and do the voice-recording. Other than the template to provide an organised structure for the facilitation of the reflection process, the content was produced by the student participants by drawing on their life experiences, opinions and knowledge. The creation of the digital reflection story then became a personalised experience, which might prompt the student participants developed a tint of affective sense of ownership, and invested more efforts and enthusiasm in their creation.

Overall, according to the researcher's assessment of the student participants' collaborative behaviours, the student participants were consistently near "proficient" in the ways they communicated with their group-mates, and had demonstrated improvement in their relationship management skills, learning attitude and contribution over the five sessions of evaluation. It seemed the weeks of group collaboration may have brought about the gradual desirable growth of the student participants' moral competence in terms of respecting and treating their group-mates with consideration, as time and practice might enable the student participants to master the requisite participation and social skills.

6.3.3. Interviews with teachers

Interviews with the student participants' form teachers (級任班導師) and CL teacher aimed to find out whether the teachers had noticed the student participants' conduct had changed for the better over the period from January to March 2012 when the student participant underwent the DST-integrated CME curriculum. In addition, the interview results would provide insights to whether the student participants maintained the desirable moral behaviours outside the CME lessons and with a different class dynamic. Three form teachers (FT01, FT02 and FT03) from the three form classes (級任班) respectively, and the participating CL class' CL teacher (CLT01) were interviewed by the researcher. As the responses of FT02 and FT03 were focused on the specific few student participants who joined the participating CL class for CME lessons, the two teachers' interview results were integrated with that of the FT01 to generate an overall understanding of the participating class' behaviours. As analysed from the interview transcripts, the interviewed teachers had broadly addressed the areas of the student participants' learning attitude, collaborative behaviours and the overall conduct.

In the aspect of learning attitude, the interviewed teachers had mentioned that the participating class was initially quiet and less participative; however, over the weeks, they had shown their passion for learning and had become more responsive. This could be due to the confounding variable of time; in January when it was the beginning of a new academic year, the student participants were not familiar with their new classmates and teachers, but with time, they might have adapted to the surrounding people and environment and become more responsive. Nonetheless, the interviewed teachers' comments regarding the student participants' positive learning attitude supported the researcher's assessment results mentioned above about their better than "proficient" attitude towards the given tasks. This implied that the student participants took responsibility and showed enthusiasm, interest and passion in learning, regardless of academic or non-academic subjects. In addition, the situation may show the student participants' positive self-esteem in learning.

我覺得這個班算是一個蠻 lively 的一個班，他們不會是死沉沉的，他們會回答問題，他們會 try to participate…就是說，做出來時，做不出，but they enjoy the process of learning, then 他們會發問，他們會回答，不會死氣沉沉，也不會說怕什麼東西。當然也有靜的學生，靜的學生通常比較不會發問，他們都聽別人發問，然後就跟著吸收，跟著笑。(FT01)

I think this class is rather lively. They will ask questions, try to participate…They may not produce results but they enjoy the process of learning. They are not afraid to ask or say anything. Of course, there are quiet ones who seldom raise questions, but they will listen to others, learn and nod in agreement. (FT01, translated from Chinese transcript)

就是比較踴躍地回答老師的問題，也不到踴躍啦，就是比較有反應，開始有反應。你剛來的時候，你看他們都很安靜對嗎，現在就已經沒有這麼糟糕了。情況有改善。學習態度有好一點，沒有到很好，好一點。我是覺得行為方面是沒有偏差，就都很正常。多數學生都很乖。(CLT01)

They are more responsive now. Initially, when you first came, you can see they were rather quiet, but now there is improvement. Their learning attitude has become better. Their conduct is satisfactory and most of the students are well-behaved. (CLT01, translated from Chinese transcript)

The interviewed teachers appraised that though they rarely conducted collaborative learning, in their once or twice experiences of using the strategy, the student participants tended to be able to demonstrate their interpersonal and participation skills to collaborate with

each other and participate actively in group discussions. Such circumstance may imply that

with the weekly practice of the co-operative learning strategy during the period of the field

trial, the student participants might have gotten accustomed to this form of learning style and

acquired the intended social skills, thus they could perform and maintain the requisite

desirable behaviours during collaborative learning in other subjects' lessons.

通常都是 teacher-led instruction, group work 比較少。有做過，但很少。一兩個而已，for Maths and Science. But 這個班，我曾經跟他們講過 they can do group work very well。In terms of ability, 他們是 very low ability class，算是啦，but when it comes to group work, surprisingly they work very well, 他們不會像一些班會吵架，還是意見不合…they know how to manage their differences somehow, so 他們還會 work quite well together. 所以我覺得這個班是可以做 group work 的，因為他們是那種很合群的人。(FT01)
Usually it's teacher-led instruction; there is less group work, just once or twice for Maths and Science. But, this class is able to do group work very well. In terms of ability, they belong to a very low ability class but when it comes to group work, surprisingly they work very well. Unlike other classes, this class does not have disputes…they know how to manage their differences somehow and work quite well together, thus I think this class is able to do group work as they are cooperative. (FT01, translated from Chinese transcript)

第一次，就很靜，很沉默，可能他們大家就彼此不是很熟悉吧，可能就沒有這麼多互動，或是說他們都會蠻安靜的，蠻沉默的，現在可能就…以昨天的例子來說，他們就是會積極地討論，然後會因為某些人沒有做事情而開始在爭論，或像組長他們就會跟我講，然後去糾正那個學生，叫他討論。第二次就昨天，改變蠻多的，就比較積極，也比較熱情去參與。(CLT01)
For the first group work, they were rather quiet, maybe because they were still not familiar with each other and did not interact much…Now, taking yesterday's group work for example, they were more participative. If one group-mate did not contribute, the group leader would tell me, and I would advise the student to join the discussion. For this second time of group work, they had changed much, they were more enthusiastic and interested to participate and contribute. (CLT01, translated from Chinese transcript)

The overall conduct of the participating class was considered as satisfactory, as

according to the interviewed teachers, they had not encountered any incidents or seen the

student participants in disputes over the past three months. They seemed to be receptive to

teachers' instructions and advice, thus during the course of the field trial, the researcher was

able to conduct the lessons smoothly without the need to stop to handle any disputes or

incidents. Besides showing consideration to their group-mates, the student participants were

able to carry out the considerate behaviours outside the CME lessons to clean up and tidy

their classrooms before they left the school, as stated by the FT01. Though it may be unclear whether the DST-integrated curriculum unit field trial might have impacted the student participants to be better able to empathise with the others, their behaviours might show their inherent desire for good, and they might have developed the mentioned behaviours into habits as they performed these considerate and responsible behaviours without reminders.

> 這個班 relatively incident-free so far. 因為你說吵架，他們不太會吵，他們都是很合群的學生，也不會搗蛋…你跟他們說什麼，他們會做，like 盡量 if you can, push in the chair, pick up the litter around you, just to lighten the load of the school attendant, and they all did…they are very empathic. If you tell them "you see the school attendant, look at her age, and she's doing all these for you", they feel for her and remember, so now everyday, they really push in the chairs. You don't have to remind them, they do it on their own, 是一個很自動自發的, because they feel for the auntie。 (FT01)

> 說真的，我只上他們的華文課，而且相處的機會沒有很多，就平均每一天啦。沒有看過他們吵架，沒有印象有發生什麼小事件……雖然他們不是好班的學生，但是不至於像差班的學生會很調皮，不聽老師的話，就是我講的話，他們還是會聽啦。但是成績可能就沒有這麼好。簡單來說就是懂事我覺得。(CLT01)
> Franking speaking, I only teach them Chinese lessons, there is not much chance to interact with them. I have not seen them quarrel or in my impression, there is not even a small incident in this class... Although they are not from a high ability class, they are not as mischievous as those from the low ability class. At least they do listen to my instructions and generally they are rather sensible. (CLT01, translated from Chinese transcript)

From the interviews with the form teachers and CL teacher, it was understood that the student participants possessed passion for learning, demonstrated collaborative and social skills in other subjects' lessons. However, it may be difficult to accredit the student participants' desirable behaviours to the effectiveness of the curriculum unit as the teachers seemed to unable to detect significant changes to the student participants' moral behaviours or value systems over the past three months to determine whether the student participants had changed for the better after undergoing the DST-integrated CME curriculum unit. As FT01 had clarified, the teachers had limited personal interaction time with each student, and three short months with the students might not be insufficient to notice any changes in their mindsets, value systems and moral behaviours.

我們進去就是教，很難有 personal interaction with them, one-to-one. And three months with them is too short. 如果我們是 follow up，可能 from P4 到 P5，我們可能可以看到那個轉變，現在其實只是三個月，很難看到。(FT01)

Once we enter the classroom, we start teaching. There is rarely any opportunity to have personal interaction with them and three months with them is too short. If we could do a follow up from P4 to P5, we will be better able to see the changes in them but now, we only know them for three months, it is hard to detect any changes. (FT01, translated from Chinese transcript)

Nevertheless, from the student participants' self and peer assessment and the researcher's evaluation results, the student participants appeared to have met the curriculum objectives to respect their group-mates by speaking politely, listening attentively and patiently, supporting each other with positive comments, contributing actively and helping each other upon the completion of the lessons, thus indicating the effectiveness of the DST-integrated CME curriculum in developing and eliciting the learners' desirable moral behaviours.

6.4. Student participants' post-curriculum feedback

By the end of the field trial, the student participants were required to complete a post-curriculum feedback survey form, in order to obtain the student participants' perceptions about the DST-incorporated CME lessons. The survey form was constructed based on a 4-point Likert scale, ranging from 4 as "strongly agree" to 1 as "strongly disagree", evaluating the learning content of and their overall learning experiences. The results of the student participants' post-curriculum feedback with the mean scores and standard deviations were presented in Table 24. To elaborate and complement the survey results, four student participants (G1S3, G2S5, G3S1 and G4S5) from each group were interviewed. The names mentioned by the student interviewees were replaced with codes in square brackets.

Table 24

Student Participants' Post-curriculum Feedback Results

	What do I think of the CME lessons?	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	*M*	*SD*
Learning content	1. Clear and understandable instructions were given.	50	45	5	0	3.45	.60
	2. The activities were not too difficult or too easy.	45	50	5	0	3.40	.60
	3. The activities organised enable me to learn better.	70	30	0	0	3.70	.47
	4. Sufficient amount of time was given to complete the activities.	25	40	30	5	2.85	.88
	5. Sufficient feedback was provided to guide me through the activities.	55	45	0	0	3.55	.51
Overall learning experience	6. I enjoy working as a group.	75	25	0	0	3.75	.44
	7. I think I have learnt much during the CME lessons.	65	30	5	0	3.60	.60
	8. I think I am able to put the values learnt into practice.	65	35	0	0	3.65	.49
	9. I think the CME lessons are interesting.	90	10	0	0	3.90	.31
	10. I am satisfied with the CME lessons.	75	25	0	0	3.75	.44

Note. N=20, 4=Strongly agree, 3=Agree, 2=Disagree, 1=Strongly disagree

In the area of learning content, all except survey question 4 achieved a mean score ranging from 3.45 to 3.70, which was between "strongly agree" and "agree". In other words, the student participants perceived that the learning activities were of appropriate difficulty level (*M*=3.40, *SD*=.60), with clear instructions (*M*=3.45, *SD*=.60) and sufficient teacher's guidance (*M*=3.55, *SD*=.51). They also perceived that the planned activities helped to improve their learning styles (*M*=3.70, *SD*=.47) but they found the amount of time allocated for the lesson activities was insufficient (*M*=2.85, *SD*=.88).

From the interview results, all the student interviewees felt that the lesson activities were manageable. There were activities that they deemed as easier or more difficult but all the activities were within their ability to cope. G1S3 and G4S5 found that though the moral scenarios they worked on in lesson unit two were challenging, they were able to handle the

problem with group collaboration. G2S5 perceived that as the mind-map templates were given, the mind-mapping task was made easier and the students simply focused on completing the mind-map templates with content.

我們都會做，會想很多 ideas 出來。Mind-map 有點難，那個 priority seat，在 MRT 喝水，不會解釋，不會 type 出來那些要寫的東西。想不到 idea。[G1S5] 給我們 idea，我們就 work out。 (G1S3)
We were able to think of many ideas to handle the activities. The scenario on the drinking of water on the MRT was slightly hard. We were unable to explain and type out what we wanted to express. We could not think of idea but [G1S5] gave us idea and we work it out. (G1S3, translated from Chinese transcript)

全部都還好…太容易就可能是 mind-map，因為老師已經幫我們畫那個 mind-map 了，你只是要打那個字跟想要寫什麼…可是如果我們自己畫那個 mind-map，就很麻煩，因為我們要彩顏色跟慢慢地畫那個圓圈，然後換那個字的顏色。如果老師幫就更容易，可是如果我們有很多時間，我們就可以自己畫那個 mind-map。 (G2S5)
All were manageable...The mind-map task was easy, as the teacher had helped us to draw the mind-map, all we needed to do was to think and type our ideas. However, if we were to draw the mind-map by ourselves, it would be troublesome, because we had to insert the shapes, add or change the shapes' and fonts' colours. With the teacher's help, it was easier, but if we had much time, we could draw our own mind-maps. (G2S5, translated from Chinese transcript)

我覺得這些活動還好，可以做，不是太難，不是太容易。 (G3S1)
I think all the activities were manageable, not too difficult or too easy. (G3S1, translated from Chinese transcript)

那個 mind-map 的。那個剛剛過的比較容易，之前那個有點難。剛剛好，因為可以 discuss，不是一個人做。 (G4S5)
The recent mind-map we did is easier while the one in the previous lesson was more challenging. Overall, they were still manageable as they were not individual work, we could discuss. (G4S5, translated from Chinese transcript)

Though the students found the lesson activities manageable, they perceived the time allowance for activity completion to be too short. Thirty-five percent of the student participants disagreed or strongly disagreed that the amount of time given for them to complete the activities was sufficient. This implied that the students faced difficulties completing the lesson tasks within the stipulated time. The interview results provided further explanation to the student participants' perceptions of the time issue. G1S3 and G2S5 had given feedback that the amount of time for some activities was insufficient. They reasoned that their groups were unable to timely complete certain activities as they had spent much

time brainstorming, trying to produce presentable outlook or they might had faced technical problems. G3S1 perceived that the amount of time allocated for the activities was reasonable and the problem lay with his group. G4S5 too thought that her group worked too slowly as they needed time to reconcile with each other and come to an agreement.

有時會夠，有時不夠。因爲我們用趕的，因爲有時我們想不到 ideas,就一直想。我們想的時候，突然想不到 ideas,我們就去另外一個，then 再回來，又再想，又想不到。(G1S3)
Sometimes the time is enough but sometime not. We rushed to complete the work, because sometimes, we spent much time brainstorming ideas. When we were unable to think of ideas, we moved to the next question, then came back again to think but we still could not think of any ideas. (G1S3, translated from Chinese transcript)

有時候夠，有時候不夠。因爲我們的組有些東西做不完。有些東西做得很快很容易，所以那個時間就夠，有些東西要花很多時間就不夠。可能那個錄音，因爲那個錄音的時候，那個聲音沒有出來，所以我們什麼東西也沒有錄到。因爲我們的 mic 壞掉，全部的組都錄完了，我們還在那面 test test。可能那個[G2S3]做的東西，那個 slideshow，她弄一些圖畫在裏面，這樣做要花很多時間找那些圖片…(G2S5)
Sometimes the time is enough but sometime not. Our group was unable to finish some of the activities. Some easy tasks were completely quickly, so the time was enough, some tasks required much time. Like the voice-recording, we faced problems with it. Our voices were not recorded because our microphone was spoilt. When other groups had completed their voice-recording, we were still testing the microphone. Like the slideshow [G2S3] did, she inserted some pictures, by doing that much time had been spent to find the pictures… (G2S5, translated from Chinese transcript)

給我們做活動的時間還好，可是有時候我們做不完，像那些 mind-maps，因爲我們動作很慢。(G3S1)
The amount of time for the activities are reasonable, but sometimes we were unable to complete the task, like the mind-maps, we worked too slowly. (G3S1, translated from Chinese transcript)

不夠，因爲我們太慢了。因爲沒有 group work 很多，自己講自己的，然後那個 type 的就很亂，到底要聽誰的，[G4S3] 要聽。我講這個，[G4S4] 講另外一個…after that，我們有討論了，她就 type 進去。(G4S5)
Not enough, because we were too slow. We did not co-operate well. We were all speaking our minds, and [G4S3] who was typing had no idea to listen to whose ideas. I was talking about mine and [G4S4] was talking about her idea…but after that we discussed together and she could type the discussion results out. (G4S5, translated from Chinese transcript)

The student interviewees seemed to attribute their inability to timely complete the lesson activities to the ways or speed their groups worked instead of relating to the complexity of the activities. This indicates that the amount of time allotted to the lesson activities might be reasonable but the students might be weak in their management of time, thus affecting their

speed of work. Nevertheless, inferring from the student interviewees' replies, the student participants made efforts to reconcile and collaborate with each other. In addition, they were motivated and interested to complete their tasks well, even though they did not complete certain given tasks or spent more than the required time to complete certain activities.

The mean scores for the student participants' perception of their overall learning experience range from 3.60 to 3.90. This means that all the twenty student participants agreed or strongly agreed that they enjoyed the co-operative learning process (M=3.75, SD=.44), and they had learnt much in the lessons (M=3.60, SD=.60) and were able to put their understanding into practice (M=3.65, SD=.49). Overall, they found the lessons interesting (M=3.90, SD=.31) and satisfying (M=3.75, SD=.44). The interviews with the students further supplemented the survey results.

Among all the questions, survey question 9 ("I think the CME lessons are interesting") has 90% of the student participants strongly agreed that the DST-integrated CME lessons were interesting. This implies that the new curriculum had successfully appealed to the student participants' interest; they had enjoyed the lessons and their learning motivation had been aroused. According to the student interviewees, the activities that they enjoyed the most were the role-playing and photo-taking. Adding the element of photo-taking gave a positive twist to the role-playing activity as the students interviewees felt that they were acting with a cameraman in front of them and making a production. Other activities mentioned included the use of the presentation slides to do digital reflection story and mind-mapping, and voice-recording via the VT, indicating the learners favoured the use of ICT for learning.

> 那個「are we considerate？」，剛才給我們看的那個，因為可以 type 字，又可以錄音。
> 那個「priority」，拍照，很好玩。(G1S3)
> The "are we considerate?" reflection story you showed us just now, because we could type words and do voice-recording. The "priority" role-playing activity and photo-taking as it was fun. (G1S3, translated from Chinese transcript)

有趣，因為我們有用到電腦做 mind-map 跟 slideshow 跟別的東西。跟 CME 用到電腦時，我們也是學到做個替人著想的人。我喜歡那個課我們在拍照的，然後做那個 story，因為我們好像在做 drama，在拍照，很好笑。(G2S5)

Interesting, because we could use the computer to do mind-map and slideshow. Learning CME with computers, we also learn about how to become a considerate person. I like the lesson which we had to take photographs and make the story, because we seemed like acting a drama. It was hilarious. (G2S5, translated from Chinese transcript)

有趣，因為可以用 VoiceThread，也可以錄音，還可以跟朋友們合作。我喜歡的，就是那個拍照的，因為可以假裝你是在那裏做那個東西。(G3S1)

Interesting, because we could use the VoiceThread, voice-record and co-operate with our friends. What I like is the photo-taking activity because I could act as someone doing something there. (G3S1, translated from Chinese transcript)

那個拍照的 part，因為我第一次演戲，很好玩，可以跟朋友一起拍照。(G4S5)
The photo-taking part, because that's my first time acting. It was fun and I could take photographs with friends. (G4S5, translated from Chinese transcript)

Not only did the student participants found the curriculum interesting and enjoyed the planned activities, they also preferred group collaboration to individual work. Seventy-five percent of the student participants strongly agreed that they enjoyed working as a group. G1S3, G2S5 and G4S5 mentioned that working in groups allowed them to have someone to brainstorm and discuss ideas together especially when one was unable to complete the task individually. G4S5 also brought up the point on social networking. The co-operative learning strategy provided the learners the opportunities for peer scaffolding and practice of communication and social skills.

喜歡，可以一起想。如果自己一個人做，有時想不到東西。(G1S3)
Yes, we can think together. If it is individual work, sometimes I may not be able to come out with any ideas. (G1S3, translated from Chinese transcript)

喜歡啊，因為不是一人做。如果你自己一個人做就很難，就沒有人幫你想東西，跟做東西，所以我們這樣小組活動就可以一起做那個東西，互相幫忙。(G2S5)
Yes, because it is not individual work. It will be difficult to work alone as there will be no one to help you with ideas. Like us, work together as a group, we can do the activity together and help each other out. (G2S5, translated from Chinese transcript)

喜歡。因為可以跟朋友，如果你不認識那個朋友，你可以跟他交新朋友。不用一個人做，可以跟朋友一起討論。(G4S5)
Yes, because you can make new friends, if you do not know the person, and we do not need to work alone as we can discuss together with friends. (G4S5, translated from Chinese transcript)

The survey results have also shown that 75% of the student participants strongly agreed that they were satisfied with the new curriculum. As compared to the CME lessons the students had attended in the past, the student interviewees positively responded that they preferred the DST-integrated CME lessons, implying that they were receptive to the constructivist learning style. G1S3, G3S1 and G4S5 stated that they had learnt more in the DST-incorporated CME lessons, going beyond the CME textbook to acquire moral values and collaboration, communication and ICT skills. G3S1 and G4S5 thought that they could better understand the values taught through the learner-centred strategies than simply using the CME textbook. Nonetheless, G2S5 had pointed out the CME textbook was not obsolete as it contained many moral scenarios and the right and wrong were directly presented to students. Thus, the CME textbook could be a good complementary resource to the new curriculum. The lesson venue also contributed to the student participants' level of satisfaction in the new curriculum. Like G2S5 and G4S5 had mentioned, they could comfortably learn in the cooling air-conditioned computer lab than in the warm and humid classrooms.

可以去 computer lab，學多一點東西， 比在 classroom 學的東西多。有 group work，我們可以一起想東西，有多人的 ideas，比 CME textbook 的多東西。有 group work，有很多人在想，可以把它們放在一起。我們不只可以學到 CME 那些東西，還可以學到別的東西，學會用 computer。(G1S3)

We can go to the computer lab and learn more things than in the classroom. There's group work and we can brainstorm ideas together. The ideas from many people are more than those in the CME textbook. We not only learn about CME values, we also learn other things, such as computer skills. (G1S3, translated from Chinese transcript)

我喜歡用電腦，因為很方便，我們不用用紙，這樣寫，我們可以直接打字就給老師。在電腦室很冷，不像課室很熱。我覺得在電腦室的活動…像 mind-map 我很少時間有做到 mind-map，所以在電腦室我們有做到…課本也是可以，因為它有說情況跟他為什麼做得對跟錯，所以我們也是可以從 CME 課本學到東西。能用課本就更容易，因為我們就可以直接讀那個課本就知道要做什麼…有時候，大家想出來的 example 會比課本多，因為有的問題不在課本，有些問題是老師問的，所以我們有想別的東西。(G2S5)

I like to use computer as it is convenient. We can type and send to the teacher directly instead of using paper. Unlike the classroom which is warm and humid, the computer lab is cooling. We seldom have chance to do some of the activities we did in the computer lab, like mind-mapping…The CME textbook is useful. It contains many scenarios and tells us what is right and wrong. It's easier to use textbook because we can get information straight from the textbook…Sometime, the examples everyone come out with are more than those in the
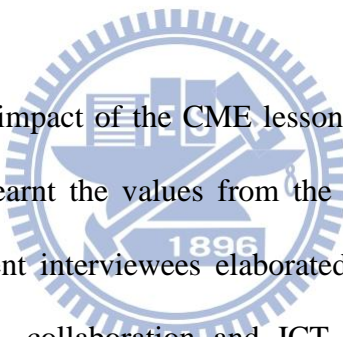
textbook. As some of the questions are asked by the teacher and cannot be found in the textbook, we tend to think more. (G2S5, translated from Chinese transcript)

我比較喜歡你的方式做 CME 課，因爲可以用到電腦，每次都是看那個書本，然後這次可以用電腦。我會更清楚那些 values，怎麼 be a considerate 的人。我想用電腦，因爲我們可以在那裏學到 values，怎麼用電腦。因爲有時我們合作的時候，我學到了怎麼跟其他的人合作。(G3S1)
I prefer your CME lessons because we can use computers. We always used the textbook in the past, but this time round we can use the computer. I can understand the values better, like how to be a considerate person. Using the computer, we learn values, how to use computer, and when we co-operate, I learn how to work with others. (G3S1, translated from Chinese transcript)

你的。因爲可以做 group work，還可以吹 air-con，還有可以跟朋友討論。每次在課室，都是一個人要做，還有功課的，有時不會，聽不懂老師講什麼，要回去自己讀，有些字不會，then 老師沒有空，不會跟你解釋。你的課，還可以講英文，他們的一定要講華文，不然就會被老師罵。你的課，比較清楚那些 values，會解決問題… (G4S5)
I prefer your lesson, because we can do group work and enjoy the air-con. In the classroom, it was always individual work and there's homework. Sometimes I couldn't understand what the teacher said, or I couldn't recognise the characters but the teacher was too busy to explain to me. For your lessons, we can speak English but for other teachers, we have to speak Mandarin otherwise we'll be scolded. After attending your lesson, I can better understand the values, solve problems... (G4S5, translated from Chinese transcript)

In terms of the learning impact of the CME lessons, 65% of the student participants strongly agreed that they had learnt the values from the lessons and were able to put the values into practices. The student interviewees elaborated on the learning points they had gained, including moral values, collaboration and ICT skills, from attending the DST-integrated CME lessons. G1S3 expressed her opinions on the ways to perform considerate behaviours to her surrounding people, while G2S5 explained her reasons for being a considerate person. G4S5 had attempted to apply the social and communication skills she acquired to the home setting to improve her relationship with her brother. It seems that the student interviewees had formed their own value systems, and attempted to apply their value systems and social skills to real concrete situations, indicating the curriculum was effective.

學到怎麼樣 encourage 人家的 ideas，怎麼樣跟朋友講好好 when 講 ideas 的時候。Be considerate，要 respect 老師 and friends when 他們在講話，不要插嘴，跟朋友講好好，還有他們的感受，需要。(G1S3)
I learnt how to encourage others for providing ideas, how to communicate my ideas to my friends in a polite manner. Be considerate, respect, the teachers and friends when they are

talking. Talk nicely to my friends, understand their feelings and needs. (G1S3, translated from Chinese transcript)

做一個替人著想的人，還有它的意思，跟我們為什麼要替人著想。 我們也學到為什麼要做一個替人著想的人，所以我們可以變成更好的人，因為如果你幫別人，有一天一個人也會幫你，如果你要人家幫你的時候。我明白了為什麼要這樣做。(G2S5)
I learnt how to be a considerate person, what it means and why we need to be considerate, so that we can become a better person. When you help someone, one day someone will also help you when you need help. I understand why I need to be considerate. (G2S5, translated from Chinese transcript)

我學到怎麼分組合作，然後什麼是 considerate 和 inconsiderate behaviours。(G3S1)
I learnt about teamwork, and what the considerate and inconsiderate behaviours are. (G3S1, translated from Chinese transcript)

合作，一起討論答案，然後 type 進去…不可以亂亂發脾氣在家，因為我在學校比較不會，在家會，因為在家每次我跟我哥哥會吵架，所以學到不可以亂亂發脾氣，要跟他慢慢講話，then 就好了，就不會吵架，慢慢講話。要 considerate 他對我怎樣，有可能我錯，覺得我不對，他沒有跟我講。(G4S5)
Co-operate, discuss the answer together and type them out…I learnt I shouldn't lose my temper at home. I seldom lose my temper in school but at home I will, because I will always quarrel with my brother. I have learnt not to lose my temper unreasonably. If I try to talk to him patiently, everything is fine. I have to consider what he says, it may be I'm wrong but he has not told me. (G4S5, translated from Chinese transcript)

Besides moral values, the student interviewees had learnt the basic operations of the slideshow and the VT, improving their ICT skills. Some of the basic operations of the slideshow mentioned by the student interviewees included inserting of images, texts, bullets and shapes and changing of the font colours. However, according to the school ICT plan, the students should have learnt these basic operations of the Powerpoint in primary 3. It appeared that the students had forgotten how to operate the slideshow application, and there was a lack of opportunities for the students to practise and revise their ICT skills. Similarly, the student participants were unfamiliar with the VT, though they might have tried the application in primary 4 for oral practice. The new CME curriculum had provided the student participants a chance to familiarise with the VT and its other functions. As G1S3 and G3S1 had remarked, other than voice-recording, they had learnt to view their work and type comments in the VT.

Computer，怎麼弄那個 mind-map，弄那個圓圈，還有怎麼放 picture 上去。你教我們的。會用 VoiceThread，去 sign in 先，去看老師要我們做的東西，開了就去看我們做的東西，如果有什麼錯，我們可以 comment。(G1S3)

I have learnt how to draw the mind-map, insert the circles and pictures. You taught us that. I now know how to use the VoiceThread, sign in to see the task you gave us and the work we had done. We can also add comments. (G1S3, translated from Chinese transcript)

IT，我有學到怎麼找那個圖片，因為老師告訴我們，跟 [G2S3] 每次在找那個圖片，所以我學到了怎麼做那個圖片， 我也是學到了怎麼打字更快一點。(G2S5)
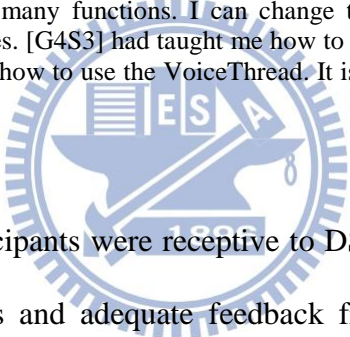
I have learnt how to find the picture because you have told us. I have also learnt from [G2S3] how to insert the pictures and how to type faster. (G2S5, translated from Chinese transcript)

有，因為我小三小四的時候，我做，然後我又忘記了…像怎麼 type 那個東西在盒子裡，和那個…像我們 delete 了一個東西，怎麼放回去。VoiceThread 也有學到一點，像怎麼用錄音，寫東西…以前老師教我們錄音那口試，然後我沒有 record 到。(G3S1)

I have learnt in primary three or four but I have forgotten…like how to insert text in the box, to retrieve the things we deleted. For the VoiceThread, I learnt to do voice-recording, add comments…in the past, the teacher had taught us voice-recording for oral practice but I didn't manage to record. (G3S1, translated from Chinese transcript)

原來那個 Powerpoint 可以做很多東西的，可以換那個 colour，可以放那些 dot，可以弄那些 shape，可以弄很多 circles, triangles 這些。 [G4S3] 按一個東西，然後那個 dot 黑色在旁邊那個，那個以前我不會。她教我…還有 VoiceThread，新的。(G4S5)

I realise the Powerpoint has many functions. I can change the colours, insert bullets and shapes like circles and triangles. [G4S3] had taught me how to insert the bullets which I don't know in the past. I also learnt how to use the VoiceThread. It is new to me. (G4S5, translated from Chinese transcript)

In sum, the student participants were receptive to DST-integrated CME lessons. They perceived that clear instructions and adequate feedback from the teachers were provided. Though they were unable to timely complete certain activities, they thought the activities were of appropriate difficulty level to manage and could help them to learn in a more effective way. In addition, the student participants perceived their overall learning experience to be enjoyable, interesting, beneficial and satisfying. The positive responses of the student participants imply that the DST-incorporated CME curriculum was appropriately designed, feasible and implementable. It was also effective in arousing and maintaining the student participants' interest and learning motivation.

Chapter 7 Conclusion and future work

This final chapter consists of three portions. The first section summarises and concludes the research report, the second section lists the research limitations in this study and the last section provides suggestions for future related research.

7.1. Conclusion

This study seeks to integrate the digital storytelling (DST) pedagogy into the Civics and Moral Education (CME) lessons to enable the learners to not only acquire the core values but also develop the 21st century skills in an information and communication technology (ICT) enriched learning environment. Hence, the specific research purposes of this study are to first design and develop a DST-infused CME curriculum unit anchored on a core value for primary school level students, and then formatively evaluate the feasibility and effectiveness of this new curriculum unit. In the attempt to achieve the research purposes, the Smith and Ragan's (2005) instructional design model, comprising the three "analysis", "strategy" and "evaluation" iterative phases, was adopted. The research results with respect to the two research purposes were summarised below.

7.1.1. Design and development of curriculum unit

The instructional analysis was first conducted to identify the needs and the inadequacies in the current curriculum. The analysis phase was conducted via document analysis and interviews with the participating school teachers and a DST expert, looking into the analyses of instructional goal, learning content, learner characteristics and learning environment. From the analysis results, it was understood that there seemed to be a lack of the ICT approach in the current CME curriculum, and there tended to be little opportunities for

students to practise their ICT skills. Furthermore, the current CME instructional situations appeared to be teacher-oriented which might stifle the students' efforts to self-reflect, form their own value systems and develop other critical socio-emotional skills. These identified inadequacies justified the needs for and highlighted the niche of the DST-integrated curriculum unit in this study.

In the strategy phase, the design process worked to avoid or rectify the existing problems while establishing the niche of the new curriculum. In designing the new curriculum unit, Wiggins and McTighe's (2005) backward design model was adopted to guide the creation of a student-centric curriculum plan. Lickona's (1991, 1993, 2001) conceptual framework for character and moral education served to guide the setting of lesson objectives and learning content. As identified by the teacher interviewees, the core value, respect, was the most critically lacking in their students. Based on the respect value, the curriculum objectives required the learners to understand "considerate" and the reasons to be considerate (moral knowing); feel the need and worth to be considerate (moral feeling); and treat others with consideration (moral action). Since the research seeks to integrate DST into the CME curriculum, Lambert's (2010) seven procedural steps to DST aided to determine the types and sequencing of learning activities and strategies to apply in order to smoothly chain the four lesson units together. The first lesson unit orientates the learners to collaborative learning, and introduce them to DST and the curriculum objectives. The second and third lesson units develop the learners in the moral cognitive and affective dimensions while bringing them through the DST techniques, with strategies of mind-mapping, role-playing and storyboarding. The final lesson unit concludes the curriculum with students creating their digital reflection stories that contain the content of their understanding of "considerate" and their resolutions to a given moral scenario.

Based on the curriculum plan, the initial version of instructional resources was then developed. However, the strategy phase should not cease upon the development of the instructional resources. The expert review and one-to-one evaluation processes called for further revision of the developed instructional resources and the development of additional resources. Eventually, the teacher's instructional toolkit for field trial include lesson plans, presentation slides on collaborative learning, mind-map examples, storyboard and digital story samples, scoring rubrics, collaborative performance assessment form. The learning materials for students' use consist of moral scenario illustrations, digital reflection story task-list, mind-map and digital reflection story templates, self and peer assessment forms, and CME textbook. The VoiceThread (VT) accounts for teacher and students were also created to park the instructional resources and students' multi-media products for class sharing.

7.1.2. Feasibility and effectiveness of curriculum unit

To formatively evaluate the feasibility and effectiveness of the DST-infused CME curriculum unit, the researcher undertook the evaluation methods of design reviews, expert reviews and learner validation (one-to-one evaluation and field trial). The researcher, experts, teachers and students of the participating school were involved in this evaluation process.

The design review process was conducted alongside the design and development stage of the curriculum unit, so as to enable the researcher to constantly verify the design against the design requirements and check the design to rectify the identified inadequacies (Tessmer, 1993; Smith & Ragan, 2005). It was found that majority of the identified problems could be resolved, except the issues on accessibility of school ICT resources and time constraints. In addition, all except the design criteria on the understanding of the target learner's capabilities were met. These unresolved issues could be tackled upon the start of the field trial when the

researcher had gained the permission to access the school ICT resources, met the selected student participants to verify their capabilities, and could manage the time on site.

Once the curriculum unit was developed, three experts (a content expert, an instructional design expert and a learner expert) were engaged to evaluate the congruence, content, design, utility and feasibility of the curriculum unit via an expert review survey form with sixteen closed-ended questions and an open section for addition comments. The results show that the mean score of every evaluation criteria was above three, indicating that the experts had either strongly agree or agree that the new curriculum unit had met the stated design standards as congruent, accurate, relevant, clear, appropriate, workable and feasible.

Other than the researcher's self-evaluation and the experts' evaluation, there was a need for the learners' validation (one-to-one evaluation and field trial) to gather their direct responses to the new curriculum unit. Three primary 5 students of disparate Chinese language competencies participated in the one-to-one evaluation. It was found the student reviewers were unfamiliar with the VT and Powerpoint applications, which might handicap their ability to complete the learning activities. The student reviewers found certain activities, such as mind-mapping and the creation of digital reflection story, challenging, and they would prefer the activities to be collaborative work and have more time to complete the activities. More scaffolding and time would be required in order to increase the feasibility and effectiveness of the curriculum unit. Nevertheless, the student reviewers had expressed interests in the DST-integrated CME curriculum, stating that they could not only learn values, but also ICT and interpersonal skills, implying that the curriculum could be deemed as appealing, implementable and feasible.

After the revision of the instructional resources, the curriculum unit was administered in a real teaching and learning situation to test for its effectiveness, implementability and feasibility. The participants were twenty primary 5 students with average CL competency, and

the researcher served the role as a participant-as-observer to immerse in the research setting to conduct the curriculum and collect data. The problems encountered during the field test were time constraints and technical hiccups, causing the curriculum unit not being able to be conducted in entirety as planned. Nonetheless, revisions, such as replacement of peer review with class sharing sessions and completion of assessments on hardcopy papers instead of on the VT, were made on site to ensure the feasibility and effectiveness of the curriculum would not be over-compromised.

The effectiveness of the curriculum could be determined by whether the student participants' learning outcomes had met the lesson objectives. The moral cognitive and affective learning performance could be examined via the student constructed mind-maps, storyboards, digital reflection stories and role-playing photographs. The student participants appeared to be able to interpret "considerate" in their own words with the key words "thoughts", "feelings" and "needs" and provide examples of considerate and inconsiderate behaviours in various contexts. They perceived that the building and maintenance of good interpersonal relationship give raise to their need and worth for being considerate to others. In applying their understanding to moral scenarios, the student participants demonstrated that they tended to be able to take perspectives of others, consider possible solutions and decide on a best solution to resolve the moral problems, showing their reasonable level of moral judgement. In addition, they self-reflected themselves as a considerate person at times, and provided ways to self-improve, displaying their humble and less ego-centric attitudes. Their moral affective performance could be examined from the photographs taken from the role-playing process. The photographs showed the student participants' attempts to engage in the character roles, displaying the emotions with body languages, facial expressions and sign boards. This implied that the student participants might have attempted to place themselves in the characters' shoes to see their viewpoints and empathise with their situations.

In terms of moral behavioural performance, the student participants' self and peer assessments of their collaborative process achieved a mean score above 3 for each evaluation criterion, indicated that they performed between "excellent" and "very good" in treating their group-mates with consideration. With the use of the one-way repeated measures ANOVA, the researcher's assessment results of the collaborative process supported the self and peer assessment results, revealing that the student participants consistently showed respect when communicating with group-mates, and demonstrated improvement in their relationship management, learning attitude and contribution efforts over the weeks of lessons. Overall, the student participants had attained the lesson objective on moral behavioural performance, by demonstrating considerate behaviours to their group-mates. The student participants' form teacher and CL teacher too expressed that the student participants had satisfactory conduct and learning attitude in their subject lessons and they were considerate to classmates and school attendants. However, the teachers were uncertain whether the student participants developed the desirable behaviours over the past three months or they were merely performing the behaviours as habits which they might have internalised since the past. The teachers' uncertainty might hinder the researcher from attributing the student participants' desirable behaviours to the impact and effectiveness of the new curriculum unit. Nevertheless, the curriculum unit had attempted to bring the learners through the three components of moral life to establish horizontal moral development with the focus on the value of respect.

From the student feedback survey, it was found that all, except the item on allotted time for activities, achieved a mean score above 3.45, which is between "strongly agree" and "agree". Though the student participants perceived that the amount of time allocated for the activities were insufficient, they felt that the learning activities were still manageable with clear instructions and helpful guidance. In addition, the student participants found the overall learning experience to be interesting, satisfying, enjoyable and beneficial, implying that the

new curriculum unit was effective in arousing and maintaining learners' learning motivation. The student participants were receptive to the constructivist and collaborative learning styles, mentioning that the curriculum not only allowed them to develop their own value systems, but they also acquired ICT skills and learn about teamwork, indicating the effectiveness of the new curriculum unit in enriching the learners with values and other critical skills.

7.2. Limitations and suggestions

Given the limited time and resources, this study faces several research limitations that may require contemplation. Limitations and suggestions concerning the instructional design and content, amount of time for field trial, formative evaluation methods, role of researcher and research participants will be addressed below.

7.2.1. Instructional design and content

The learning content was primarily limited to the moral situations that happened on the public transports. The student participants repeatedly worked on the same moral scenarios over four weeks; though they tended to have a deep impression of these moral situations, they were not widely exposed to the various possible moral problems that could occur in different contexts. It was only in lesson unit 4 when the student participants were requested to provide various examples of considerate and inconsiderate behaviours that they went beyond the moral scenarios on public transports to think of other moral problems that occurred in home, school and other public places. It could be possible that since the student participants were grouped into four groups, each group could work on moral scenarios contextualised in different contexts. The learning content could then be expanded so that the student participants could be sufficiently exposed to and be more aware of the diverse moral situations and resolutions in different contexts.

The DST procedures suggested by Lambert (2010) and Kajder (2004) emphasised on the clarification and structuring of a story; however, in hindsight, the step on the structuring of the story was found to be uncompleted in the new curriculum unit design. The planning of the story in the form of mind-map was done, but the mind-map was not further developed into a storyline or script before the start of the role-playing and storyboarding activities. The student participants did the role-playing based on the mind-map content, and not a prepared role-playing script, thus they tended to fumble for the initial ten to fifteen minutes of the activity as they were unsure of how they should carry out the role-playing task and the kinds of role-playing scenes they should take photographs of. After which, with the fragmented story content from the mind-maps and the random scene shots, the student participants' visual and writing literacy skills were challenged as they struggled to organise the photographs into a story sequence and script-write concurrently. Thus, the quality of the created storyboards suffered and resulted to be over-simplified storylines.

Moreover, the role-playing activity turned out to resemble a silent scene shot process, whereby the student participants could only use facial expressions, gestures or other acting equipments to express the meaning of the scenes they had photographed. As such, the student participants' moral affective dimension might not be fully triggered; they might not be able to fully immerse in the characters' thoughts, feelings and needs to empathise with the characters' situations. Nonetheless, according to the post-curriculum feedback, the student participants enjoyed the role-playing and photo-taking activities the most.

The curriculum unit could be revised to include a script-writing session, providing the students with time to develop the mind-maps into role-playing scripts and decide the critical scenes of the scripts that need to be recorded with photographs. With the scripts readily available, the students may more swiftly engage in and complete the role-playing activity. The way the role-playing process was conducted may also be revised. The students could act out

the play according to the script with dialogues and actions, allowing them to better engage themselves in the characters' roles. The students who are in-charge of photo-taking could also observe the entire play and take their discretion to take photographs of crucial scenes. Furthermore, during the storyboarding process, the students would not need to worry about the storylines, but simply select and organise the taken photographs in accordance to the available story scripts. Consequently, less time would be needed for storyboarding and the students would have time to voice-record developing the storyboards into digital stories.

Due to the design of the template, the constructed digital reflection stories did not appear to be of a narrative story structure but a project presentation format containing slides with headings and mind-maps. The content was largely personalised as it contained the student participants' life experiences and knowledge, but the student participants seemed to be constrained by the provided template and made little attempts to alter the template into their preferred format. The interviewed DST expert had mentioned that the structure of a DST may not necessarily be in the narrative style of introduction, body and conclusion, but in the structure that serves the needs of the subject lesson. Thus, the digital reflection story could be constructed in the exposition format. Instead of including mind-maps in the template, the students could do mind-mapping on paper and script-write the crucial content into their reflection story on the Powerpoint slides. The digital reflection story template could be adjusted to contain examples of sentence structures and guiding questions to the content sequences, reducing the students' efforts to struggle with content sequencing and sentence constructions. Consequently, with the revised template, the end product would more likely resemble a digital story rather than a planning product of DST.

7.2.2. Time allowance for field trial

Time constraint may diminish the effectiveness of the new curriculum unit. Other than the disruptions caused by the unexpected school emergency event and the minor technical problems, the student participants frequently arrived late at the lesson venue and they usually required more than the stipulated amount of time to complete tasks, adding strains to the already limited time allowance for field trial. As the full 1.5 hours of lesson periods were usually not available, the student participants could not complete the self and peer assessment of collaborative process using the VT, thus their assessment results were not made available for peers' viewing and reflection. In addition, there was insufficient time to conduct peer review of groups' products. Hence, they did not use the mind-map checklist and moral scenario rating scale form to do peer assessment and critique. Furthermore, the student participants did not have time to do voice-recording to convert their storyboards into digital stories, and complete the voice-recording for their digital reflection stories. Despite the insufficient time to complete all the planned activities and assessments, the field trial period could not be extended beyond the month of March, taking into consideration that the student participants would be preparing for semestral assessments in April.

It may be advisable that before the start of the DST-CME curriculum unit, the students should be equipped with the necessary IT skills and be proficient in the VT and Powerpoint applications, so that the progress of the curriculum would not be delayed. There could be two or three ice-breaking cum revision sessions to allow the students to build bonds with their new group members, revise their IT skills and get used to recording of their own voices. With these pre-curriculum orientation sessions, the lesson unit 1 would not required two but one week of lesson to primarily introduce DST and explain the curricular objectives to the students. The other one week of lesson could then be used for script-writing session which was lacking in the design of the curriculum unit in this study. Crucial activities, like mind-

mapping, role-playing, storyboarding and reflection, should be retained as they are deemed as learning strategies to develop the students in perspective-taking, moral reasoning and self-understanding. Nevertheless, to be time-effective, the self and peer assessment of collaborative behaviours could be done on paper, and the teacher could collate and made the results available online on the VT for the students' view. The peer review sessions could be considered to be replaced with a ten minutes class sharing session, providing the students at least an opportunity to view each other's learning products. If possible, the student could be encouraged to conduct the peer review at home since the learning products are made available for sharing online.

7.2.3. Evaluation methods

The curriculum unit incorporated collaborative learning strategy requiring the student participants to learn in groups, thus the evaluation often involved the assessment of group learning outcomes instead of individual learning outcomes. The one-to-one evaluation and the post-curriculum feedback reflected, the student participants preferred collaborative work in order to harness on each other's strengths to provide peer scaffolding. As the learning products (mind-maps, storyboards and digital stories) were constructed with group efforts, every member in the group received the same evaluation results. However, the level and quality of contribution of each group member may differ. By assessing in groups, the student participants could not be accredited according to their contributions. The curriculum unit in this study attempted to include individual assessment in the forms of self and peer assessment; nonetheless, it was an evaluation of their collaborative behaviours, instead of the learning products. The moral cognition and emotions of each student participants were not individually assessed, except in lesson unit 4 where there was a section for individual self-reflection.

It is suggested that despite working in collaborative groups, the curriculum could be further revised to include more opportunities for individual work and assessments. For example, besides the self and peer assessments and the self-reflection portions, the students could individually work on a mind-map of a similar moral scenario after working on one in a group. The students could also use the group-created script and role-played scene photographs to assemble into their own individual storyboards. This may allow the students to gradually become more familiar with the DST strategy and gain more confidence in performing the DST steps on their own, and enable the teacher to have more opportunities to evaluate the students' individual moral development.

The data collected involve formative and constant evaluation of the learning process. From the evaluation results, it was understood that the student participants seemed to achieve the curriculum objectives. However, due to the limited time and resources, the researcher was unable to conduct ongoing evaluation so as to observe the student participants over a longer period of time and further determine the extent of changes in the moral qualities of the student participants after attending the new curriculum.

7.2.4. Role of researcher

As the researcher functioned as the dual roles of participant and observer in this study, several details that occurred during the instructional process could be overlooked. While the researcher personally immersed to collect data in its natural setting, she could not concentrate to observe the whole instructional process. For example, when the researcher was conducting direct instruction to the whole class or providing guidance to individual groups, the interaction process between the researcher and the student participants could not be fully observed and recorded. Hence, the researcher specifically observed the student participants' collaborative behaviours and selected certain timing in each lesson to solely conduct the

observation. However, this might run the risk of observer effect as the student participants might tend to behave as what was expected of them when they realised the researcher was observing and assessing their behaviours. An observer, such as a teacher colleague or a teacher aide, could be designated to assist with collection of observational data of the whole instructional process and provide peer debriefing.

7.2.5. Research participants

The research participants for the field trial consisted of a class of twenty primary 5 students. With this small sample of participants, the amount of data collected was limited. The interpretation of the research results were also conducted in accordance to the characteristics of the research participants. Therefore, it might not be advisable to generalise the research results to the whole cohort of primary 5 students in the participating school or to the other primary schools in Singapore. Nevertheless, the researcher has provided a thick description of the processes and results of this study so that other researchers can refer to the content to make their own interpretations and transferability.

7.3. Future research

Based on the research results and the above listed research limitations, this section provides suggestions to make improvements for future similar studies and directions for future related research. These suggestions cater to the aspects of instructional design and learning content, research participants and evaluation methods.

7.3.1. Instructional design and content

To address the time limitation issue, it is suggested that future DST-integrated CME curriculum unit could be adopted as part of the primary 5 interdisciplinary project work

programme. As the project work programme is a cross-disciplinary collaboration and it spans over an academic term, students would have more time to construct their digital stories in various subject periods instead of solely CME periods. Since the DST-integrated CME curriculum involves the making of moral stories with visual and audio effects, subject departments, such as CME, Social Studies, Art and Music, could collaborate to equip students with core values and the respective visual, media and language literacy skills while the students performed the DST procedures in the respective subject lesson periods.

To expand the learning content, students could be requested to brainstorm moral scenarios taken from news reports or school incident reports. Instead of working on hypothetical moral scenarios from the CME textbook, students could be more aware of the real life moral problems surrounding them. Akin to the Digital Underground Storytelling for Youth (DUSTY) programme in Hathorn's (2005) study, future DST-integrated CME curriculum could be incorporated with the service learning programme to engage the students to reflect their community service experience in the form of a digital moral story. This would personalise the digital story and encourage the students to reflect their social identity with respect to the community they served, raising their social responsibility and social consciousness.

7.3.2. Evaluation methods

Subsequent future studies could proceed with an action research on the DST-integrated CME curriculum as a form of ongoing evaluation to observe the student participants for a longer period of time, in order to better assess the changes in their moral qualities over a semester or a year. The curriculum could then be revised include pair and individual work, once the student participants have become familiar with the DST techniques and equipped with the necessary ICT skills. With the opportunities for individual performance,

the moral cognitive and affection aspects of the students could be individually and more accurately assessed.

7.3.3. Research participants

As mentioned in the research limitation section, the sample of research participants was small, thus the data collected was limited and generalisation of the research results was deemed to be unadvisable. Smith and Ragan (2005) suggested field trials to be conducted in various instructional settings with at least thirty participants. Future studies could revise the DST-integrated CME curriculum unit and administer to a larger sample of participants (more classes or the entire level of primary 5 students) or different primary levels of students, to better evaluate the feasibility and effectiveness of the curriculum.

Future related research could also consider the instructional design of a DST – CME pedagogical course for teachers with the teachers as the research participants. As the DST workshop expert and literature had mentioned, the current development of the DST is behind that of the North America, Europe and Australia (Hartley & McWilliam, 2009), thus many teachers in Singapore may not understand what DST is and how to infuse DST into teaching. By having personally gone through the multi-step processes of story-telling and digital media production, the CME teachers might be able to provide more appropriate and effective guidance to students in their digital moral story production process.

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Appendix 1: A consent letter for participating school authority

Brief proposal and consent letter

Dear Principal

I would like to seek your permission to conduct my Master thesis research in the school. As the education system shifts to focus on values developments and with the implementation of the IT Masterplan 3, my research focus emphasised on the ICT integration in CME lessons. My research study aims to design, develop and evaluate a digital storytelling incorporated CME curriculum unit. The research is projected to be conducted from 30 January to 30 March 2012.

I would like to request for a Primary 5 Mother Tongue class, of average Chinese Language competency, as the participating class for my research project. I will be directly involved in teaching the participating class with the instructional materials that I have designed and developed. The participating students will work in groups of four or five, to discuss moral scenario stories, construct values clarification mind maps, develop story boards, and eventually to create digital moral stories. Three consecutive CME periods (1.5 hours) are needed to run the research each week and every lesson will be held in the computer lab. Selected CME teachers and the form teachers of the participating students will be involved in interviews to facilitate the designing process of the curriculum unit and the formative evaluation of the participating students' learning outcome.

Consent forms will be issued to parents to gain both the students' and parents' consensus to participate in the research. Information and data collected will be kept strictly confidential and analysed for research purposes. Photographs of students engaging in activities or student-teacher interaction will be taken for research purposes. Analysis will be written in my Master thesis and made known to researchers (thesis advisor and two thesis oral examiners) associated with this project.

Thank you for collaborating in this research project.

Yours sincerely
National Chiao Tung University
Thesis advisor, Dr. Chien Chou
Master student, Miss Liu Ying-Tzu
18 January 2012

I, the Principal, agree to allow Miss Liu Ying-Tzu to conduct her Master thesis research in the school, and provide the necessary assistance needed for her research.

Signature: _____   Date: _____

Appendix 2: Consent forms for student participants of one-to-one evaluation

Participation in Civics and Moral Education Research Project

To: The Parents/ legal guardian

Through: The Principal

Date: 20 January 2012

Dear Parents/ legal guardian

I am Miss Liu Ying-Tzu, a MOE-employed Chinese Language teacher and a Master graduate student from the National Chiao Tung University (Taiwan). I am currently collaborating with the school on a research project regarding the use of digital storytelling to foster moral education. A unit of lessons based on digital storytelling-integrated CME curriculum had been created and I would like to invite feedback from your child on the designed CME teaching materials.

If you allow your child to participate in this research, arrangements will be made for me to take your child through the materials so that your child can better understand the content, and thereafter provide comments and suggestions. Your child may also be requested to try out some of the exercises. The review session will take place during **one of the CME periods** from **25 to 27 January 2012**, in the school computer lab.

Your child's opinions will be helpful for the further improvement and revision of the teaching materials which may be implemented to future moral education lessons. Your child's real name will not be used in the research report. Your child's participation is **completely voluntary** and your child is **free to withdraw** at any time.

Attached please find a consent form which, upon agreement, is to be signed by your child and yourself, and returned to me (Miss Liu Ying-Tzu) by **25 January 2012**. If you have any questions or concerns, please feel free to contact me via email or mobile phone number.

Yours sincerely

Miss Liu Ying-Tzu

National Chiao Tung University

Thesis advisor Dr. Chien Chou

STUDENT CONSENT FORM

I, (student's name) _____,

(Mother Tongue class) _____ (Form class) _____

understand that I have agreed to participate in Miss Liu Ying-Tzu's research project on the use of digital storytelling in CME lessons, trusting that all information shall be kept strictly confidential. I also understand that my participation is completely voluntary and that if I feel discomfort and would like to withdraw from the research, I may do so at any time.

PARENT'S/ LEGAL GUARDIAN'S CONSENT FORM

This consent form must be signed by the parent/ legal guardian.

I, (parent's/ legal guardian's name) _____, parent/ legal guardian of (child's name) _____, understand that my child has agreed to participate in Miss Liu Ying-Tzu's research project on the use of digital storytelling in CME lessons, trusting that all information shall be kept strictly confidential. I also understand that my child's participation is completely voluntary and that if my child or I feel discomfort and would like to withdraw from the research, my child may do so at any time.

Signature: _____   Date: _____

Appendix 3: Consent forms for student participants of field trial

Participation in Civics and Moral Education Research Project

To: The Parents/ legal guardian

Through: The Principal

Date: 25 January 2012

Dear Parents/ legal guardian

I am Miss Liu Ying-Tzu, a MOE-employed Chinese Language teacher and a Master graduate student from the National Chiao Tung University (Taiwan). I am currently collaborating with the school on a research project regarding the use of digital storytelling to foster moral education. A Mother Tongue class has been invited to be involved in this research project. A unit of lessons based on digital storytelling-integrated CME curriculum was created and the CME textbook will be used as a complementary learning resource. The students will work in groups of four or five to discuss and create digital moral stories in the computer lab during CME lessons. The research will be conducted from **30 January 2012 to 30 March 2012**.

During the course of the research, photographs on the students' interaction and class activities will be taken for research purposes only. Your child's real name will not be used in the research report. If your child chooses to participate, **with your permission**, your child will be using the designed CME curriculum package and attending the CME lessons conducted by me in the school computer lab. Your child's participation is **completely voluntary** and your child is **free to withdraw** at any time.

Attached please find a consent form which, upon agreement, is to be signed by your child and yourself, and returned to me (Miss Liu Ying-Tzu) or the CL teacher of by **26 January 2012**. If you have any questions or concerns, please feel free to contact me via email or mobile phone number.

Yours sincerely

Miss Liu Ying-Tzu

National Chiao Tung University (Taiwan)

Thesis advisor Dr. Chien Chou

STUDENT CONSENT FORM

I, (student's name) _____ ,

(Mother Tongue class) _____ (Form class)_____

understand that I have agreed to participate in Miss Liu Ying-Tzu's research project on the use of digital storytelling in CME lessons, trusting that all information shall be kept strictly confidential. I also understand that my participation is completely voluntary and that if I feel discomfort and would like to withdraw from the research, I may do so at any time.

PARENT'S/ LEGAL GUARDIAN'S CONSENT FORM

This consent form must be signed by the parent/ legal guardian.

I, (parent's/ legal guardian's name) _____, parent/ legal guardian of (child's name)_____, understand that my child has agreed to participate in Miss Liu Ying-Tzu's research project on the use of digital storytelling in CME lessons, trusting that all information shall be kept strictly confidential. I also understand that my child's participation is completely voluntary and that if my child or I feel discomfort and would like to withdraw from the research, my child may do so at any time.

Signature: _____   Date: _____

Appendix 4: Interview questions for DST workshop expert in needs analysis phase

Research interview

Dear interviewee

Thank you for agreeing to participate in my research interview. The focus of my Master thesis research is placed on the design and development of an ICT-integrated CME curriculum unit. Your insightful views will help in the designing of a viable, appropriate and effective curriculum unit that caters to the students' needs. Attached are the interview questions for your preview before the interview. The interview will be conducted over-the-phone or through Skype and the interview session will take about an hour. Information provided will be kept confidential, and analysis is made for research purposes only. Name codes will be used in the research report to ensure the anonymity of your identity. For further enquires, you may contact me via email. Thank you for your participation.

Yours sincerely

Miss Liu Ying-Tzu

National Chiao Tung University

Thesis advisor Dr. Chien Chou

A. Background information

1. How long have you being a digital storyteller?

2. How long have you been conducting workshops on digital story creation?

3. To whom do you usually conduct workshops to?

B. Interview questions

1. How is the current development of digital storytelling in Singapore?

2. What are the prerequisite skills that the students need to have to be able to do digital storytelling?

3. How do you teach the students to create digital stories?

4. How much time is needed to teach the students to produce a digital story?

5. What are challenges or problems you faced when conducting the workshops with the students?
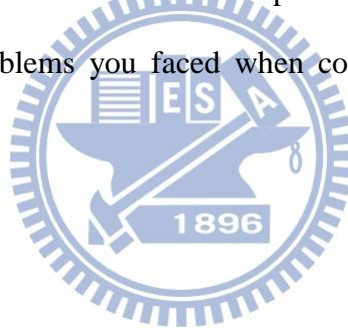
Appendix 5: Interview questions for teacher interviewees in needs analysis phase

Research interview

Dear teacher

Thank you for agreeing to participate in my research interview. The focus of my Master thesis research is placed on the design and development of an ICT-integrated CME curriculum unit. Your insightful views will help in the designing of a viable, appropriate and effective curriculum unit that caters to the students' needs. Attached are the interview questions for your preview before the interview. The interview will be conducted over-the-phone or through Skype and the interview session will take about an hour. Information provided will be kept confidential, and analysis is made for research purposes only. Name codes will be used in the research report to ensure the anonymity of your identity. For further enquires, you may contact me via email. Thank you for your participation.

Yours sincerely

Miss Liu Ying-Tzu

National Chiao Tung University

Thesis advisor Dr. Chien Chou

A. Background information

4. How long have you been teaching in the current school?

5. How long have you been teaching CME?

6. What are the levels of CME classes that you are currently teaching?

B. Interview questions

6. What are the CME and ICT resources that you usually use in your CME lessons?

7. What do you think of the availability and effectiveness of the current CME resources?

8. What do you think of using the CME textbook as a complementary tool instead of the main teaching resource?

9. What do you think of your students' capability (oral, critical thinking, IT and literacy skills) to handle ICT activities?

10. What are the teaching strategies that you usually use in your CME lessons?

11. How do you incorporate ICT into your CME lessons?

12. What are the problems or challenges (languages, timetabling, teaching strategies etc.) that you faced when conducting CME lessons?

13. How do you assess whether your students have learnt by the end of a CME lesson?

14. In your opinion, how effective are the current assessment methods?

15. What do you think are the moral values that are critical yet lacking in your students?

Appendix 6: Expert review survey form

Evaluation aspects		Strongly Agree	Agree	Disagree	Strongly Disagree
Congruence	1. The learning activities align with the learning objectives.	4	3	2	1
	2. The instruction is appropriate for the target learners.	4	3	2	1
	3. The curriculum meets the target learners' needs.	4	3	2	1
	4. The evaluation methods meet the learning objectives.	4	3	2	1
Content	5. The learning activities are able to arouse target learners' interest.	4	3	2	1
	6. The learning content is accurate.	4	3	2	1
	7. The learning activities are of the appropriate difficulty level for the target learners.	4	3	2	1
	8. Learning contexts are relevant to target learners' life experiences.	4	3	2	1
Design	9. The curriculum objectives are clearly presented.	4	3	2	1
	10. Adequate resources are designed and developed for instructional use.	4	3	2	1
	11. Instruction procedure is clearly and logically presented.	4	3	2	1
	12. The evaluation methods accurately measure the target learners' performance.	4	3	2	1
Utility and feasibility	13. The instruction can be implemented as it was designed.	4	3	2	1
	14. Time estimates for completion of the instruction are accurate.	4	3	2	1
	15. The target learners will be able to attain the objectives of the instruction.	4	3	2	1
	16. The target learners will learn from the unit.	4	3	2	1

Additional comments or suggestions for improvement of the instruction:

Thank you for taking your time to review the curriculum unit and for your precious comments

and suggestions.

Master student Miss Liu Ying-Tzu

National Chiao Tung University

Thesis advisor Dr. Chien Chou

Appendix 7: One-to-one evaluation log

Lesson Units	Guiding questions	Student's responses
Lesson unit 1: We are one!	1. How do you find the digital story? Is it clear? Is it interesting? 2. Please identify the moral situations in the digital story. 3. Please explain the group rules and roles. 4. Please identify the words that you do not understand. 5. How much time do you think you need to complete the self and peer assessments?	
Lesson unit 2: Think twice before we act	1. Are you able to understand the messages conveyed by the pictures? 2. How easy or difficult is it for you to create mind-maps with the Powerpoint? 3. How much time do you think you need to complete the mind-maps using the Powerpoint?	
Lesson unit 3: It all makes a difference	1. How do you find the lesson activities (role-playing and storyboarding)? 2. How helpful is the moral scenario rating scale in telling you what to do for the activities?	
Lesson unit 4: I am considerate	1. How useful is the task-list in telling you what to do for the activity? 2. How are you able to resolve the problem in the moral scenario? 3. Do you think you have confidence completing the digital story with your own efforts?	
Others	1. How familiar are you with the operations of the Powerpoint and VoiceThread? 2. How interested are you in attending such lesson?	

Appendix 8a: Feedback form for student participants of field trial

What do I think of the CME lessons?	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Clear and understandable instructions were given.	4	3	2	1
2. The activities were not too difficult or too easy.	4	3	2	1
3. The activities organised enable me to learn better.	4	3	2	1
4. Sufficient amount of time was given to complete the activities.	4	3	2	1
5. Sufficient feedback was provided to guide me through the activities.	4	3	2	1
6. I enjoy working as a group.	4	3	2	1
7. I think I have learnt much during the CME lessons.	4	3	2	1
8. I think I am able to put the values learnt into practice.	4	3	2	1
9. I think the CME lessons are interesting.	4	3	2	1
10. I am satisfied with the CME lessons.	4	3	2	1

Appendix 8b: Interview questions for student participants of field trial

1. What do you think of the difficulty level of the activities?

2. What do you think of the amount of time given for activities?

3. Do you enjoy working in a group? Why?

4. What did you learn from the CME lessons?

5. Which parts of the CME curriculum do you find it interesting? Why?

6. Recall the CME lessons you have attended in the past and now, how do you prefer the CME lessons to be conducted? Why?

Appendix 9: Interview questions for teacher interviewees of formative evaluation

Research interview

Dear teacher

Thank you for agreeing to participate in my research interview. The focus of my Master thesis research is placed on the design, development and evaluation of an ICT-integrated CME curriculum unit. Your insightful views will help in the evaluation of the effectiveness of the curriculum unit and the learning outcomes of the students in your class. Attached are the interview questions for your preview before the interview. The interview will be conducted face-to-face and the interview session will take about thirty minutes. The interview venue and time can be arranged at your convenience. Information provided will be kept confidential, and analysis is made for research purposes only. Name codes will be used in the research report to ensure the anonymity of your identity. For further enquires, you may contact me via email. Thank you for your participation.

Yours sincerely

Miss Liu Ying-Tzu

National Chiao Tung University

Thesis advisor Dr. Chien Chou

A. Background information

1. How long have you been teaching your form class?

2. What subjects do you teach in your form class?

B. Interview questions

1. How did your students interact with you in and outside of classroom?

2. What do you notice regarding your students' behaviours and interaction process when they were doing group works? Any changes over the weeks?

3. How did your students handle small incidents that happened in and out of the class?

4. How do you find the overall conduct of your students this semester?

5. What significant changes have you noticed over this semester in your students' behaviours and attitudes?
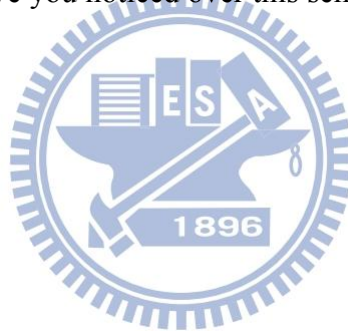
Appendix 10: Excerpts of the MOE CME 2007 syllabus

CIVICS AND MORAL EDUCATION (PRIMARY) SYLLABUS

INTRODUCTION

Values are the foundation of a person's character. They determine his beliefs and his attitudes towards life, the people around him and the world at large. Civics and Moral Education (CME) focuses on developing the moral well-being of our pupils by helping them acquire and live by the values that guide them to make appropriate choices and determine their behaviour and attitudes towards themselves, others and the environment. While the family plays a significant role in shaping moral development in a child, the school also plays an equally important role in equipping him with knowledge and life skills, and nurturing in him correct attitudes so that he will develop into a morally upright, caring and responsible individual and citizen.

RATIONALE

The Civics and Moral Education (Primary) Syllabus is designed to anchor our young in sound moral principles. It is important for them to be morally upright and understand the relevance of moral values in a modern society. Pupils need to be equipped with social and emotional competencies to be able to live out their values in an effective manner.

Being equipped with these values and competencies will enable them to make wise decisions amidst the vast array of choices available to them. As citizens, our young need to cultivate values which develop a sense of belonging to Singapore and build confidence in the future of our nation.

The following considerations were made in the development of the CME syllabus:

- **Emerging Trends** that may affect the social environment and norms, such as
  - a rapidly ageing population
  - changing family structures due to dual-income nuclear families and higher divorce rates
  - globalisation
  - greater competition in a knowledge-based economy with higher job mobility and economic re-structuring
  - rapid advancements in technology (e.g. Information Technology and the Life Sciences)

- Alignment with the **Desired Outcomes of Education** at the end of primary school level in which pupils should
  - be able to distinguish right from wrong
  - have learnt to share and put others first
  - be able to build friendships with others
  - have a lively curiosity about things
  - be able to think for and express themselves
  - take pride in their work
  - have cultivated healthy habits
  - love Singapore

- Provision of opportunities for pupils to learn the values and competencies outlined in the framework for **Social and Emotional Learning (SEL)**

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- Alignment between the **needs of pupils** at different developmental stages and pedagogical considerations, e.g. language suitability, selection of topics, design of activities, interdisciplinary project work and assessment

- The unique **multicultural heritage** of our nation that upholds values like service to the nation and community above self, the appreciation of different cultures, the importance of family togetherness, filial responsibility, the respect and care of the elderly in society, nurturing the younger generation, thrift, diligence, respect for authority and the belief in social order

- Incorporation of Economic Literacy, Financial Literacy and ethical issues in the life sciences

GOAL OF CME

The overarching goal of CME is to nurture a person of good character, who is caring and acts responsibly towards self, family, school, community, nation and the world. It attempts to answer the questions below which serve to guide pupils and teachers in their understanding and expectations of CME:

- **Who am I?**
  - What are my values and beliefs? Do they make me a person of good character?
  - How do I apply my values and beliefs?
  - What are my goals? How meaningful are they?
  - How can I prepare myself for the future?
  - How do I relate to others and the environment?

- **What are my roles and how can I contribute in**
  - my family?
  - my community?
  - the nation?
  - the world?

- **Who are we as a nation?**
  - What constitutes our national identity?
  - What does our country mean to us?
  - How can we play our part in the global community?

SYLLABUS FRAMEWORK

Nurturing Good Values

The CME syllabus is based on the principle that an individual's beliefs, attitudes and behaviour stem from his personal values. It is thus important to focus on nurturing sound personal values in our pupils so as to develop good character in them. For pupils to internalise and practise good values, they should know what good values are, be able to reflect on and come to an understanding of why it is necessary to uphold good values and also be provided with opportunities to put the values into practice. This can be achieved through understanding the relationship between moral knowing, moral feeling and moral action[1] in the development of a morally upright individual. (See **Figure 1**)

Moral knowing refers to the cognitive aspect of morality which involves knowing what is right and good. Pupils will be able to define good values, formulate sound moral principles and explain what constitutes good character and right conduct. The skills related to moral reasoning, critical thinking, responsible decision making and problem-solving, and effective communication also form an important part of moral knowing.

Moral feeling refers to the affective aspect of morality and constitutes the bridge[2] between moral knowing and moral action. It involves a sincere belief in and commitment to uphold good values. It inspires us to carry out actions that are in accordance with the values and beliefs

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[1]Lickona, Thomas. *Educating for Character: How Our Schools Can Teach Respect and Responsibility*. New York: Bantam Books, 1992. 53-62.

[2]Ryan, Kevin and Thomas Lickona. "Character Development: The Challenge and the Model". *Character Development in Schools and Beyond*. Washington, DC: The Council for Research in Values and Philosophy, 1992. 19.

we hold. Moral feeling also motivates us to consider the consequences of our actions and the feelings of others when faced with moral issues. Self-reflection skills are important in building greater self awareness and helping us align our thoughts and actions.

Moral action refers to doing the right thing, where we base our decisions and actions on moral knowing and moral feeling. It not only comprises the will and competencies required to engage in moral action, but also the development of good habits[3] as a result of consistently engaging in moral action. The implication of this is that pupils must be provided with many and varied opportunities to put good values into practice. Relevant skills for moral action include social and communication skills such as those related to goal setting and conflict resolution.

MORAL ACTION
Doing what is right and good

MORAL KNOWING
Knowing what is right and good

Self

MORAL FEELING
Having a sincere belief in and commitment to what is right and good

Figure 1: Relationship between moral knowing, moral feeling and moral action

When behaviour and actions are consistently moral, and rooted in moral knowing and feeling, the individual, featured at the core of the triangle (See **Figure 1**), develops into a person of good character. We thus need to ensure that the right values are in place to elicit appropriate conduct from our pupils. The individual at the core also emphasises the need to develop a moral person from within. We want to nurture intrinsic motivation in our pupils so that they will act from the

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[3]Ryan, Kevin and Thomas Lickona. "Character Development: The Challenge and the Model", *Character Development in Schools and Beyond*. (Washington, DC: The Council for Research in Values and Philosophy, 1992. 20.

basis of their own beliefs and value system rather than from external compulsion or rewards.

Putting Values into Practice
To nurture sound values, we need to put the values learnt into practice within the context of real-life situations in the family, school, community, nation and the world. As shown in **Figure 2**, the concentric circles radiating outwards highlights the social role of the individual as he interacts with the world around him. He will be taught to consider his role, and the consequences of his actions on himself and others in his family, school, community, nation and the world. He will be encouraged to feel for others when making decisions and to also align his actions with his values.

OBJECTIVES
In order to achieve the goal of nurturing good character in our pupils, it

Moral Action

Self
Family
School
Community
Nation
World

Moral Knowing

Moral Feeling

Figure 2: Social Role of the Individual

is essential that pupils acquire the relevant knowledge, skills and attitudes related to moral knowing, moral feeling and moral action. The objectives in CME for moral knowing, moral feeling and moral action are stated below:

Objectives for Moral Knowing

At the end of the CME (Primary) programme, pupils will be able to:

- know what is right and good
- formulate sound moral principles
- know the principles involved in making sound moral decisions
- understand the importance of family and their role in it
- consider multiple perspectives when making moral decisions
- be open-minded and non-judgmental when considering the views of others
- practise moral reasoning and critical thinking when making decisions
- understand the need to maintain social cohesion and the importance of racial and religious harmony
- know the values essential to the well-being of our nation including *Our Shared Values* and the *Singapore Family Values*
- know their role in the community, nation and the world

Objectives for Moral Feeling

At the end of the CME (Primary) programme, pupils will be able to:

- develop a sincere belief in and commitment to uphold and practise moral values
- recognise the need to clarify their values and actions through understanding their feelings, so that they can consciously take a moral stand
- consider the feelings of others when faced with moral issues
- develop intrapersonal skills e.g. self-reflection

Objectives for Moral Action

At the end of the CME (Primary) programme, pupils will be able to:

- base their decisions and actions on moral knowing and moral feeling
- put good values into practice
- develop good habits as a result of consistently engaging in moral action
- cultivate good social and communication skills
- be responsible in their actions
- promote harmony and social cohesion in a multiracial and multi-religious society

VALUES

The CME syllabus focuses on six core values, namely Respect, Responsibility, Integrity, Care, Resilience and Harmony, which form the foundation upon which good character is built. These values complement and reinforce *Our Shared Values*, the *Singapore Family Values*, the *Singapore 21 Vision* and the *National Education* messages. They will guide pupils to discern between right and wrong, and will help them to not only make responsible choices, but also become more aware of their role in society. Other values, concepts and attitudes related to these core values e.g. adaptability, entrepreneurship and creativity will also be taught to further reinforce and substantiate pupils' understanding of the six core values.

The definition of the six core values are as follows:

- **Respect**

A person demonstrates respect when he believes in his own self-worth and the intrinsic worth of all people.

- **Responsibility**

A person who is responsible recognises that he has a duty to himself, his family, community, nation and the world, and fulfils his responsibilities with love and commitment.

- **Integrity**

A person of integrity upholds ethical principles and has the moral courage to stand up for what is right.

- **Care**

A person who is caring acts with kindness and compassion. He contributes to the betterment of the community and the world.

- **Resilience**

A person who is resilient has emotional strength and perseveres in the face of challenges. He manifests courage, optimism, adaptability and resourcefulness.

- **Harmony**

A person who values harmony maintains good relationships and promotes social togetherness. He appreciates the unity and diversity of a multi-cultural society.

SOCIAL AND EMOTIONAL LEARNING (SEL)

Social and Emotional Learning (SEL) is the acquisition of skills to recognise and manage emotions, develop care and concern for others, make responsible decisions, establish positive relationships, and handle challenging situations effectively.

The social and emotional competencies are:

- **Self Awareness**

Pupils who have a clear understanding of their own strengths, inclinations and weaknesses will develop positive self-concept, self-worth and a sense of self efficacy. Being aware of own emotions and behaviour is fundamental to managing own behaviour.

- **Self Management**

Being skilled in self management enables pupils to manage their own emotions, exercise self-discipline, take personal responsibility and develop organisational skills to enhance personal outcomes.

- **Social Awareness**

Pupils who are aware of the needs, values, strengths and weaknesses of others develop a deeper understanding and respect for others. Being aware of how others feel and their dreams enables pupils to develop empathy and appreciation for diversity. Social awareness is fundamental for developing good interpersonal relationships.

- **Relationship Management**

Effective relationship management skills are essential for the development of one's social well-being. It involves the skills for effective communication, social engagement, building relationship, working collaboratively, negotiation and conflict management.

- **Responsible Decision Making**

Responsible decision making is essential for personal and social well-being. It requires critical thinking skills which allow one to make responsible and informed decisions, and evaluate these decisions based on personal, social, moral and ethical considerations. It also involves translating these decisions into actions and having the courage and conviction to stand and live by them.

The teaching of social emotional competencies complements the teaching of values and facilitates the translation of value into action.

TEACHING OF CIVICS AND MORAL EDUCATION

Teaching Approaches

In the teaching of CME, a process-based approach is preferred to a content-based approach. Content-based approaches focus on the learning of facts and information, and are largely teacher-centred. Process-based approaches are pupil-centred and focus on learning "why" and "how" instead of "what". They aim to facilitate the learning of skills and to internalise values through action.

The approaches should be used in combination whenever possible.

RESPECT
UPPER PRIMARY

Topic	Learning Objective(s)	Scope	Concepts / Related Values / Messages
1. Building self-respect	Pupils will be able to: • know their strengths and weaknesses • demonstrate commitment towards self-improvement	• What am I good at? Things that I am good at are: – things that I can do well – my talents – my strengths • How can I improve myself? By building my strengths and knowing my weaknesses, I show self-respect. This can be done by: – being aware of my abilities – knowing how to improve myself	• Care • Responsibility • Self-esteem • Self-respect • Self-worth • Every Singaporean matters (Singapore 21) • Cultivate healthy habits (DOE) • Self awareness

RESPECT
UPPER PRIMARY
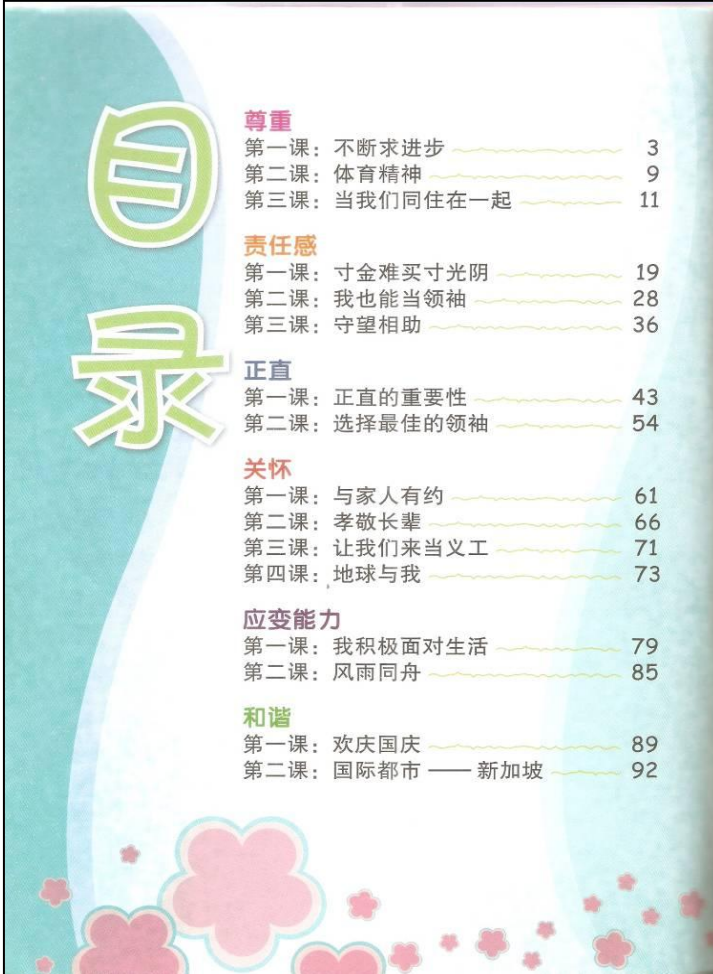
Topic	Learning Objective(s)	Scope	Concepts / Related Values / Messages
2. Being considerate	Pupils will be able to: • understand the need to be sensitive to others • demonstrate sensitivity to others	• <u>Why do I need to be aware of the likes and dislikes of others?</u> Some of the reasons are: – to build harmonious relationships – to gain the trust and respect of others – to appreciate them for who they are • <u>How do I treat others with consideration and sensitivity?</u> Some of the ways are: – being polite to others – being patient to others – being aware of their feelings – asking for permissions to use their things	• Care • Harmony • Consensus, not conflict • Social Bonding • Racial and religious harmony (Our Shared Values) • Mutual respect (Singapore Family Values) • Learn to share and put others first (DOE) • Build friendships with others (DOE) • We must preserve racial and religious harmony (NE) • Declaration of Religious Harmony • Social awareness • Relationship management

RESPECT
UPPER PRIMARY

Topic	Learning Objective(s)	Scope	Concepts / Related Values / Messages
3. Doing my school proud	Pupils will be able to: • understand the vision and goals of the school • demonstrate ways to live up to the school's vision • achieve the school's goals	• <u>What does my school expect of me?</u> Some of my school's expectations of me are: – being a good and responsible pupil – being a good and responsible citizen – behaving well at all times • <u>How do I live up to the expectations of my school?</u> Some of the ways include: – knowing the school's vision and goals – working together with other members of the school to achieve the school's vision and goals	• Appreciation • Care • Harmony • Integrity
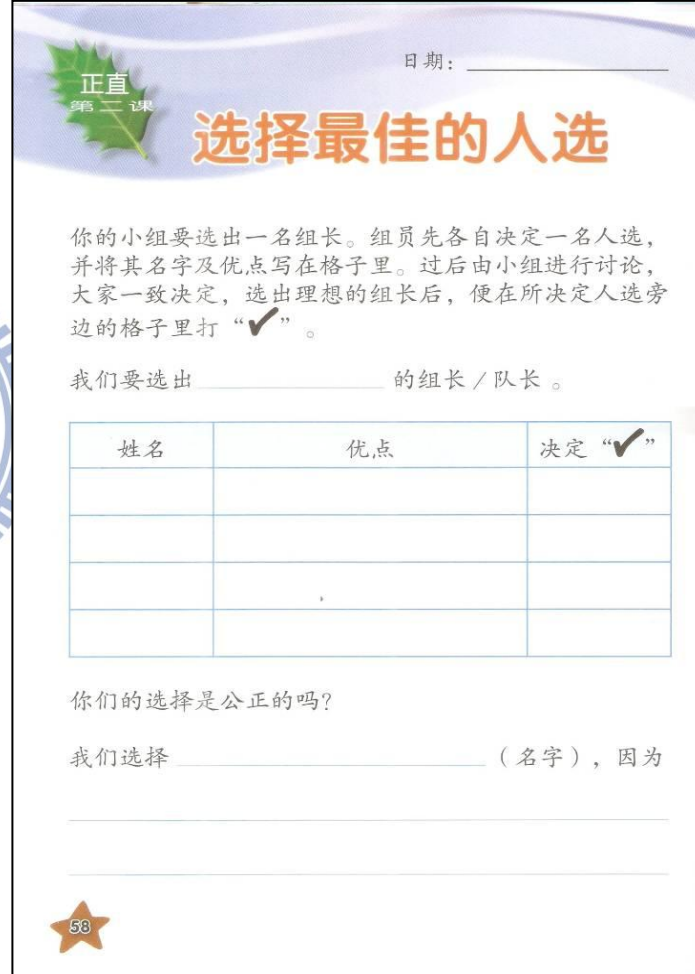
Appendix 11: Excerpts of the CME textbook

Content page of the CME textbook

Activity sheet that involves group efforts and peer evaluation

日期：_____

正直
第二课

选择最佳的人选

你的小组要选出一名组长。组员先各自决定一名人选，并将其名字及优点写在格子里。过后由小组进行讨论，大家一致决定，选出理想的组长后，便在所决定人选旁边的格子里打"✔"。

我们要选出 _____ 的组长／队长。

姓名	优点	决定"✔"

你们的选择是公正的吗？

我们选择 _____（名字），因为

_____

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日期：＿＿＿＿＿＿＿

关怀
第二课

做个孝顺的孩子

（一）在日常生活中，你如何表达对父母以及祖父母的孝心？请写下你可以做的一些事情。

68

（二）根据你之前所写的内容，选出三样你能做到的事，填写在以下的框框里，然后告诉父母或祖父母你将如何对他们表示孝心，并请他们写下评语。你可以将以下的框框剪下来，贴上磁（cí）片，然后让它吸附在电冰箱上，以提醒自己。

我会＿＿＿＿＿＿＿＿

父母或祖父母的话：

我会＿＿＿＿＿＿＿＿

父母或祖父母的话：

我会＿＿＿＿＿＿＿＿

父母或祖父母的话：

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关怀
第三课

日期：_____

献出你的爱心

你从录像短片《当义工》中学到了什么？请写出两点。

看过了这则故事，请完成以下的图表。想一想怎样做才是一个好领袖。

哪一名同学具有领导才能？

他们是如何表现出自己的领导才能？

★ 你认为一个好领袖必须具备哪些条件？

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Appendix12: A lesson plan in the Teacher's guide file

和谐

当我们同住在一起

教学目标： 学生
- 学会尊重他人的文化以及宗教习俗；
- 明白在这多元文化的岛国中，不管是接待或探访朋友，他们都应该注意礼节。

社交与情绪管理技能：
- 学生学会尊重他人的文化习俗。（社会层面的认知）
- 学生明白当他们对他人的文化习俗表示尊重时，他们同时也在建立人与人之间的了解与互信。（社会层面的认知及人际关系处理）

节数： 4节

建议活动

我应该怎么做？
策略：
- 讲故事
- 课堂讨论
- 角色扮演 / 心智图法 (Mind Mapping®)

11

我应该怎么做？

教学重点

- 新加坡是一个多元宗教和文化的国家。这里住着华人、马来人、印度人、欧亚人等不同文化背景的族群。当我们对他人的文化习俗表示尊重时，我们同时也在建立人与人之间的了解与互信。
- 多认识新加坡的不同文化与习俗能促进各族之间的了解。要做到这一点，其中一个途径便是探访与接待来自其他文化背景的朋友。

步骤

- 参阅学生读本第11-14页，讲述故事《礼尚往来》。

《礼尚往来》故事大纲

贺巴里邀请乐塔和家乐到他的家享用午餐。乐塔和家乐上门拜访时，不但携带精心挑选的礼物，还有礼貌地与贺巴里的家人打招呼。贺巴里也借此机会从妈妈那儿学习如何做一个待客周到的小主人。

教学提示：
教师可参阅Social Studies（四下）课本里"Customs and Costumes Of Our Multi-racial Society"。

- 展示图片/尊重/五年级/第三课/1，让学生认识清真食品认证标签 (Halal logo)。

12

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❀ 让学生讨论以下的问题：
　🌀 你认为乐塔和家乐上门做客时，表现得有礼貌吗？为什么？
　🌀 你认为贺巴里是不是个待客周到的小主人？为什么？
　🌀 当我们拜访来自不同文化背景的亲戚或朋友时，应该如何对他们表示尊敬？
❀ 问学生他们的父母或长辈怎样教导他们礼尚往来的道理。教师可参阅附录1，以获得更多相关的信息。
❀ 向学生强调当我们拜访朋友时，如果不知道要怎么做才是恭敬有礼，可以询问主人或家里的长辈。
❀ 参阅学生读本第15-16页。将学生分组，每组讨论一个情境里的问题。

情境一
休息时，明达请达里尔和那基卜在农历新年期间到他的家去。他们在上门做客时，应该注意哪些事项才是有礼貌的客人？
（例如：先准备好橘子、对主人说一些吉祥的贺语、避免穿黑色的衣服、用双手捧着橘子交到长辈的手里，接过橘子时也要用双手。）

情境二
慧敏、莎伦、艺佳到哈米莎的家去做专题作业。她们应该怎么做才是有礼貌的客人？
（例如：在一个信奉回教的家庭里，主人在祈祷的时候，客人应保持安静，如果需要说话也应该降低声量。）

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情境三
雷蒙邀请他的同学到巴西立的度假村庆祝他的生日。他应该准备怎样的食物来招待来自不同宗教背景的同学？
（例如：他应该为信奉回教的同学准备清真 (Halal) 食品，同时也为那些吃素的兴都教徒和佛教徒准备素食。）

❀ 将学生分组，先让他们进行讨论，然后通过角色扮演或心智图法 (Mind Mapping®) 报告他们的答案。

想一想

❀ 在以上的情境里，有哪些不同的文化习俗是你之前不知道的？你从中学到了什么？
❀ 回想过去当你探访或接待朋友时，是否已经做到了礼尚往来？将来如果还有类似的机会，你会怎样做得更好？

14

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探访来自不同文化背景的朋友时，你应该注意哪些事项？

我应该做的事：

- 衣着得体；
- 进屋前先脱鞋子；
- 进屋后向朋友及他的家庭成员打招呼；
- 如果想使用家居设备如冷气机、洗手间等，要先征求主人的同意；
- 根据不同的节庆使用不同的贺词，如"新年快乐"、"恭喜发财"、"Selamat Hari Raya Puasa"、"Happy Deepavali"、"圣诞快乐"等；
- 使用双手接过物品、饮料或食物；
- 如果不知道要怎么做，可以询问主人；
- 离开前，记得向朋友及他的家庭成员说声"谢谢"和"再见"。

我不应该做的事：

- 没有主人的允许，不可踏入房间；
- 不要把屋子弄乱；
- 不可触碰屋内的宗教文物。

接待来自不同文化背景的朋友到家里做客时，你又应该注意哪些事项？

我应该做的事：

- 有礼貌地招呼客人，准备一些饮料或小吃；
- 准备食物或饮品时，需要考虑到客人的饮食要求。例如：为信奉回教的客人准备清真食品，为那些吃素的兴都教徒和佛教徒准备素食，还要记得兴都教徒和道教徒都不吃牛肉；
- 向客人介绍家庭成员；
- 与客人谈话，确保他们感觉轻松自在；
- 如果客人不习惯家中的宠物，不要让宠物靠近他们。

我应该尽量避免做的事：

- 让客人独自坐在客厅观看电视节目；
- 在电话上聊天而冷落客人。

Appendix 13: Samples of pictorial resources
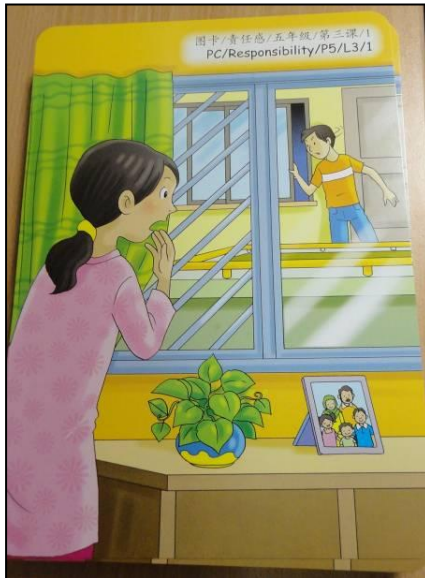
如果你是娜拉，你会怎样做？为什么？

What would you do if you were Nora? Why?

1. 图卡所显示的照片是不是环保的行为？为什么？

2. 你认为环境问题如土壤污染、水质污染以及空气污染会给我们带来怎样的影响？

3. 我们是否有必要保护全球环境？为什么？

1. Does the picture show care for the environment? Why?

2. How do you think pollution of the land, water and air will affect us?

3. Is there a need to safeguard our global environment? Why?

"传乒乓球" 游戏指示

1. 准备音乐光碟，当学生在进行游戏时播放音乐。
2. 将学生分成5至6人一组，围坐成一个圆圈。
3. 音乐开始时，每组的第一名学生把乒乓球放在平面物体(如书本)上，然后将球传给旁边的同学。
4. 当组员将球传了一圈，小组便可得一分。每组学生继续进行传球活动，直到音乐停止。各小组必须记录乒乓球已传了多少圈。
5. 音乐停止时，传得最多圈的小组就是优胜者。

游戏规则：

• 在传球的过程中，学生不准用手触碰乒乓球。
• 如果乒乓球掉落在地上，组员必须将球拾起，从头开始传球。

Appendix 14: Participating school's year 2011 CME rubrics

a) Responsibility

Descriptor	Mark Band	Criteria
Excellent	10 marks	• Showing very clear sense of right and wrong through speech and action **at all times**. • Keeping environment clean and green **at all times**. • Respecting School's/ other people's property **at all times**. • Attending school punctually **at all times** (no record in eportal offence module). • Submitting assignments/ homework on time **at all times** (no record in eportal offence module). • Shows **very positive attitude** towards self and others. • Returning lost money/items to teachers/ General Office **at all times**.
Very good	8 marks	• Showing very clear sense of right and wrong through speech and action **most of the times**. • Keeping environment clean and green **most of the times**. • Respecting School's/ other people's property **most of the times**. • Attending school punctually **most of the times** (1 - 2 records in eportal offence module). • Submitting assignments/ homework on time **most of the times** (1 – 2 records in eportal offence module). • Shows **positive attitude** towards self and others. • Returning lost money/items to teachers/ General Office **most of the times**.
Good	6 marks	• Showing very clear sense of right and wrong through speech and action **occasionally**. • Keeping environment clean and green **occasionally**. • Respecting School's/ other people's property **occasionally**. • Attending school punctually **occasionally** (>2 records in eportal offence module). • Submitting assignments/ homework on time **occasionally** (>2 records in eportal offence module). • Shows **some positive attitude** towards self and others. • Returning lost money/items to teachers/ General Office **occasionally**.

b) Attitude towards others

Descriptor	Mark Band	Criteria
Excellent	10 marks	• Greeting and showing respect to teachers and fellow students **at all times**. • Being polite/ courteous to teachers and fellow students **at all times**. • Doing acts of kindness for teachers and fellow students **at all times**.
Very good	8 marks	• Greeting and showing respect to teachers and fellow students **most of the times**. • Being polite/ courteous to teachers and fellow students **most of the times**. • Doing acts of kindness for teachers and fellow students **most of the times**.
Good	6 marks	• Greeting and showing respect to teachers and fellow students **occasionally**. • Being polite/ courteous to teachers and fellow students **occasionally**. • Doing acts of kindness for teachers and fellow students **occasionally**.

c) Helpfulness

Descriptor	Mark Band	Criteria
Excellent	10 marks	• Offering help to peers who are weak academically **at all times**. • Lending a helping hand to teachers/ students in need **at all times**. • Readily volunteering his/ her services in group activities and displaying a good team spirit **at all times**.
Very good	8 marks	• Offering help to peers who are weak academically **most of the times**. • Lending a helping hand to teachers/ students in need **most of the times**. • Readily volunteering his/ her services in group activities and displaying a good team spirit **most of the times**.
Good	6 marks	• Offering help to peers who are weak academically **occasionally**. • Lending a helping hand to teachers/ students in need **occasionally**. • Readily volunteering his/ her services in group activities and displaying a good team spirit **occasionally**.

d) Group discussion

Descriptor	Mark Band	Criteria
Excellent	10 marks	• Able to identify the correct values **at all times**. • Able to distinguish right from wrong **at all times**. • Co-operate with group members **at all times**.
Very good	8 marks	• Able to identify the correct values **most of the times**. • Able to distinguish right from wrong **most of the times**. • Co-operate with group members **most of the times**.
Good	6 marks	• Able to identify the correct values **occasionally**. • Able to distinguish right from wrong **occasionally**. • Co-operate with group members **occasionally**.
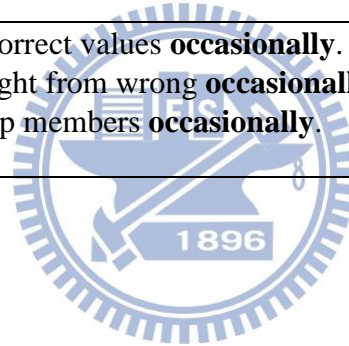
Appendix 15: Participating school's ICT plan

	Primary 1	Primary 2	Primary 3
Baseline ICT standards lesson	• Basic Operations • Introduction to a computer • Log in to computer (switching on, entering of username and password) • Activate icon (click, double click, right click) • IBM Touch Typing • Proper positioning of fingers, capital letters, punctuations, numbers, Shift, Enter, Esc, Spacebar **Learning with text** • Activate Microsoft Word • Progress from typing letters to sentences • Remove letter using Backspace and Delete • Enter to go to next line • Apply Touch Typing skills • Change font/ colour/ size/ style/ alignment • Insert a Clip Art and resize • Print Preview • Open, save, print application and proper shutdown	• Activate Microsoft Word • New/ Open word processor • Insert Word Art as title • Insert 2x2 table as layout, format border • Insert a Clip Art, resize/ crop • Enter to go to next line • Type out short sentences under picture • Remove letter using Backspace and Delete • Change font/ colour/ size/ style/ alignment • Cut/ Copy/ Paste/ Undo/ Redo • Spelling and Grammar checker/ word count • Print preview • Open, save, print application and proper shutdown	**Learning with searches (Internet navigation)** • Introduction to Wikipedia • Open specified browser • Save the webpage **Learning with multimedia** • Create and name a folder • Activate Microsoft Powerpoint • Create new slide • Choose layout/ slide design/ background • Insert Word Art, format Word Art • Enter text, format font colour/ size/ type/ style • Insert bullets • Insert Clip Art, resize, compress, delete • Animation (Slide transition, customize animation) • Delete/ change animation, format animation • Copy URL of saved browser to presentation as source of information (hyperlink) • Open, save application • Saving in a memory storage device (thumbdrive) and safe eject of device • Introduction to "Keep Source Formatting" when compiling separate presentations
Cyberwellness programme	**Dangers of social networking** • To reinforce online dangers that is lurking on social networking platforms such as Facebook and Twitter.	**Dangers of social networking** • To reinforce online dangers that is lurking on social networking platforms such as Facebook and Twitter.	**Importance of Netiquette** • To educate pupils the importance of internet courtesy
Holiday ICT Enrichment programme	**Digital drawing** • Pupils will master the basic of digital art and experience the enjoyment of digital drawing using Microsoft Paint.	**E-card design** • Pupils will learn to create customized greeting cards using Microsoft Publisher.	**Construction of Robot and NXT programming** • Pupils will be introduced to Robotics and Lego Mindstorm programme and learn to construct problem solving robots.

	Primary 4	**Primary 5**	**Primary 6**
Baseline ICT standards lesson	**Learning with searches (Internet search engine)** • Introduction to Wikipedia • Google search • Copy/ paste **Learning with Spreadsheet** • Activate Microsoft Excel • Insert Worksheet, rename Worksheet, change Tab colour • Select columns and rows • Insert, delete column/ row • Enter text and numbers into cells • Font colour/ type/ size/ style/ alignment • Merge/ unmerge cells • Auto drag to extend series • Edit cell entries • Format data according to types (currency, data, decimal) • Insert cell border, format colour line border and cells • Chart Wizard (Bar & Pie), formatting Chart • Basic operation formula (+, -, x, /) • Print preview • Open, save application	**Learning with searches (Internet search engine)** • Search World Web search engine • Accessing Favourites and History in Internet Explorer **Learning with text** • Operate Microsoft Word for script writing and to print script **Learning with data collection tools** • Activate Newsmaker software • Introduction to play control: volume, recording functions • Recording of voice and visual • Using Youtube to search for introduction music/ sound effects • Record audio from Youtube into Newsmaker • Open, save application	**Learning with searches (Internet search engine)** • Search World Web search engine • Accessing Favourites and History in Internet Explorer **Learning with text** • Operate Microsoft Word for script writing and to print script **Learning with data collection tools** • Recording using video camera • Activate Windows Movie Maker • Import video (recording) to collection, import to track • Introduction to play controls • Introduction to Split tool & Camera tool • Creating of titles/ text • Inserting/ Remove transition • Inserting/ Remove video effects • Recording online music/ sound effects from Youtube • Inserting music track, Crossfade technique • Export video as wmv video format • Open, save project
Cyberwellness programme	**Importance of internet safety** • To educate pupils the importance of internet safety such as phishing and identity theft	**Cyberbullying and gaming addiction** • To educate pupils on effects of cyberbullying and dangers of gaming addiction	• A review of all the Cyberwellness content learnt in primary school
Holiday ICT Enrichment programme	**Blogging** • Pupils will learn to start a blog and how to blog responsibly.	**Animation design** • Pupils will learn to create animation using Macromedia Flash.	**Photograph editing** • Pupils will acquire the technique of photograph editing.

Appendix 16a: Lesson unit 1 – Lesson plan

(Initial version) Lesson unit 1: We are one!	
Level	Primary 5
Class size	20
Venue	Computer lab
Allotted time	CME periods (30 January 2012)
Duration	3 periods (1.5 hours)
Teaching resources	1. Teacher's digital story 2. Presentation slides 3. CME textbook (p.28-33) 4. The VoiceThread
Prerequisite skills	1. ICT skills: Able to operate the VoiceThread

Identify desired results	
Essential questions	**Lesson objectives**
(Cognitive) • What behaviours are considered as considerate or inconsiderate?	Students will **understand**… • The ways to treat group-mates with consideration • The reasons to be considerate to group-mates
(Affective) • Why should I be considerate to others? • How do I feel when I am treated with consideration or inconsideration?	Students will **feel**… • The need for group rules and roles • The worth of the group-mates to be treated with consideration

(Behaviour)
• How can I treat others with consideration?
	Students will be **able to**…
	
	• Treat group-mates with consideration by:
	  - speaking politely
	  - listening attentively and patiently
	  - supporting others with positive comments
	  - contributing actively
	  - helping each other out

Assessment evidence
1. Dialogues during class discussion 2. Class observation of cooperative learning process 3. Discussion results on provided moral scenario

Lesson procedure			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
15	• Sharing your story (teacher's demonstration)	• Present teacher's self-made digital story • Introduce what DS is • Focus on three parts of DS (slide 4, 9 and 12) for class discussions to lead students to the essential questions of the unit	• Dialogues on DS and essential questions

20		• As a class, students will discuss group rules and roles.
		  - Why do we need group rules/ roles?
		  - What kinds of group rules/ roles do we need?
		  - What is the responsibility of each role?
		  - Are any of the roles more important than others?
		• Introduce and explain the self and peer assessment checklists and group work performance rubrics
		• Divide students into groups of 5.
			• Dialogues on group rules and roles

20 20		• Group discussion of the moral scenarios on the CME textbook with regards to the lesson objectives, group rules and roles, using the given checklist. - 2 groups discuss scenario 1 - (p.28-30) - 2 groups discuss scenario 2 (p. 31-33) • Each group voice-records the discussion results in the VoiceThread. • Each group listens to assigned groups' discussion results on the VoiceThread.	• Class observation • Discussion results on provided moral scenario
10 minutes allowance for students to move to and fro computer lab from classrooms.			

(Revised version) Lesson unit 1: We are one!	
Level	Primary 5
Class size	20
Venue	Computer lab
Allotted time	CME periods (30 January 2012)
Duration	3 periods (1.5 hours)
Teaching resources	1. Sample digital story 2. Presentation slides 3. CME textbook (p. 28-33) 4. Moral scenario checklist 5. The VoiceThread 6. Weekly self assessment form 7. Weekly peer assessment form 8. Collaboration performance rubric
Prerequisite skills	1. ICT skills: Able to operate the VoiceThread

Identify desired results	
Essential questions	**Lesson objectives**
(Cognitive) • What behaviours are considered as considerate or inconsiderate?	Students will **understand**… • The ways to treat group-mates with consideration • The reasons to be considerate to group-mates
(Affective) • Why should I be considerate to others? • How do I feel when I am treated with consideration or inconsideration?	Students will **feel**… • The need for group rules and roles • The worth of the group-mates to be treated with consideration

(Behaviour)
• How can I treat others with consideration?
	Students will be **able to**…
	
	• Treat group-mates with consideration by:
	  - speaking politely
	  - listening attentively and patiently
	  - supporting others with positive comments
	  - contributing actively
	  - helping each other out

Assessment evidence
1. Dialogues 2. Discussion results of the CME textbook's moral scenario using moral scenario checklist 3. Self-assessment of collaboration process

Lesson procedure			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
10		• Teacher groups the students into four groups of five and have the students seated in the common area of the computer lab. • Teacher conducts a quick survey on students' capabilities: - ability to operate the Powerpoint application - ability to operate the VoiceThread - experiences in using public transport.	
10	• Sharing your story	• Teacher presents sample digital story to introduce what digital story is • Focus on three parts of DS (slide 4, 9 and 12) for class discussions to lead students to the essential questions of the unit.	• Dialogues
20		• Teacher discusses the group rules and roles with the students: - Why do we need group rules/ roles? - What kinds of group rules/ roles do we need? - What is the responsibility of each role? - Are any of the roles more important than others? • Teacher introduces and explains the self and peer assessment checklists and collaboration performance rubric. • Teacher explains the CME textbook's moral scenarios (p. 28-33), and the lesson activity with the use of the moral scenario checklist. • Teacher revises the basic operations of the VoiceThread with the students.	• Dialogues
20		• Each group discusses the assigned moral scenario and completes the moral scenario checklist on the VoiceThread. - Group 1 and 3: scenario 1 (p.28-30) - Group 2 and 4: scenario 2 (p. 31-33)	• Discussion results on moral scenario
10		• The students self-assess their own collaboration performance.	• Self-assessment
10		• Class sharing of the discussion results on the moral scenario checklist.	
10 minutes allowance for students to move to and fro computer lab from classrooms.			

Appendix 16b: Lesson unit 1 – Sample digital story

Whose priority?

The story happened yesterday when I was sitting in the MRT, going home from school.

A father and his daughter boarded the MRT at the Woodlands station. The priority seat was the only seat available then, and the father got his daughter to sit on the reserved seat.

Reserved seating

The daughter looked puzzled, staring and pointing at the reserved seat sign and kept asking, " dad, are you sure I can sit here?" The father assured his daughter to sit on the seat.

PRIORITY SEAT
Be considerate. Give up this seat to a passenger with special needs.

"But it doesn't show children. I'm not an old person, I'm not pregnant and I'm not a baby."
"It's ok, you can sit."

I, at this time, was wondering: hey, the kid is right. So can children sit on the reserved seat? Shouldn't the father try to explain why she is allowed to sit on the priority seat?

The MRT had reached the next stop. Two seats opposite us were available.

But the father didn't seem to have the intention to sit down. He was carrying heavy baggage and standing close to his child.

Two secondary school girls boarded the MRT after the father and daughter alighted. They pointed and looked at the priority seat.

I started to ponder: should I give up my seat to him? Maybe it's because he wanted to stay close in order to take care of his child. Should I give up my seat to him? Finally, I changed my seat.

Reserved seating

Girl B sat down and said, "Hey, I'm reserving seat for the old people." She smiled and giggled away while her friend stood in front of her.

Reserved seating

"I'm not going to sit on the reserved seat. I'm not that old." Girl A spoke in a high tone and insisted to stand.

Ha, are you sure you are going to give up your seat when there is an old person? Before, I could witness it, it's time for me to alight.

Credits

Thank you Microsoft ClipArt for the wonderful picture repository.

Thank you Hsu Yun Ru for the beautiful pictures drawn.

Thank you Liu Ying-Tzu for the fabulous story.

Thank you Liu Ying-Tzu & Hsu Yun Ru for the celestial voices.
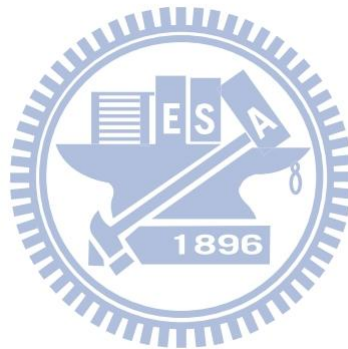
Appendix 16c: Lesson unit 1 – Presentation slides on group rules and roles (revised version)

Lesson 1

We are ONE!

Group Golden Rules

⭐ Good listening

⭐ Polite

⭐ Show appreciation and encouragement/ praises

⭐ Participation of all

Group Roles

Checker

Recorder

Encourager

Reader

Facilitator
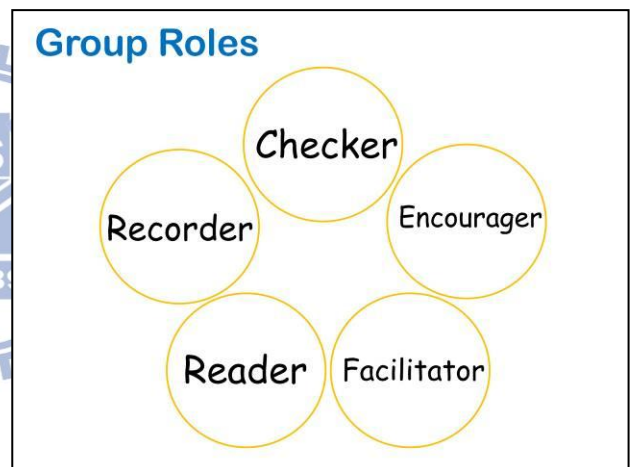
Group Roles

Checker

✓ Check for fair division of work
✓ Check for agreement
✓ Check for rule abidance
✓ Check final work

Group Roles

Encourager

✓ Say encouraging words or praises
✓ Remind and prompt group-mates to be polite and encouraging

Group Roles

Planner
- ✓ Keep track of time
- ✓ Keep work organised
- ✓ Create opportunities for everyone to contribute
- ✓ The only person who can approach teacher for help

Group Roles

Reader
- ✓ Read instructions
- ✓ Report final work (i.e. voice-record final work in VoiceThread)

Group Roles

Recorder
- ✓ Keep track of discussion in written logs
- ✓ Record the final agreed decisions/ answers

Group Roles

Checker

Recorder

Is any one of the roles more important than the others?

Encourager

Reader
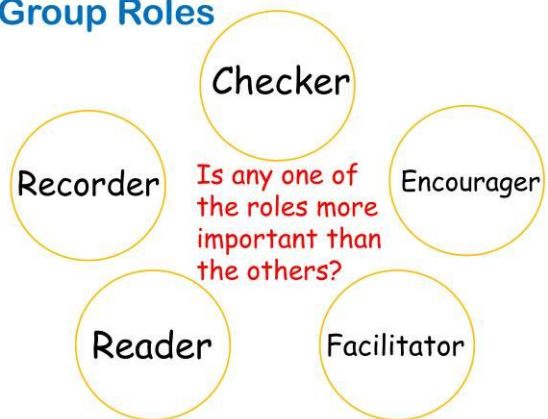
Facilitator

*The word "facilitator" in the initial version was replaced with "planner" in the revised version of presentation slides.

Appendix 16d: Lesson unit 1 – Weekly self and peer assessment rating scale forms (revised version)

| Self assessment rating scale form |

A Considerate Group Member	Excellent	Very good	Good	Needs to improve
1. I listen attentively and patiently when my group-mate is speaking.				
2. I speak politely, avoiding any name-calling, anger, and impatience, even when I disagree with my group-mate's opinions.				
3. I response to my group-mates with encouraging or praising words/ statements.				
4. I contribute to my group by providing my ideas and helping out with any work.				
5. I provide enough opportunities for my group-mates to contribute their ideas.				
6. I have truly fulfilled my group role responsibility.				
7. What is one thing you have learnt about yourself from co-operating with others?				
8. What is one thing you have learnt from this lesson?				

*The word "sarcasm" was removed from statement 2. In statement 5, the word "ample" was replaced with "enough", and in statement 6 the word "dutifully" was replaced with "truly".

Self assessment rating scale form

Names of group-mates:						
A –				B -		
C -				D -		
My Considerate Group	Group-mates	Excellent	Very good	Good	Needs to improve
1. My group-mate listens attentively and patiently to each other.	A				
	B				
	C				
	D				
2. My group-mate speaks politely, avoiding any name-calling, anger and impatience.	A				
	B				
	C				
	D				
3. My group-mate consistently encourages or praises group members during the group activity.	A				
	B				
	C				
	D				
4. My group-mate actively helps out group members to complete the group activity.	A				
	B				
	C				
	D				
5. My group-mate provides enough opportunities for every group member to contribute their ideas.	A				
	B				
	C				
	D				
6. My group-mate has truly fulfilled the responsibilities of the respective group role.	A				
	B				
	C				
	D				
7. What is one thing your group shine in this week's group activity?					
8. What is one thing your group can improve on in the next group activity?					

*The word "sarcasm" was removed from statement 2. In statement 5, the word "ample" was replaced with "enough", and in statement 6 the word "dutifully" was replaced with "truly".

Appendix 16e: Lesson unit 1 – Collaborative performance rubric (moral behavioural aspect)

Considerate behaviour in group work	Exemplary	Proficient	Satisfactory	Needs improvement
Communication	• Always listens patiently and attentively to others. • Always speaks politely even in disagreement. • Always considers other's point of view and makes effort to convince others.	• Usually listens patiently and attentively to others. • Usually speaks politely even when there is disagreement in views. • Usually considers other's point of view.	• Listens attentively but ignores turn-taking at times. • Sometimes may speak in impatient tone when disagreement occurs or when displeased. • Sometimes considers other's point of view but may still insist on own view.	• Impatient and hardly pays attention to others. • Gets angry and argues when there is a disagreement. • Seldom considers other's ideas and often insists on own view.
Relationship management	• Always maintains and works in harmonious relationship with group-mates. • Responses to group-mates with encouraging words/ statement and praises, and even encourages less confident members.	• Usually maintains and works in harmonious relationship with group-mates. • Responses to group-mates with encouraging words/ statement and praises.	• Able to work with group-mates without much argument. • Responses to group-mates with smiles but hardly any verbal encouraging words/ statements and praises.	• Shows some difficulties in work harmoniously with others. • Hardly shows encouragement to group-mates; instead, makes fun of or speaks sarcasm to group-mates.
Attitude	• Always shows positive attitude and great enthusiasm to the assigned task.	• Often shows positive attitude and some enthusiasm to the assigned task.	• Shows some interest and enthusiasm to the assigned task.	• Shows minimal interest to the assigned task.
Contribution	• Performs all the duties of the group roles well. • Always contributes to group effort without reserve and even provides opportunities for group-mates to contribute their efforts. • Always coordinate with and helps group-mates to complete task together.	• Performs nearly all duties of the group roles well. • Contributes much to group effort. • Often coordinate with and helps group-mates to complete task together.	• Performs some duties of the group role. • Sometimes contributes some knowledge, opinions and skills. • Sometimes assist group-mates in completing task.	• Rarely performs the duties of the group roles. • Minimal contribution to group effort • Seldom helps group-mates in task completion.

Appendix 16f: Lesson unit 1 – Two moral scenarios on group work

Moral scenario 1

彼得也和他的组员开会。不过，他却提早离开了。

你们应该知道怎么做吧？我不能错过足球练习。我还必须去给队员点名以及带领大家做热身运动。下个星期再见！

大家都对彼得的态度很不满。为了能准时完成作业，苏妮塔建议大家先决定几个会议的日期。

31

既然彼得这么忙，我们就别等他了。让我们先讨论，等作业完成后才交给彼得过目。现在就开始说说这次的专题作业应该做些什么吧！

报告专题作业的前一天，彼得看了小组完成的作业后，很不满意。他连夜修改了全部的内容。第二天，彼得向老师报告了自己修改过的专题作业。

咦？这不是我们的报告！他怎么可以修改全部的内容呢？

32

结果，小组只得了丙等的成绩。

彼得，你不应该修改我们的作业。

你只顾着练球！我们已经尽力了！

你们应该依照我的指示去做！

都是你们的错！

33
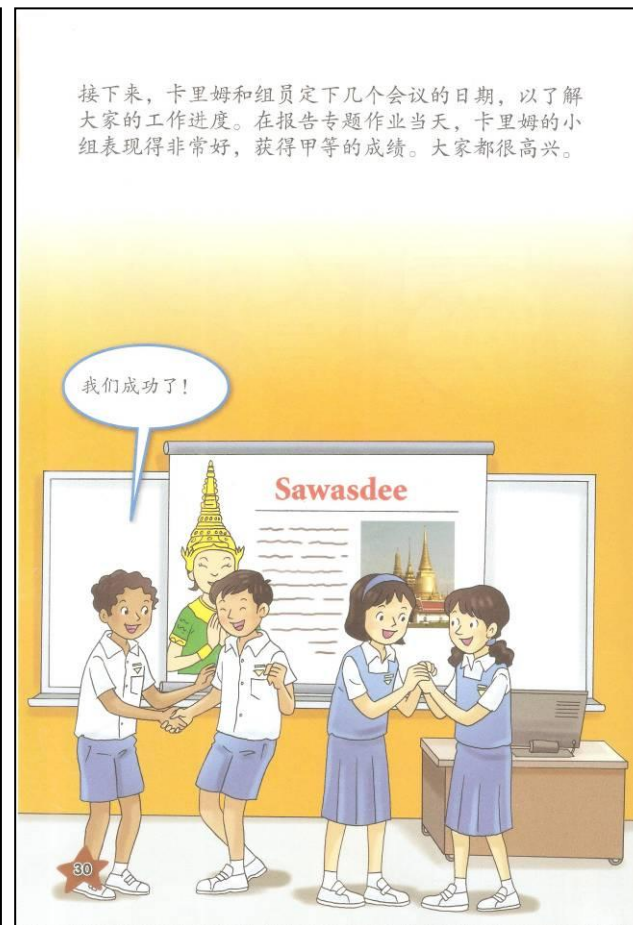
Appendix 16g: Lesson unit 1 – Moral scenario checklist

Considerate Group?	Yes	No
1. The group listens attentively and patiently to each other.		
2. The group speaks politely to each other, avoiding any name-calling, anger and impatience.		
3. The group consistently encourages or praises each other during the group activity.		
4. The group provides enough opportunities for every group member to contribute their ideas.		
5. The group actively helps out each other to complete the group activity.		
6. The group members have truly fulfilled the responsibilities of their respective group roles.		
7. What kinds of behaviours the group members have shown are considered as considerate or inconsiderate?		
8. How do the group members feel when they are treated with consideration or inconsideration?		
9. Why should the group members treat each other with consideration?		
10. How can the group members treat each other with consideration?		

Appendix 17a: Lesson unit 2 – Lesson plan

<table>
<tr><td colspan="2" align="center">(Initial version) Lesson unit 2: Think twice before we act</td></tr>
<tr><td>Level</td><td>Primary 5</td></tr>
<tr><td>Class size</td><td>20</td></tr>
<tr><td>Venue</td><td>Computer lab</td></tr>
<tr><td>Allotted time</td><td>CME periods (06 February 2012)</td></tr>
<tr><td>Duration</td><td>3 periods (1.5 hours)</td></tr>
<tr><td>Teaching resources</td><td>1. Mind-map checklist
2. Story mind-map example
3. Problem mind-map example
4. Presentation slides with moral scenario illustrations
5. The VoiceThread platform</td></tr>
<tr><td>Prerequisite skills</td><td>1. ICT skills:
  • Able to operate the VoiceThread platform
  • Able to operate the Powerpoint to create mind-maps</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Identify desired results</td></tr>
<tr><td align="center">Essential questions</td><td align="center">Lesson objectives</td></tr>
<tr>
<td>

(Cognitive)

- What does it mean to be considerate to others?
- What behaviours are considered as considerate or inconsiderate?
- Why is it necessary to be considerate to others?
- How do I know if I have or have not demonstrated consideration to others?

</td>
<td>

Students will understand…

- To be considerate is to take into account of others' feelings, needs, rules/ laws and circumstances and to treat the person the way he/she would like to be treated.
- The reasons for the need to be considerate:
  - Everyone has different thoughts, needs and feelings
  - Our decisions and behaviours will affect others
  - To build and maintain harmonious relationships

</td>
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<tr>
<td>

(Behaviour)

- How can I treat others with consideration?

</td>
<td>

Students will be able to…

- Treat group-mates with consideration by:
  - speaking politely
  - listening attentively and patiently
  - supporting others with positive comments
  - contributing actively
 - helping each other out

</td>
</tr>
</table>

Assessment evidence

1. Mind-maps checklist
2. Story mind-map
3. Problem mind-map
4. Class observation of cooperative learning process
5. Self-assessment
6. Peer assessment

Lesson procedure			
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
15	• Sharing your story	• Teacher presents digital story. • Teacher explains task with the mind-map examples.	
30 10	• Owning your insights • Finding the moment of change	• Each group has to integrate the 3 chosen scenarios into a story and develop a story mind-map. • Each group will develop the assigned scenarios into a problem mind-map - A provided checklist serves as a guideline. • Each group shares their mind-maps on the VoiceThread and make explanation for their solution to problem.	• Class observation • Mind-maps checklist • Story mind-map • Problem mind-map
10		• Students self-assess and peer assess in the VoiceThread at the end of group activity.	• Self-assessment • Peer-assessment
15	• Owning your insights	• Students critique the assigned group's mind-maps on the different facets of consideration to an issue and state their agreement or disagreement to the way problem is solved.	• Mind-maps review checklist
10 minutes allowance for students to move to and fro computer lab from classrooms.			

(Revised version) Lesson unit 2: Think twice before we act	
Level	Primary 5
Class size	20
Venue	Computer lab
Allotted time	CME periods (06 February 2012)
Duration	3 periods (1.5 hours)
Teaching resources	1. Moral scenario illustrations 2. Story mind-map example 3. Problem mind-map example 4. Mind-map templates 5. Mind-map checklist 6. The VoiceThread 7. Weekly group work observation checklist 8. Collaboration performance rubric 9. Weekly self assessment form 10. Weekly peer assessment form
Prerequisite skills	1. ICT skills: • Able to operate the VoiceThread platform • Able to operate the Powerpoint to create mind-maps • Able to retrieve documents from email box
Identify desired results	
Essential questions	**Lesson objectives**
(Cognitive) • What does it mean to be considerate to others? • What behaviours are considered as considerate or inconsiderate? • Why is it necessary to be considerate to others? • How do I know if I have or have not demonstrated consideration to others?	Students will **understand**… • To be considerate is to take into account of others' feelings, needs, rules/ laws and circumstances and to treat the person the way he/she would like to be treated. • The reasons for the need to be considerate: - Everyone has different thoughts, needs and feelings - Our decisions and behaviours will affect others - To build and maintain harmonious relationships
(Behaviour) • How can I treat others with consideration?	Students will be **able to**… • Treat group-mates with consideration by: - speaking politely - listening attentively and patiently - supporting others with positive comments - contributing actively - helping each other out

	Assessment evidence		

1. Peer review using mind-map checklist
2. Problem mind-map
3. Observation of collaboration process
4. Self and peer assessment of collaboration process

		Lesson procedure	
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
10 10	• Sharing your story	• Teacher presents digital story. • Teacher introduces the mind-mapping technique with the story mind-map example. • Teacher explains the lesson activity using the problem mind-map example, the mind-map templates and checklist. • Teacher revises the basic operations of the Powerpoint application with the students.	
25	• Owning your insights	• Each group is assigned to work on a moral scenario. - Group 1 – moral scenario 1 - Group 2 – moral scenario 4 - Group 3 – moral scenario 5 - Group 4 – moral scenario 2 • Each group analyses the assigned moral scenario using the mind-map template and checklist. • Each group uploads the completed mind-map to the VoiceThread.	• Class observation • Mind-maps checklist • Story mind-map • Problem mind-map
10		• Students self and peer assess their collaboration performance.	• Self and peer assessment
15	• Owning your insights	• Students critique the assigned group's mind-maps on the different facets of consideration to an issue and state their agreement or disagreement to the way problem is solved.	• Peer review
10 minutes allowance for students to move to and fro computer lab from classrooms.			
Teacher's post-lesson task: 1. review the groups' mind-maps			

Appendix 17b: Lesson unit 2 – Moral scenario illustrations

Sometimes, on the MRT, old people may want to drink water or hungry baby may need to drink milk. However, the MRT staff says eating or drinking is not allowed. Do you think old people or babies are allowed to eat or drink on the MRT?	Two girls board the bus. One of them quickly sits on the reserved seat and giggles that she is reserving seat for the old people. The other girl points to the sign and says she will never sit on a reserved seat. Do you think young people should sit on the reserved seats even when they are available?
(Used as teaching example) On the MRT, I was sitting beside a little girl. Her father was carrying heavy baggage and standing close to her. Should I give up my seat to the father?	On the MRT, your friend made a bet with you that the girl's long silky hair was a wig. He then made fun of the girl by pulling the girl's hair off. What should you do?
On the MRT, some pupils sit or stand at the train entrance/ exit door. What will do you when you see this happening?	(Additional picture) Often, on the public bus, passengers crowd near the front of the bus and refuse to move to the rear. What will do you when you see this happening?

Appendix 17c: Lesson unit 2 – Story and problem mind-map examples

Story mind-map example
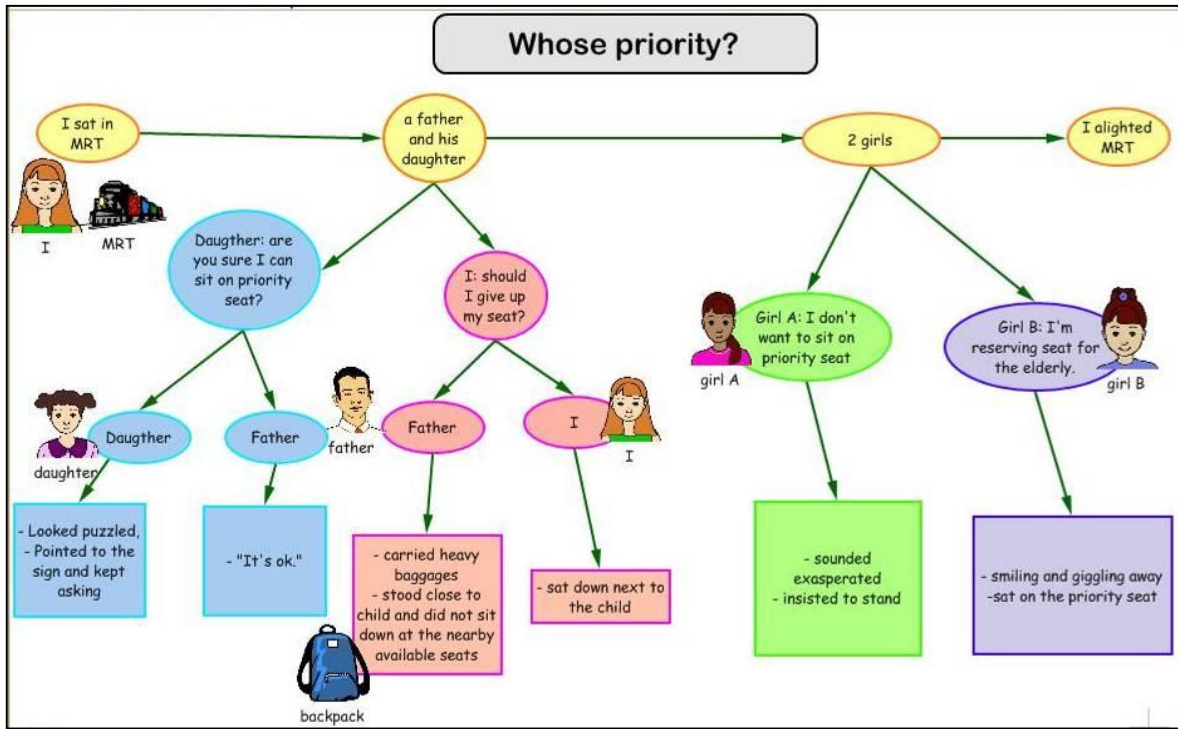
Problem mind-map example
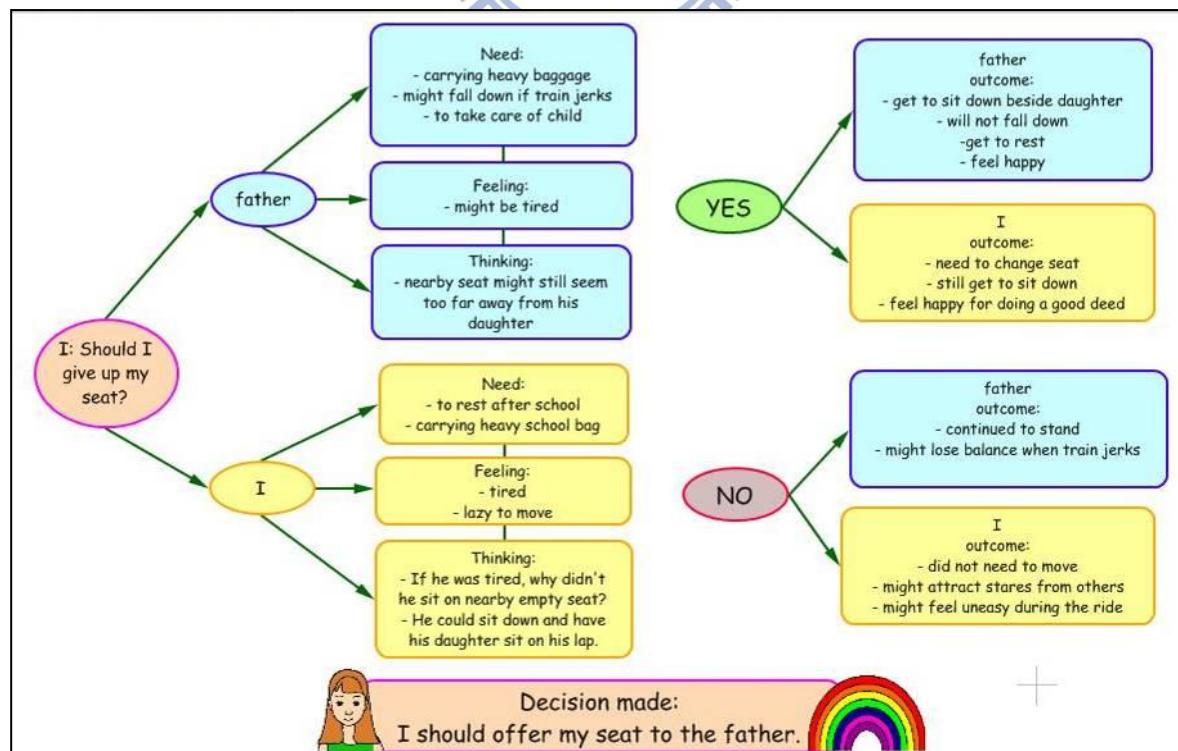
Appendix 17d: Lesson unit 2 – Problem mind-map templates

Mind-map template for moral scenarios 1 and 2
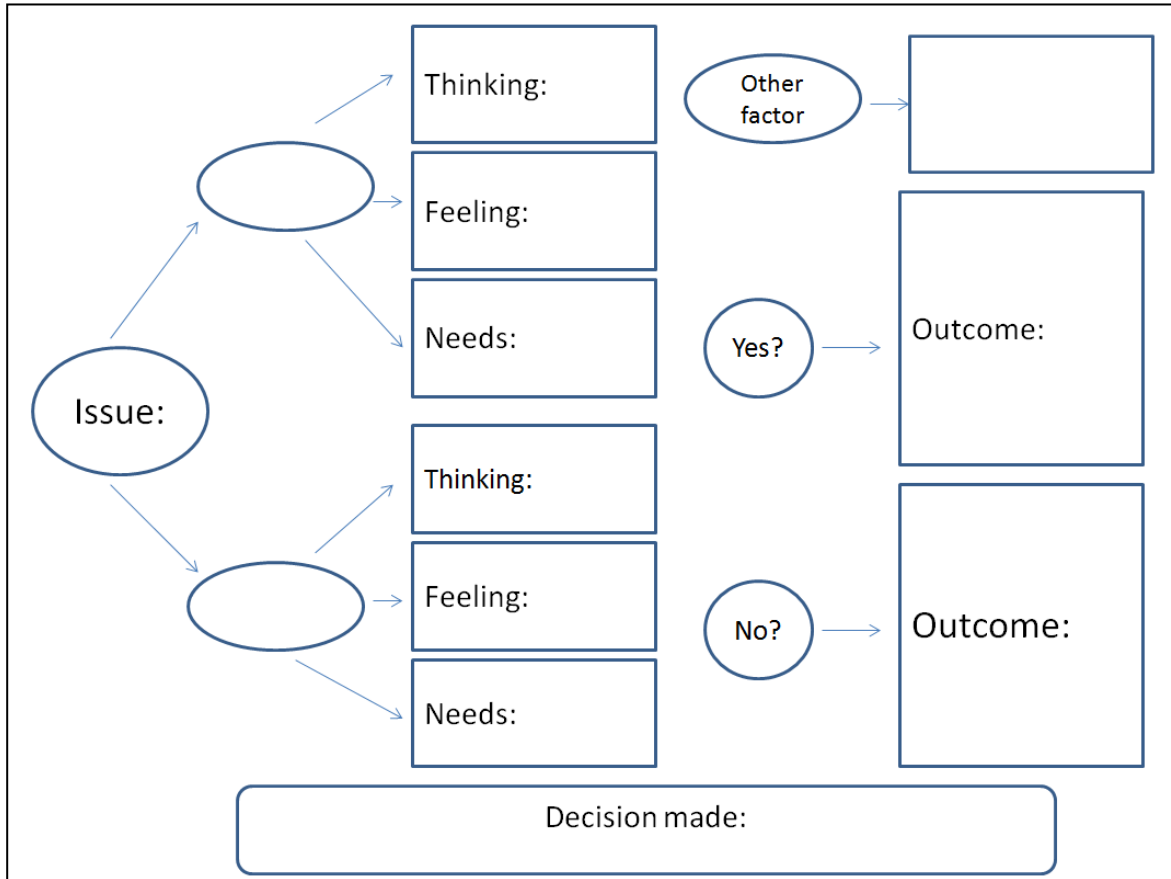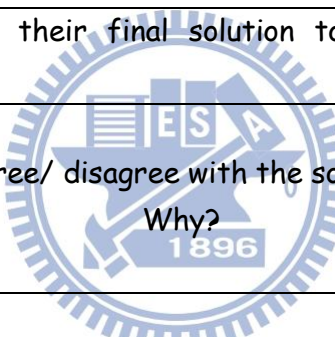
Mind-map templates for moral scenarios 4 and 5

What should I do?

Thinking:

Feeling:

Needs:

Thinking:

Feeling:

Needs:

Thinking:

Feeling:

Needs:

Solution 1:

Outcome:

What should I do?

Solution 2:

Outcome:

Decision made:
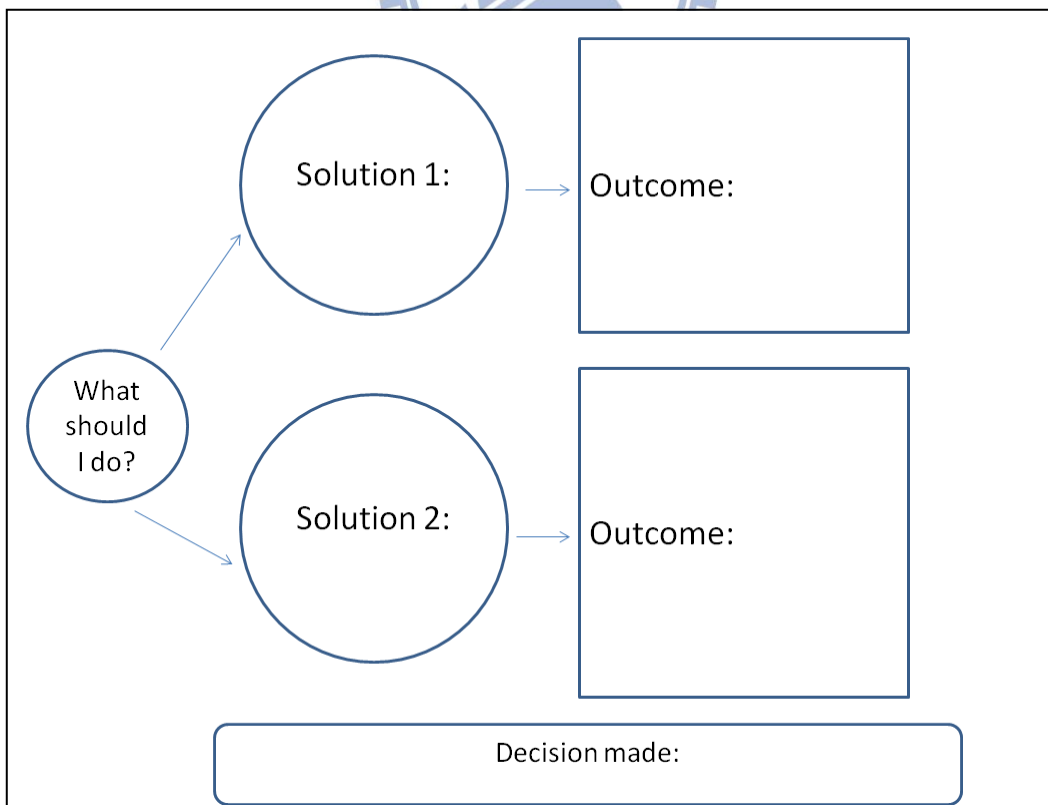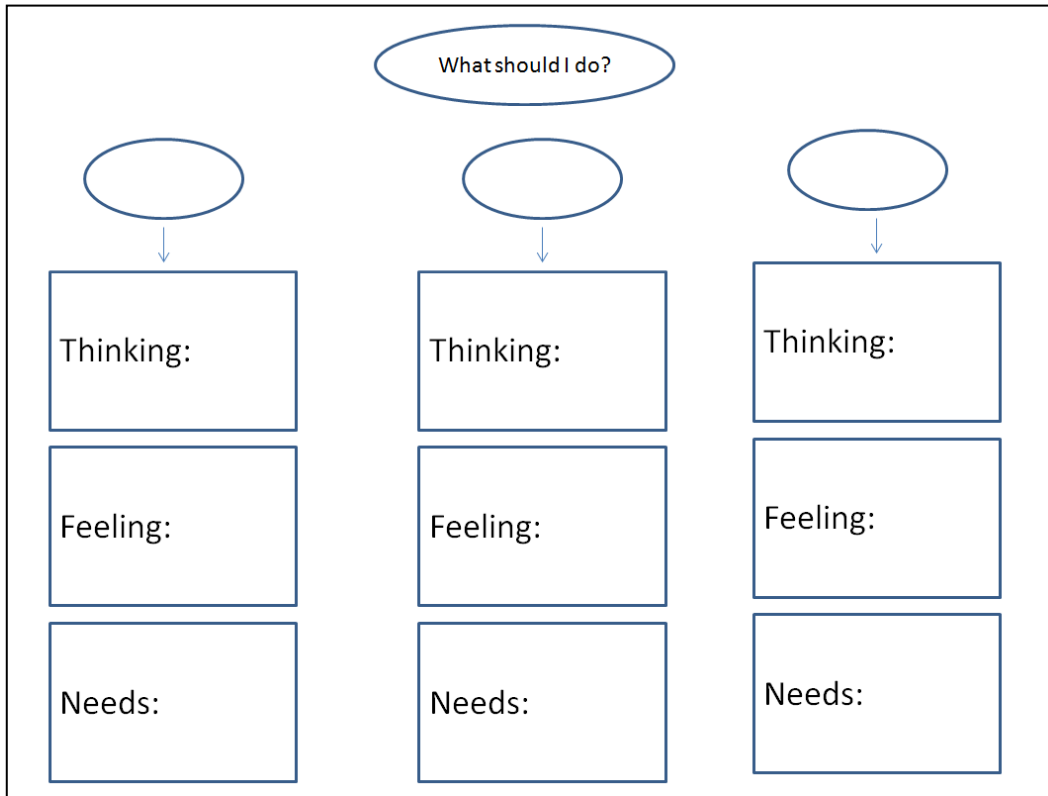
Appendix 17e: Lesson unit 2 – Mind-map checklist

<div style="border:1px solid">**Initial version**</div>

Things to be considered	Checked
Story Mind-map	
1. The story consists of an introduction, the three provided problems and an ending.	
2. The story is presented in a first-person point of view.	
Problem Mind-map	
3. The group has considered all the characters' feelings.	
4. The group has considered all the characters' needs.	
5. The group has considered all the characters' ways of thinking.	
6. The group has considered the different consequences of the different decisions made.	
7. The group has presented their final solution to solve the problem.	
For peer review: I agree/ disagree with the solution. Why?	

<div style="border:1px solid">**Revised version**</div>

Things to be considered	Checked
Problem Mind-map	
1. The group has considered all the characters' feelings.	
2. The group has considered all the characters' needs.	
3. The group has considered all the characters' ways of thinking.	
4. The group has considered the different consequences of the different decisions made.	
5. The group has presented their final solution to solve the problem.	
For peer review: I agree/ disagree with the solution. Why?	

Appendix 17f: Lesson unit 2 – Weekly group work observation rating scale form

Considerate behaviours in group work	Group no.: Group members	Exemplary	Proficient	Satisfactory	Needs improvement	Remarks
Communication - Listens patiently and attentively to others - Speaks politely - Considers other's point of view and makes effort to convince others.						
Relationship management - Maintains and works in harmonious relationship with group-mates. - Encourages and praises group-mates						
Attitude - Shows positive attitude - Shows enthusiasm						
Contribution - Performs duties of a group role - Contributes to group effort - Provides opportunities for group-mates - Coordinate with and helps each other						

Appendix 18a: Lesson unit 3 – Lesson plan

(Initial version) Lesson unit 3: It all makes a difference.	
Level	Primary 5
Class size	20
Venue	Computer lab
Allotted time	CME periods (13 and 20 February 2012)
Duration	6 periods (3 hours)
Teaching resources	1. Moral scenario illustrations 2. Teacher's digital story storyboard 3. Story mind-map 4. Problem mind-map 5. Powerpoint 6. Digital camera 7. The VoiceThread

Prerequisite skills	1. Literacy skill: Able to construct a story with logical and coherent sequence
	2. Aesthetic skill: Able to capture critical scene and appropriate emotions of role-play characters
	3. ICT skills:
	   • Able to operate Powerpoint to create mind-maps
	   • Able to operate a digital camera
	   • Able to operate the VoiceThread platform

Identify desired results	
Essential questions	**Lesson objectives**

(Affective)
 	
• Am I a considerate person?
• Why should I be considerate to others?
• How do I feel when I am treated with consideration or inconsideration?
 	
(Behaviour)
 	
• How can I treat others with consideration?
	Students will **feel**…
	
	• The need to be considerate
	• The worth of others to be treated with consideration
	
	Students will be **able to**…
	
	• Perform the considerate actions through role-play
	• Treat group-mates with consideration by:
	  - speaking politely
	  - listening attentively and patiently
	  - supporting others with positive comments
	  - contributing actively
	  - helping each other out
	  -

	Assessment evidence		

1. Storyboard rating scale
2. Storyboards
3. Class observation of cooperative learning process
4. Self-assessment
5. Peer assessment

	Lesson procedure (Lesson 3, 13 February 2012)		
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
15		• Teacher relates the story and problem mind-maps to the lesson objectives. • Teacher explains the lesson activities.	
25 30	• Owning your insights • Owning your emotions • Seeing your story	• Among the three given moral scenarios, each group has to choose one that has yet to be worked on and examine the perspectives of the different characters in the pictures and extend to different story outcomes - With the help of mind-mapping technique - Take reference to the mind-maps other groups have done in week 2 • Role-play the characters to personally experience the circumstances that different characters are in and how different characters think, feel and want to be treated. - Take photographs of the crucial role-play scenes	• Class observation • Moral Scenario rating scale
10		• Students self-assess and peer assess in the VoiceThread at the end of group activity.	• Self-assessment • Peer-assessment
10 minutes allowance for students to move to and fro computer lab from classrooms.			

Lesson procedure (Lesson 4, 20 February 2012)			
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
10 20 25	• Finding the moment of change • Seeing your story • Hearing your story • Assembling your story	• Teacher shows the self-made storyboard. • In groups, students select the photographs or search pictures from Clip Art to create different storyboards, showing how different decisions made by different characters may result in different outcomes. - Storyboards can be created using the Powerpoint. • Upload all the storyboards to the VoiceThread • Select the story that best solves the issue in the picture to add transcripts and voice-record with emotions	• Class observation • Storyboards
10		• Students self-assess and peer assess in the VoiceThread at the end of group activity.	• Self-assessment • Peer-assessment
15		• Peer review of the storyboards.	• Storyboard rating scale
10 minutes allowance for students to move to and fro computer lab from classrooms.			

<table>
<tr><td colspan="2" align="center">(Revised version) Lesson unit 3: It all makes a difference.</td></tr>
<tr><td>Level</td><td>Primary 5</td></tr>
<tr><td>Class size</td><td>20</td></tr>
<tr><td>Venue</td><td>Computer lab</td></tr>
<tr><td>Allotted time</td><td>CME periods (13 and 20 February 2012)</td></tr>
<tr><td>Duration</td><td>6 periods (3 hours)</td></tr>
<tr><td>Teaching resources</td><td>
1. Students' mind-maps constructed in unit 2
2. Problem mind-map example
3. Sample storyboard
4. Digital camera
5. The VoiceThread
6. Storyboard rating scale form
7. Weekly group work observation checklist
8. Collaboration performance rubric
9. Weekly self assessment form
10. Weekly peer assessment form
</td></tr>
<tr><td>Prerequisite skills</td><td>
1. Literacy skill: Able to construct a story with logical and coherent sequence
2. Aesthetic skill: Able to capture critical scene and appropriate emotions of role-play characters
3. ICT skills:
  • Able to operate a digital camera
  • Able to operate the VoiceThread platform
</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Identify desired results</td></tr>
<tr><td align="center">Essential questions</td><td align="center">Lesson objectives</td></tr>
<tr><td>

(Affective)

• Am I a considerate person?
• Why should I be considerate to others?
• How do I feel when I am treated with consideration or inconsideration?

(Behaviour)

• How can I treat others with consideration?

</td><td>

Students will **feel**…

• The need to be considerate
• The worth of others to be treated with consideration

Students will be **able to**…

• Perform the considerate actions through role-play
• Treat group-mates with consideration by:
  - speaking politely
  - listening attentively and patiently
  - supporting others with positive comments
  - contributing actively
  - helping each other out

</td></tr>
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	Assessment evidence		

1. Storyboard rating scale
2. Observation of collaboration process
3. Self and peer assessment of collaboration process

	Lesson procedure (Lesson 4, 13 February 2012)		
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
10 15		• Teacher reviewed the groups' mind-maps constructed in lesson unit two. • Teacher relates the lesson activity to the lesson objectives. • Teacher explains the lesson activity via a short demonstration by inviting students to role-play a situation depicted by a selected group's mind-map. • Teacher conducts work division session with students, by giving students two minutes who to perform the tasks of director, cameraman, equipment designer and actors/ actresses.	
45	• Owning your emotions • Seeing your story	• Based on the mind-map constructed in lesson unit two, each group role-plays the characters. • Each group makes their own acting equipment tools if necessary. • Each group takes photographs of the role-play scenes.	• Observation
10		• Students self and peer assess their collaboration performance.	• Self and peer assessment

10 minutes allowance for students to move to and fro computer lab from classrooms.

Teacher's post-lesson tasks:
1. Retrieve the photographs from the cameras' memory cards;
2. Sift and remove the unclear photographs and upload the clear ones onto the VoiceThread.

Lesson procedure (Lesson 5, 20 February 2012)			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
20		• Teacher explains the lesson activity using the problem mind-map and sample storyboard. • Teacher shows the uploaded photographs that the groups had taken in the previous lesson, and revises how to arrange and delete slides in the VoiceThread.	
40	• Finding the moment of change • Assembling your story • Hearing your story	• Each group review their mindmap and their photographs. • Each group selects the photographs and reorganises the sequence of the photographs to form the storyline. • Each group adds transcripts to form the storyboard. • Each group voice-records their story to form a digital moral story.	• Observation
10		• Students self and peer assess their collaboration performance.	• Self and peer assessment
10		• Peer review of digital stories	• Storyboard rating scale
10 minutes allowance for students to move to and fro computer lab from classrooms.			
Teacher's post-lesson task: 1. Review the groups' storyboards using the storyboard rating scale			

Appendix 18b: Lesson unit 3 – Sample storyboard

Should I give up my seat?

The story happened yesterday when I was sitting in the MRT, going home from school.

A father and his daughter boarded the MRT at the Woodlands station. The priority seat beside me was the only seat available then, and the father got his daughter to sit on the priority seat.

Priority seat

The daughter looked puzzled, staring and pointing at the priority seat sign and kept asking, " Dad, are you sure I can sit here?" The father assured his daughter to sit on the seat.

The MRT had reached the next stop. A seat opposite us was available.

But the father didn't seem to have the intention to sit down. He was carrying heavy baggage and standing close to his child.

I started to ponder: should I give up my seat to him?

He was carrying many heavy baggage. If the train jerked and he was not careful, he might fall down. He might get hurt.

He was carrying many heavy baggage and he had to take care of his daughter. He must be exhausted.

I was carrying a heavy school bag too. I was tired after school too.

I thought: why didn't he want to sit down on the available seat that was opposite us?

Maybe he thought that the seat was too far away from his daughter. He might want to stay really close to his young daughter in order to take care of her.

Should I give up my seat to him?

I finally decided to change my seat.

The father smiled and thanked me, then happily put his bags down and sat beside his daughter.

Smilingly, I knew I had made the right decision and done a good deed.
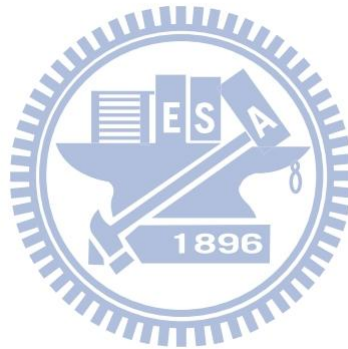
Appendix 18c: Lesson unit 3 – Storyboard rating scale

Initial version

Evaluation criteria	Excellent	Very good	Good	Needs to improve
1. The group has role-played all the characters shown in the picture.				
2. The group has expressed the possible feelings of the role-played characters.				
3. The group has reported the possible needs of the role-played characters.				
4. The group has reported the possible thoughts of the role-played characters.				
5. The group has considered the rules/ laws.				
6. The group has considered the situations that the role-played characters are in.				
7. The group has presented the reasons for the decisions made by the different characters.				
8. The group has shown the different consequences caused by the different decisions made by the different characters.				
9. The group has presented the decision that could best solve the issue in the picture.				
For peer review: I agree/ disagree with the solution. Why?				

Revised version

Evaluation criteria	Excellent	Very good	Good	Needs to improve
1. The group has role-played all the characters shown in the picture.				
2. The group has expressed the possible feelings of the role-played characters.				
3. The group has reported the possible needs of the role-played characters.				
4. The group has reported the possible thoughts of the role-played characters.				
5. The group has considered other factors such as the social rules or laws.				
6. The group has shown the possible consequences caused by the different decisions made.				
7. The group has presented the decision that could best solve the issue in the picture.				
For peer review: I agree/ disagree with the solution. Why?				

Appendix 19a: Lesson unit 4 – Lesson plan

(Initial version) Lesson unit 4: I am considerate.	
Level	Primary 5
Class size	2
Venue	Computer lab
Allotted time	CME periods (19 and 26 March 2012)
Duration	6 periods (3 hours)
Teaching resources	1. Task-list 2. CME textbook (p.97) 3. The VoiceThread 4. Rubric

Prerequisite skills	1. Literacy skill: Able to construct a story with logical and coherent sequence
	2. Aesthetic skill: Able to select the appropriate pictures to represent the appropriate critical scene
	3. ICT skills:
	    • Able to operate Powerpoint to create mind-maps
	    • Able to operate the VoiceThread

Identify desired results	
Essential questions	**Lesson objectives**

(Cognitive)
 	
• What does it mean to be considerate to others?
• What behaviours are considered as considerate or inconsiderate?
• Why is it necessary to be considerate to others?
• How do I know if I have or have not demonstrated consideration to others?
 	
(Affective)
 	
• Am I a considerate person?
• Why should I be considerate to others?
• How do I feel when I am treated with consideration or inconsideration?
 	
(Behaviour)
 	
• How can I treat others with consideration?
	Students will **understand**…
	
	• To be considerate is to take into account of others' feelings, needs, rules/ laws and circumstances and to treat the person the way he/she would like to be treated.
	• The reasons for the need to be considerate:
	  - Everyone has different thoughts, needs and feelings
	  - Our decisions and behaviours will affect others
	  - To build and maintain harmonious relationships
	• Whether he or she is a considerate person.
	
	Students will **feel**…
	
	• The need and worth to be considerate to group-mates
	
	Students will be **able to**…
	
	• Convey appreciation to group-mates.

Assessment evidence
1. Dialogues during class discussion
2. Mind-maps
3. Digital reflection story
4. Rubrics

Learning plan (Lesson 5, 05 March 2012)			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
20		• Teacher recaps the essential questions and unit objectives through class discussion. • Teacher explains the task of the lesson with the task list.	• Dialogues during class discussion
30	• Owning your insights • Finding the moment of change	• Each student plans content for his/ her digital reflection story with the help of mind-maps and the questions in the task list.	• Task list • Mind-maps
30	• Seeing your story	• Search for pictures that will be used in digital story.	
10 minutes allowance for students to move to and fro computer lab from classrooms.			

Learning plan (Lesson 6, 19 March 2012)			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
20 20 20	• Seeing your story • Hearing your story • Assembling your story	• Organise the selected pictures into a storyboard using the Powerpoint • Prepare transcripts • Upload the Powerpoint onto the VoiceThread and add voice-recording	• Digital reflection story
20	• Sharing your story	• Sharing of digital reflection stories on the VoiceThread for peer reviews on (1) common and different views of "being considerate"; (2) agreement and disagreement with the way the problem story is handled, and (3) to give praises.	• Peer review • Rubrics
10 minutes allowance for students to move to and fro computer lab from classrooms.			

	(Revised version) Lesson unit 4: We are considerate.	
Level	Primary 5	
Class size	20	
Venue	Computer lab	
Allotted time	CME periods (19 and 26 March 2012)	
Duration	6 periods (3 hours)	
Teaching resources	1. Task-list 2. Digital reflection story template 3. CME textbook (p.97) 4. The VoiceThread 5. Digital reflection story rubric 6. Weekly group work observation checklist 7. Collaboration performance rubric 8. Weekly self assessment form 9. Weekly peer assessment form	
Prerequisite skills	1. Literacy skill: Able to construct a story with logical and coherent sequence 2. Aesthetic skill: Able to select the appropriate pictures to represent the appropriate critical scene 3. ICT skills: • Able to operate Powerpoint to create mind-maps • Able to operate the VoiceThread • Able to retrieve documents from the email box	
Identify desired results		
Essential questions		**Lesson objectives**

Essential questions	Lesson objectives

(Cognitive)
 	
• What does it mean to be considerate to others?
• What behaviours are considered as considerate or inconsiderate?
• Why is it necessary to be considerate to others?
• How do I know if I have or have not demonstrated consideration to others?
 	
(Affective)
 	
• Am I a considerate person?
• Why should I be considerate to others?
• How do I feel when I am treated with consideration or inconsideration?
 	
(Behaviour)
 	
• How can I treat others with consideration?
	Students will **understand**…
	
	• To be considerate is to take into account of others' feelings, needs, rules/ laws and circumstances and to treat the person the way he/she would like to be treated.
	• The reasons for the need to be considerate:
	  - Everyone has different thoughts, needs and feelings
	  - Our decisions and behaviours will affect others
	  - To build and maintain harmonious relationships
	• Whether he or she is a considerate person.
	
	Students will **feel**…
	
	• The need and worth to be considerate to group-mates
	
	Students will be **able to**…
	
	• Treat group-mates with consideration by:

| | | - speaking politely
- listening attentively and patiently
- supporting others with positive comments
- contributing actively
- helping each other out
• Convey appreciation to group-mates. |

Assessment evidence
1. Dialogues 2. Digital reflection story 3. Observation of collaboration process 4. Self and peer assessment of collaboration process

Learning plan (Lesson 6, 19 March 2012)			
Time (min)	**Lambert's (2010) seven steps for digital storytelling**	**Activities**	**Evaluation**
20	• Owning your insights	• Teacher recaps the essential questions and unit objectives through class discussion. • Teacher explains the lesson activity with the task-list and the digital reflection story template. • Teacher goes through the CME textbook's moral scenario (p.97) and reminds students to take note of the cultural aspect in the scenario.	• Dialogues
50	• Finding the moment of change • Seeing your story	• Each group is split into two mini-teams. - 2 students work on part 1 – comprehension of "considerate" - 3 students work on part 2 – the CME textbook's moral scenario • Once the groups complete the content part, they could search for pictures for their slides.	• Observation
10		• Students self and peer assess their collaboration performance.	• Self and peer assessment
10 minutes allowance for students to move to and fro computer lab from classrooms.			
Teacher's post-lesson tasks: 1. review students' work and give feedback; 2. combine the two separate parts of students' work into one and email to the groups' emails			

Learning plan (Lesson 6, 26 March 2012)			
Time (min)	Lambert's (2010) seven steps for digital storytelling	Activities	Evaluation
20	• Finding the moment of change	• Teacher reviews the given feedback with the students using a group's work as an example.	
20 10	• Finding the moment of change • Seeing your story	• Instead of splitting into two mini-teams, the two mini-teams get together as a group again to revise the content together. • Once the groups complete the content part, they could search for pictures for their slides.	• Observation
	• Owning your insights	• Teacher conducted part 3 – self-reflection and appreciation moment with the students. • Student had to write their self-reflection and appreciation words on paper.	
10	• Hearing your story • Assembling your story	• Students get into groups again to type part 3 into the slides. • Students upload the slides into the VoiceThread and do group voice-recording.	
10		• Students self and peer assess their collaboration performance.	• Self and peer assessment
10	• Sharing your story	• Sharing of each group's reflection stories.	• Digital reflection story
10 minutes allowance for students to move to and fro computer lab from classrooms.			
Teacher's post-lesson task: 1. Assess the students' moral qualities from the digital reflection story using the digital reflection story rubric.			

Appendix 19b: Lesson unit 4 – Task-list for digital reflection story-making (revised version)

Our task	To create a digital story to reflect on what we have learnt for the past five weeks
Our audience	• Classmates • Teachers
Our tools	• Our smart brains • Powerpoint • Digital camera • VoiceThread
Our story content	• What does "being considerate" mean? • Why do we need to be considerate? • How do we apply my understanding of "considerate" to the given scenario in my CME textbook, page 97? (analyse, reason with the help of mind-maps) • Are we considerate? (provide examples) • How do we show appreciation to each other for working together as a group for the past few weeks?
	Have fun and enjoy! ☺

*The pronouns of "I" and "my" in the initial version were replaced with "we" and "our" in the revised version of task-list.

Appendix 19c: Lesson unit 4 – Digital reflection story template

Title:
E.g. Are we considerate?

What is "considerate"?

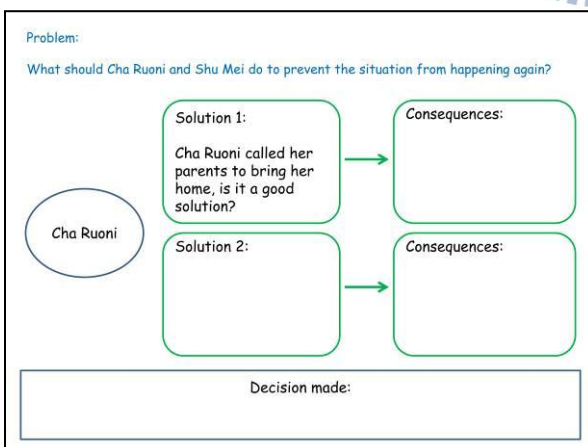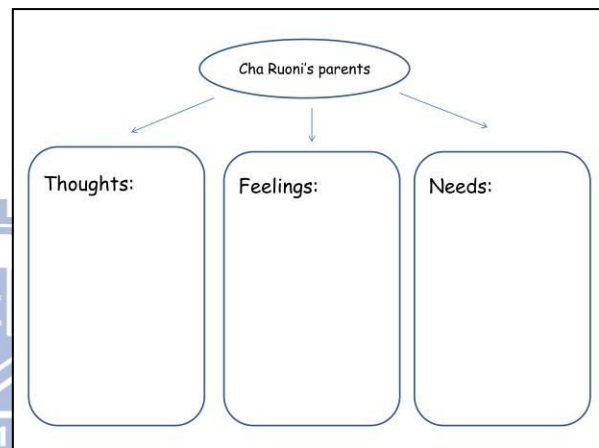Why do we need to be considerate?
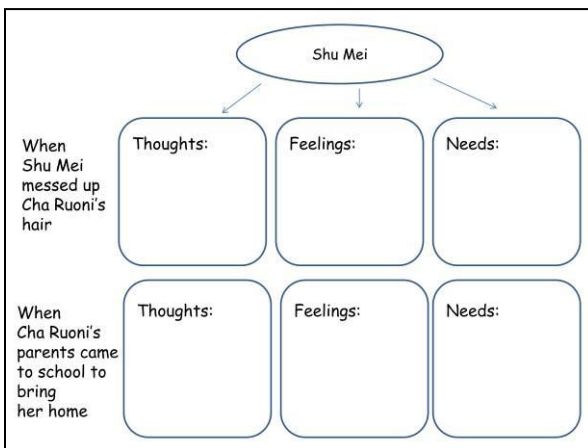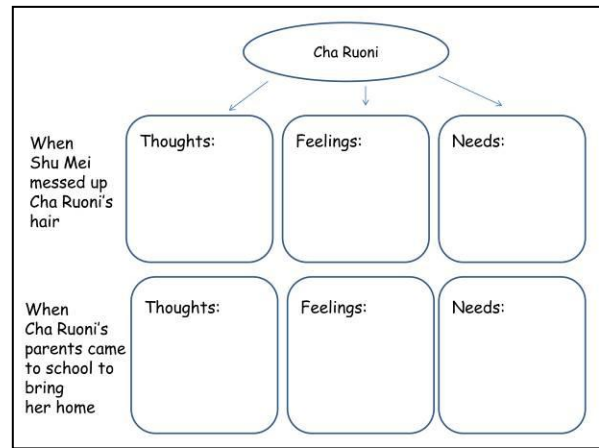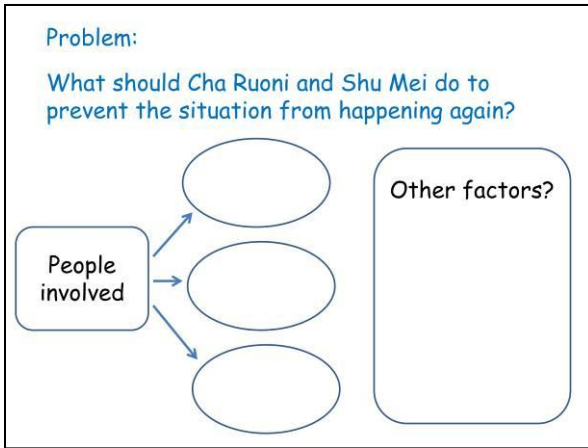
Example of considerate behaviour

• Explain the example with reasons

Example of inconsiderate behaviour

• Explain the example with reasons

素梅的新同学查若妮来自泰国。素梅故意作弄查若妮，还把她的头发弄乱，令查若妮很难过。查若妮的父母还得特地来学校将她带回家。素梅知道整洁的重要性，但是她认为查若妮太小题大作了。

Problem:

What should Cha Ruoni and Shu Mei do to prevent the situation from happening again?

People involved → ( ) ( ) ( )

Other factors?

Cha Ruoni

When Shu Mei messed up Cha Ruoni's hair — Thoughts: | Feelings: | Needs:

When Cha Ruoni's parents came to school to bring her home — Thoughts: | Feelings: | Needs:

Shu Mei

When Shu Mei messed up Cha Ruoni's hair — Thoughts: | Feelings: | Needs:

When Cha Ruoni's parents came to school to bring her home — Thoughts: | Feelings: | Needs:

Cha Ruoni's parents

Thoughts: | Feelings: | Needs:

Problem:

What should Cha Ruoni and Shu Mei do to prevent the situation from happening again?

Cha Ruoni

Solution 1:
Cha Ruoni called her parents to bring her home, is it a good solution? → Consequences:

Solution 2: → Consequences:

Decision made:

Problem:

What should Cha Ruoni and Shu Mei do to prevent the situation from happening again?

Shu Mei

Solution 1: → Consequence:

Solution 2: → Consequence:

Decision made:

Am I considerate?

- E.g. I am always considerate.
- E.g. Sometimes, I am considerate, sometimes, I am not.

My attitude

- E.g. I'm already very considerate; I don't need to improve.
- E.g. I want to be more considerate…
- E.g. I can be more considerate than now, I will do……
- E.g. Everyone should be considerate, otherwise…
- E.g. There is no need to be considerate!

1 considerate thing I had done

1 inconsiderate thing that I had done

How can I improve?

I want to thank…

- E.g. _____ want to thank _____ for _____.
- E.g. Thank you _____ for _____. (_____)
- E.g. "_____has been_____. Thank you." (_____)

Appendix 19d: Lesson unit 4 – Moral scenario on bullying

Appendix 19e: Lesson unit 4 – Digital reflection story rubric (evaluation of moral cognitive and affective aspects)

Initial version

	Exemplary	Proficient	Satisfactory	Needs improvement
Comprehension	• Clearly and substantially explains what it means to be considerate by: - Identifying and elaborating with examples of considerate and inconsiderate behaviours in various diverse contexts - Providing reasons for the need to be considerate - Stating various ways to treat others with consideration	• Clearly explains what it means to be considerate by: - Providing some examples of considerate and inconsiderate behaviours in limited contexts - Providing some reasons for the need to be considerate - Stating some ways to treat others with consideration	• Briefly explains what it means to be considerate by: - Providing few examples of considerate and inconsiderate behaviours in limited contexts - Stating few ways to treat others with consideration	• Have difficulty explaining the definition of "being considerate" • Have difficulty providing reasons for the need to be considerate • Unable to state the ways to treat others with consideration
Application	• Considers adequately the needs, feelings, culture and perspectives of self and others • Considers adequately the possible consequences of each possible decision • Clearly presents the best solution with supporting reasons	• Considers the most of the needs, feelings, culture and perspectives of self and others • Considers consequences of some possible decisions • Presents a good solution with supporting reasons	• Briefly consider the needs and feelings of others • Considers a few consequences of some possible decisions. • Offers a viable solution	• Unable to identify the moral issue in the scenario • Views issue from standpoint of self • Fails to consider the consequences of decision made
Affective	• Express one's commitment and desire to be a considerate person with appropriate emotions and pictures. • Provide ample and convincing examples to illustrate one's understanding of self as a considerate person and ways to improve further	• Express one's desire to be a considerate person with some emotions and pictures. • Attempts to illustrate one's understanding of self with a few examples.	• Express the need to be considerate only in certain contexts or to certain people.	• Do not express the need to be considerate to others

Revised version

Categories	Exemplary	Proficient	Satisfactory	Needs improvement
Moral knowledge of "considerate" (Moral qualities: Moral awareness, knowing moral values)	• Clearly and substantially explains what it means to be considerate by: - Identifying and elaborating with examples of considerate and inconsiderate behaviours within various diverse contexts - Providing convincing reasons for the need to be considerate - Stating various ways to treat others with consideration	• Clearly explains what it means to be considerate by: - Providing some examples of considerate and inconsiderate behaviours within some contexts - Providing some reasons for the need to be considerate - Stating some ways to treat others with consideration	• Briefly explains what it means to be considerate by: - Providing few examples of considerate and inconsiderate behaviours within limited contexts - Stating few ways to treat others with consideration	• Have difficulty explaining the definition of "being considerate" • Have difficulty providing reasons for the need to be considerate • Unable to state the ways to treat others with consideration
Moral judgement of scenario (Moral qualities: perspective-taking, moral reasoning, decision-making)	• Fully considers the needs, feelings, culture and perspectives of self and others • Fully considers the possible consequences of each possible decision • Clearly presents the best solution	• Considers the most of the needs, feelings, culture and perspectives of self and others • Considers consequences of some possible decisions • Offers a reasonably good solution	• Briefly consider the needs and feelings of others • Considers a few consequences of some possible decisions. • Offers a possible solution	• Unable to identify the moral issue in the scenario • Views issue from standpoint of self • Fails to consider the consequences of decision made
Moral reflection of self (Moral qualities: self-knowledge, humility, conscience)	• Express one's commitment and desire to be a considerate person • Express one's understanding of self with examples • Indicate ways to improve oneself	• Express one's desire to be a considerate person • Express one's understanding of self with examples • Express the need to improve oneself	• Express the need to be considerate • Vaguely express one's understanding of self without support of examples • Do not express the need to improve oneself	• Do not express the need to be considerate to others • Do not understand own character • Do not express the need to improve oneself

Appendix 20: Evaluation results table for group digital moral reflection stories

Evaluation Results of Group Digital Moral Reflection Stories

Criteria categories[a]	Group 1	Group 2	Group 3	Group 4	Overall
Moral knowledge of "considerate"	4	3	3	3	$N = 4$ $M = 3.25$ $SD = .43$
Moral judgement of scenario	3	3	4	3	$N = 4$ $M = 3.25$ $SD = .43$
Moral reflection of self	(G1S1) 3 (G1S2) 4 (G1S3) 3 (G1S4) 3 (G1S5) 3	(G2S1) 3 (G2S2) 3 (G2S3) 4 (G2S4) 4 (G2S5) 4	(G3S1) 3 (G3S2) 3 (G3S3) 3 (G3S4) 3 (G3S5) 3	(G4S1) 2 (G4S2) 3 (G4S3) 3 (G4S4) 3 (G4S5) 3	$N = 20$ $M = 3.15$ $SD = .48$

Note. 4=Exemplary, 3=Proficient, 2=Satisfactory, 1=Needs improvement.
[a]Group evaluation for the "moral knowledge" and "moral judgement" categories, and individual evaluation for the "moral reflection" category.