

# Media education in the School 2.0 era: Teaching media literacy through laptop computers and iPads

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**Abstract**

In the School 2.0 era in Hong Kong, students are using laptop computers and iPads to explore and discuss media issues in the classroom. Using the innovation theory, this study investigates this new way of teaching and learning. It examines the effectiveness and challenges of learning media literacy through new media technologies. The results show that students are highly motivated by the new media and express great interest in the media literacy curriculum. The new methods not only enhance students' media literacy, but they also strengthen their 4C skills (critical thinking, creativity, communication, and collaboration). Using new information technologies to teach media education is effective because the new curriculum can create “meaning” and “relevance” for the Net-Generation students.

**Keywords**

Hong Kong, information technology, iPad, laptop computer, media literacy, Net Generation, School 2.0, Web 2.0

As Internet technology develops, schools around the globe are experimenting with numerous e-learning projects. In Hong Kong, some schools are integrating information technology (IT) into media education. Instead of learning media literacy in the traditional way, school students are now using laptop computers and iPads in the classroom to explore and discuss media issues.

The Shak Chung Shan Memorial Catholic Primary School and the Good Counsel Catholic Primary School in Hong Kong have implemented a media education project entitled “21<sup>st</sup> Century Skills Learning: The Creative Information Technology Education Project,” which tries to integrate

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learning with IT. The project is supported by the Quality Education Fund of the Education Bureau of the HKSAR (Hong Kong Special Administrative Region) government. The research project discussed in this article was conducted in these two schools.

The study had two objectives: (1) to examine the effectiveness of learning media literacy through new media technologies in classroom settings and (2) to explore the advantages and challenges of using new media to conduct media education.

Media education is “the process of teaching and learning about media” (Buckingham, 2003); media literacy is the outcome. Media literacy consists of a series of communication competencies, including the ability to access, analyze, evaluate, create, and act using all forms of communication (National Association for Media Literacy Education (NAMLE), 2016).

In this study, IT is defined as “the use of any computers, storage, networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange all forms of electronic data” (TechTarget, 2016a, p. 1). IT is generally regarded as a subset of information and communications technology (ICT). According to technology experts, ICT is an umbrella term that “includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.” ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries (TechTarget, 2016b, p. 1).

In Hong Kong, the Education Bureau puts great emphasis on IT learning. The objective is to equip students with the capability of using IT to process information effectively in the digital era. The curriculum development guide of the educational authority states that through using technology as a means, students should “actively search for relevant information to address various issues raised in learning and in their daily lives” (Education Bureau, 2012). IT is particularly encouraged for the use of interactive learning.

## **Media literacy and School 2.0 in the Web 2.0 era**

Hong Kong is a technologically advanced city. The household broadband penetration rate is 82.8%, and the mobile phone subscriber rate is 237.3% (Office of Government Chief Information Officer HKSAR, 2014). In total, 96% of Hong Kong’s smartphone users browse the Internet daily on their smartphone. That is the highest rate in Asia. About 4.4 million of the city’s 7 million citizens have Facebook accounts (Go-Global, 2015).

In the 21st century, Hong Kong has followed other advanced countries and cities into the Web 2.0 era. “We media” such as blogs, Facebook, Twitter, micro-blogs, YouTube, Wikipedia, and citizen journalism sites have created a participatory media environment. Today’s students are not only media consumers but also media producers. It is very easy for them to upload their media products onto the Internet. In the new technological environment, students are deeply immersed in both the new and the old media, and need to cultivate media literacy to achieve “critical autonomy.” At the same time, although they have the right to produce media content, they are not considered mature enough to use their communication powers. They need guidance on how to deal with the new communication technologies. Therefore, media education in the Web 2.0 era has an important role in education (Lee, 2010a, 2014). In response to the new technologies, media education, in terms of its basic assumptions, tasks, goals, curricula, and pedagogy, is undergoing a paradigm shift.

As the media environment is undergoing a sea change, schools are facing great challenges. Hong Kong is changing from an industrial society to a knowledge society. Today's primary school students will be tomorrow's knowledge workers. In the new society, young people need to constantly innovate and cultivate high-order thinking skills (Collins & Halverson, 2009). They do not need to learn particular subjects, as in the industrial era, but rather generic skills. Education scholars have pointed out that people in the 21st century need five groups of skills (Partnership for 21st Century Skills, 2008). In addition to "knowledge of core subjects" (English, mathematics, science, history, and economics), "life and career skills," and "twenty-first century themes" (global awareness, financial, business and entrepreneurial literacy, and civic literacy), they need two more: "information, media, and technology skills" (information literacy, media literacy, and ICT literacy) and "learning and innovation skills" (creativity and innovation skills, critical thinking and problem-solving skills, and communication and collaboration skills). This study focuses on the latter two groups of skills. In brief, media literacy and the 4C skills (critical thinking, creativity, communication, and collaboration) are crucial for students to survive in the contemporary society.

As laptop computers and tablets become more popular, using IT for teaching and learning is a natural trend. To cultivate competent knowledge workers in the 21st century, it is impossible to continue the traditional approach of using computers for drill and practice to help learners memorize information for examinations. Newer educational concepts encourage teachers to implement a student-centered approach in open-ended environments that encourage collaborative groups of students to use technology to solve meaningful problems (Morrison & Lowther, 2010; Yelland, 2007). IT can make a difference to student learning when teachers change the way they guide students to use computer technology. It is imperative for educators to update their curricula and pedagogies. Teachers have to change their way of teaching so that they motivate their students to become involved in active participatory learning.

We need to rethink the role of IT in instruction. It is necessary to develop new methods and innovative pedagogies that use computers in the classrooms. This will require a shift in the education paradigm. Schools have to reform as the world moves into the School 2.0 era. The new educational model will have the following characteristics (Collins & Halverson, 2009; Morrison & Lowther, 2010):

### 1. Student-centered instruction

Student-centered instruction emphasizes understanding the world rather than mimicking content. Understanding the world requires students to actively process and manipulate information. They have to observe the world and strive to reduce discrepancies between what they know and what they observe. Students will be motivated to resolve the discrepancies by developing a new understanding (Brooks & Brooks, 1993). They not only try to observe and understand but also think profoundly about different issues.

### 2. Open-ended learning environment

It is important to create an open-ended learning environment that promotes inquiry-based learning, problem-based learning, and project-based learning. Students will have an opportunity to participate in the exploration of knowledge.

### 3. Innovative use of IT

iPad and the Internet will be used to create a convenient, user-friendly, and stimulating learning environment.

### 4. Collaborative learning

Teachers will use instructional processes that facilitate collaboration and the development of communication skills among students. They encourage the students to share learning strategies and views.

### 5. Active search for answers by students

Equipping students with problem-solving skills is important. In the new paradigm, students will be encouraged to think critically and to actively seek solutions to real-world problems. They will be encouraged to find meaning in the information they are given and to apply what they have learned to their everyday lives.

## Educational innovation for the Net Generation

Using new IT to teach media literacy is certainly an educational innovation. This study adopts the innovation theory to examine how school students adopt this new way of learning.

An innovation is commonly defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 1995, p. 11). An innovation is also expected to create a new dimension of performance, meaning, and positive change (Drucker, 1985). According to both Rogers’ and Drucker’s interpretations, newness and improved outcome are the primary features of an innovation. However, recent discussions of innovation theory in the marketing field argue that “innovation is the process of creating and delivering new customer values in the marketplace” (Carlson & Wilmot, 2006, p. 6). According to this interpretation, adding user value is vital to the success of the adoption of an innovation. User value is defined as a product’s or service’s benefits minus its costs. It includes not just tangible benefits but also intangible benefits such as service, convenience, and personal identity. Therefore, user experience is as important as the physical product. According to Carlson and Wilmot (2006), understanding the target subjects’ needs and focusing on value creation are essential to ensuring that an innovation is well received.

In an educational setting, if students see the benefit of the adoption (user value), they will actively engage with the educational innovation. Therefore, it is important to find out who they really are and what they want. To understand the value of a new curriculum to students in the Web 2.0 era, educators must understand the Net Generation. Today, school students are growing up in a digital world. They have some unique characteristics such as living online, a belief in freedom of choice, a love of exploration, and a preference for experiential learning, and they are keen on participation and sharing and looking for fun. Spoon-fed education is what they hate most. Their information-seeking behavior is very different from that of older generations. With strong thinking and investigative skills, they engage with active information searches, and they enjoy interactivity. Refusing just to accept what they are given, they prefer to participate rather than merely observe.

In the information-seeking process, they inquire, discuss, argue, criticize, and ridicule. They often seek information for fun and for personal conversation (Tapscott, 2009). The young students of the post-1990s and the Millennials want to reach out and connect. Talking, sharing, and creating are what they like to do and what they need in an educational environment (Brogan, 2010).

To create value for young people, marketing strategists suggest that marketing and promotion with meaning is the key (Gilbreath, 2010). They suggest that when a promotion strategy is meaningful, people will choose to engage with a product or service that they perceive as valuable. Gilbreath argues that “we are evolving toward a new kind of marketing, something that people choose to engage with, something that offers meaning in exchange for their attention” (p. 6). Successful promotion adds value to people’s lives. In an educational setting, if a new curriculum can create “meaning” and “relevance” for students, it will possibly be well received and will facilitate learning. This study investigates whether the innovative media literacy curriculum mentioned above will match the Net Generation’s needs and learning mode.

## **Media literacy and the 21st century skills learning**

Media literacy in Hong Kong is considered as a life skill which enables young students to critically understand, analyze, use, and influence the media. In the 21st century, young people have become prosumers and they are sophisticated media users. They are leading a media life (Westlund & Bjur, 2014). Being media literate is important for them to become informed and independent citizens as well as competent future knowledge workers.

Canadian media educators put forward several key concepts of media education: (1) the media construct reality; (2) audience negotiate meaning in media; (3) media have commercial, social, and political implications; (4) form and content are closely related in the media; and (5) each medium has a unique aesthetic form (Ontario Ministry of Education, 1989). In the United States, media literacy is regarded as comprising a number of communication competencies, such as the ability to access, analyze, evaluate, and communicate information in a variety of forms (NAMLE, 2016).

Hong Kong media educators synthesized the foreign experience and proposed that a media literate person is supposed to have the following competences (Lee, 2010b, p. 3):

1. Critical awareness of the media influence on individuals and society;
2. Understand the nature and operation of media industry as well as the medium characteristics;
3. Media analytical skill;
4. Critical appreciation of the media;
5. Learn through the media;
6. Creative expression;
7. Media monitoring and media criticism skill;
8. Practice media ethics;
9. Constructively apply what has learned from the media to everyday life.

In the past decade, United Nations Educational Scientific and Cultural Organization (UNESCO) promoted a new concept of media and information literacy (MIL), arguing that in the digital age, media literacy should integrate with information literacy and ICT skills so that people can learn how to handle media messages and information coming from all sources and platforms (Wilson,

Grizzle, Tuazon, Akyempong, & Cheung, 2011). In Hong Kong, media literacy educators also paid attention to this new development and considered that media education has to further integrate with IT use.

Therefore, this study has the following research questions:

*RQ1.* Is it effective to learn media literacy through ITs in schools?

*RQ2.* Can learning media literacy through ITs enhance students' 4C skills?

*RQ3.* What are the advantages and challenges of using ITs, such as laptop computers and iPads, to conduct media literacy training?

## Methodological note

The Shak Chung Shan Memorial Catholic Primary School and the Good Counsel Catholic Primary School in Hong Kong implemented the "21<sup>st</sup> Century Skills Learning: The Creative Information Technology Education Project," which integrated media education with IT. A new online curriculum was designed, and the course was implemented in the Grade 4 and Grade 5 classes. The project was a cross-curricular subject that combined General Studies with Computer Studies. A Web platform was established for posting e-books, curriculum resource materials, students' work, and assignments. Students also used this online platform for class discussions, sharing, and online debates. The students used desktop computers or iPads in the classrooms to access the Web platform and to get online. The students in the two schools had to do assignments at home through the Web platform. At school, the students needed to produce a "one minute news" program in groups and exchange views with fellow students in the partner school.

The Shak Chung Shan Memorial Catholic Primary School played a major role in the initiation of this project, and it keeps on updating this curriculum as the technology has advanced.

A detailed study of the new curriculum in these two schools was carried out. The researcher of this study followed the implementation of this curriculum for five years, from 2009 to 2014. Multi-methods were adopted for data collection. The researcher carried out 14 class observation sessions. A student focus group study and a teacher focus group were conducted. Two student surveys and two teacher surveys were also administered. Each survey included both pretest and posttest segments. In total, 1312 student questionnaires were successfully collected for analysis. The details are listed below:

1. 2009–2010 Student survey pretest  
2009–2010 Teacher survey pretest  
In total, 664 student questionnaires and 10 teacher questionnaires were collected. More than half of the teachers who were in this media literacy team joined the survey.
2. 2011 Student survey posttest  
2011 Teacher survey posttest  
In total, 648 student questionnaires and 8 teacher questionnaires were collected. Half of the teachers who were in this media literacy team joined the survey.
3. 2010–2011 14 class observation sessions
4. 2011 Student focus group study
5. 2011 Program evaluation meetings of the two schools

6. 2011 Sharing Seminar organized by the IT in Education Division of the Education Bureau: Shared curriculum results with other primary schools in Hong Kong
7. 2012 Exchange meetings with mainland China media literacy educators
8. 2013 (11 May) Sharing session at the MIL Seminar in the 21st Century held by Education Bureau and Hong Kong Baptist University
9. 2013 Teacher focus group study: Nine teachers gave updated report on the curriculum
10. 2014 School visit (18 July): Observation and discussion about the latest development of the curriculum

Regarding the surveys, the questionnaires were set in Chinese. Since the targets of the student surveys were primary school students, they know Chinese better than English. The teachers gave them briefing in Cantonese before they filled in the questionnaires. After data analysis, the questions were translated back to English for report writing. The questions were derived from literature review. Many foreign and local media literacy literature clearly outlined the competencies a media literacy person should have. For instance, media literate people should know the characteristics of different media and they should understand the nature and operation of the media industry (Silverblatt, Ferry, & Finan, 1999). They are expected to know that different media organizations have different editorial stands and media messages have commercial and political implications (Ontario Ministry of Education, 1989). The media, especially the online media, have great social influence (Tyner, 2010). Media reality is different from objective reality (Potter, 1998). All these key competences of media literacy were included in the questionnaires for evaluation.

## **The Millennials and media literacy**

The students in Grades 4 and 5 at the Shak Chung Shan Memorial Catholic Primary School and the Good Counsel Catholic Primary School are Millennials, and they are typical of the Net Generation. Although they are only 9 or 10 years old, most of them have extensive experience with computers and the new media. The survey findings show that 33.8% of them are light computer users (less than half an hour a day), 30.6% are medium users (30 to 59 minutes a day), and 35.3% are heavy users (more than an hour a day). It is worth noting that primary school students mainly use the computers for doing homework, playing computer games, chatting, and watching online videos. Our findings show that light computer users usually use the computer to do homework. Medium users use the computer for both work and entertainment, and heavy users mainly use the computer for entertainment.

The survey results indicate that primary school students are experienced IT users. In their everyday lives, they frequently use the computer for work and play. In general, they use the computer for learning. Therefore, using IT for instruction in the School 2.0 era matches the existing media habits and needs of the Millennials.

Survey results offer evidence to the effectiveness of the media literacy curriculum. After receiving the media literacy training, the primary school students have a sophisticated understanding of the media. In all, 71% are aware of the great influence that media has on them, and 62.9% understand the profound influence that media has on society; 79.8% students say that they know every newspaper has its own editorial stance, and 80.9% say that they understand the medium format characteristics of the mass media. Only 15.6% say that they do not know how news is produced,

**Table 1.** Students' response to the statement "I know how to distinguish fact from opinion" (student survey result).

	Pretest (%)	Posttest (%)	Total (%)
Highly agree	26.5	28.0	27.2
Agree	39.5	45.4	42.0
Neutral	23.2	19.1	21.4
Disagree	5.6	5.8	5.7
Highly disagree	5.3	1.7	3.7
Total	100.1 (N = 664)	100.0 (N = 518)	100.1 (N = 1182)

\*Cramer's V = .112,  $p < .01$ .

and 7.5% are not able to distinguish fact from opinion. Moreover, only 5.8% think that they still do not know how to select good media for consumption.

The pretest and posttest comparison indicates that students' media literacy is enhanced by the media literacy course, especially in the following aspects:

1. Awareness of the media's influence on individuals in everyday life;
2. Recognition that media coverage is not necessarily true;
3. Awareness that there are bad media in Hong Kong;
4. An understanding of how news is produced;
5. Ability to distinguish fact from opinion (see Table 1);
6. An understanding of the characteristics of each medium;
7. Recognition that every newspaper has its own editorial stance (see Table 2);
8. Recognition that online information is not reliable;
9. An understanding of media ethics.

The teacher survey echoes the student survey results. About 85% teachers agree that the media education curriculum has helped students avoid being affected by negative media messages. All of the teachers who participated in the survey state that media education has enabled students to fully enjoy the fun of the media. And they all consider that media education is useful in assisting students in understanding the function and operation of the media. In all, 95% of them say that the media literacy guides the students to learn how to analyze media messages and their underlying values. The curriculum can enhance students' civic consciousness as well.

In the evaluation meetings, the teachers unanimously say that the iPads and the online platform motivate the students to acquire media literacy because it is fun. The student feedback is very favorable and the learning effect is desirable. The students are asked to go back home to do online assignments, discuss media issues with fellow students, and do class preparation. The Web platform is able to attract them to explore the media on their own. It encourages interactive learning and self-learning. The teachers say many students have iPads and iPhones at their home, so these new media technologies are no strangers to them. They are comfortable to use. In a progress report to the Education Bureau, it is stated that the teachers recognize that the media education curriculum is able to enhance students' media literacy. The students are more sophisticated in media analysis and media production (Shak Chung Shan Memorial Catholic Primary School, 2010).

In the sharing seminar, teachers point out that after the media literacy classes, most of the students demonstrate their understanding about the media construct reality. Students enthusiastically discuss in class about how different newspapers report a news issue in a very different way.



**Table 2.** Students' response to the statement "I think every newspaper has its own editorial stance" (student survey result).

	Pretest (%)	Posttest (%)	Total (%)
Highly agree	32.4	37.5	34.6
Agree	39.6	42.3	40.8
Neutral	19.4	12.7	16.5
Disagree	3.5	5.0	4.1
Highly disagree	5.1	2.5	4.0
Total	100.0 (N=664)	100.0 (N=518)	100.0 (N=1182)

\*Cramer's  $V = .121$ ,  $p < .01$ .

**Table 3.** Self-evaluation of 4C skills (student survey result).

	"My critical thinking skills are good." (%)	"I have good communication skills." (%)	"I am a creative person." (%)	"I know how to work together with people." (%)	"I know what media education is." (%)
Highly agree	19.5	19.5	23.9	22.4	24.9
Agree	38.6	37.6	34.0	43.1	45.8
Neutral	26.4	26.6	28.4	22.2	20.8
Disagree	9.1	11.6	9.1	7.1	4.8
Highly Disagree	6.4	4.6	4.6	5.2	3.7
Total	100.0 (N=518)	99.9 (N=518)	100.0 (N=518)	100.0 (N=518)	100.0 (N=518)

## Enhancing 4C skills of the students

The focus group results show that students believe they acquired critical thinking skills from the project analyzing media products. After the project, they knew that news is subjective and news stories might not be true; the Internet is a rich source of information, but one cannot blindly accept everything seen or read online, and that all TV commercials have a marketing agenda. Moreover, TV commercials carry negative values that may not be suitable for children. The focus group members said they were smarter after taking the media literacy course.

The survey results suggest that students have confidence in their 4C skills. Table 3 shows that after the media literacy training, only 15.5% students do not agree that their critical thinking skills are good and only 13.7% do not think that they are creative persons. Only 12.3% students think that they do not do well at team work, and 16.2% doubt their communication skills. Overall, they have positive and high opinions about themselves. A comparison of the pretest and posttest data suggests that this media literacy curriculum is particularly useful in enhancing students' creative skills.

The Shak Chung Shan Primary School and the Good Counsel Catholic Primary School are progressive schools. They put a great emphasis on enhancing students' 4C skills. From time to time, teachers mention these concepts in class. Moreover, before the students filled in the survey questionnaires, the teachers explained to them about the meaning of the questions. Hence, they were capable of conducting self-evaluation on their 4C capability.

From Table 4, we can see that the findings of the teacher pretest and posttest surveys indicate that all the 4C skills of the students had been enhanced. After media literacy training, the teachers remark that students have been more critical in thinking and better in communication. The students

**Table 4.** Evaluation of 4C skills of students (teacher survey result).

	"Their critical thinking skills are good." (%)	"They have good communication skills." (%)	"They are creative young people." (%)	"They know how to work together with people." (%)	"I am familiar with media education" (%)
	Pretest/posttest	Pretest/posttest	Pretest/posttest	Pretest/posttest	Pretest/posttest
Highly agree	0/25	0/25	0/25	0/25	0/0
Agree	60/75	20/50	20/25	40/50	0/50
Neutral	0/0	0/25	20/50	0/25	40/50
Disagree	40/0	80/0	60/0	60/0	60/0
Highly disagree	0/0	0/0	0/0	0/0	0/0
Total	100.0 (N = 10/8)	99.9 (N = 10/8)	100.0 (N = 10/8)	100.0 (N = 10/8)	100.0 (N = 10/8)

show their remarkable talent in creativity. All the students have to participate in the "one minute news video production." The students show great enthusiasm in media production and they are willing to give up their recess time to do the video project. They do research, discuss the theme, analyze the issue from different perspectives, and work in a team to write the script and shoot the pictures. One of the teachers even comments that he is shocked to see the creative outputs of the students. It is a happy surprise.

It is interesting to find that the amount of time spent on a computer is related to students' self-evaluation of their 4C skills. Among the students who participated in this study, medium computer users show the highest confidence in their 4C capabilities. They also think that they understand media education. Light computer users rank themselves lower, whereas heavy computer users, who use a computer for more than an hour a day, have the lowest self-evaluation scores on their 4C skills. This may be because this group mainly uses computers for entertainment rather than for learning.

## Value creation of the media literacy project

The media literacy project in these two primary schools encompasses the General Studies and Computer Studies subjects. The curriculum is taught by teachers coming from both subjects. The results of the class observation suggest that the school children are very excited about the media literacy curriculum and they enthusiastically participate in class discussion and sharing. They are comfortable interacting with the school Web platform and they are curious about using the laptop computers and iPads.

The survey findings also show that 67.6% students consider the curriculum novel and interesting and 58.8% think that it is practical. The majority (91.9%) of the students disagree with the statement that the curriculum is boring and 86.5% of the students disagree with the statement that they are not able to handle it (see Table 5). Overall, 75.9% of the students have a positive opinion about the project and only 8.3% are negative about it.

The class observation results suggest that the teaching team is well prepared to teach the curriculum. Before the class, all of the teaching materials are uploaded to the Web platform. At the beginning of each class, the teacher usually provides some basic information and knowledge about the media issues being taught, and then they open up the class for free discussion. The students are guided to use the school laptop computers or iPads and to go online to watch videos that are related

**Table 5.** Perception of the media literacy curriculum (student survey result).

	Agree (%)	Disagree (%)	Total
Novel and interesting	67.6	32.4	100.0 (N=518)
Practical	58.7	41.3	100.0 (N=518)
Don't know the content	13.7	86.3	100.0 (N=518)
Boring and troublesome	8.1	91.9	100.0 (N=518)
Worry about not being able to handle it	13.5	86.5	100.0 (N=518)

to the issues discussed. Very often, the videos are on YouTube, and the students are excited to watch them. After watching the short videos, the students discuss and debate the issues in groups. Then, each group uploads their discussion results to the Web. Everyone in the class can then share the other groups' views, and the teacher leads a class discussion. The students greatly enjoyed the immediacy of sharing and problem solving that this class arrangement allows.

The class observations also reveal that when the teachers are teaching these classes, they do not use the traditional top-down way of instruction. They try very hard to encourage students to take the initiative in asking and answering questions. The teachers in this project emphasize interactive pedagogy. They use IT as a tool to turn the class instruction from "teaching" into "learning." Students are encouraged to seek meaningful answers on various controversial media issues.

Students are very enthusiastic about this student-centered and inquiry-based learning mode. They find the open-ended learning environment refreshing. They are very happy to be allowed to "play" with computers and iPads in the classroom. To them, the computer is now not only a tool but also a teacher and a toy.

The students particularly enjoy the free discussion in class. In traditional classes in Hong Kong, school children seldom have opportunities to talk freely. In the media literacy class, they are permitted to chat and talk. They like group discussion very much, because group members can exchange views and work together to seek answers to the teacher's questions. They can also compare their solutions to those presented by other groups. In this way, they can take a look at an issue from multiple perspectives. To these school children, collaboration learning is also a kind of competition. They can see whether their views are more logical or superior to the views of others. They like this way of learning because they can explore ideas and discover answers by themselves. They have a sense of freedom in the classroom. In the class, the students are also taught to produce a short film on current affairs. They are given a free hand to choose topics and they learn how to creatively express themselves. The "one minute news" assignment project teaches them a variety of video production skills. The students have a sense of ownership of their work and they feel empowered. They are learning by doing and exploring knowledge together. In the evaluation meeting, the teachers express that this assignment has a great value in motivating students to conduct active learning.

According to the discussion in the focus group, the students are attracted to this curriculum because it allows them to "play" on laptop computers/iPads, have free discussions in class, and watch short videos. In particular, the video watching activity made the class interesting and lively. Apparently, multimedia is very appealing to these school children.

As all of the primary school students participating in this project belong to the Net Generation, they are intimate with IT. After taking the course, only 8.7% of the students say they do not feel curious and excited about using IT to learn. Only 17% of them feel it is inconvenient to

do homework online, and 7.3% do not enjoy watching videos in class. Most of the students are enthusiastic about learning through IT. About 70% of the students believe that it is really interesting to use new media for studying.

In the first year of the project, all of the students used laptop computers. In the second year, the Shak Chung Shan Memorial Catholic Primary School bought iPads for the students' use. The survey results show that the number of students who think that using IT for learning is interesting increased from 67.6% to 76.8% after the introduction of iPads. This change is also evident in the class observation. According to the students, the iPads are much more advanced and fun than laptop computers.

The analysis of the focus group shows that the students are excited about the course because it is interesting, practical, and useful. They can apply what they learn in their everyday lives by critically watching TV commercials and avoiding being manipulated by them. They recognize that they have acquired not only media literacy and 4C skills but also computer literacy. To them, this project is meaningful and relevant, and they hope to take this course every year.

In the teacher focus group, the school teachers showed great enthusiasm in teaching media literacy because they saw the curriculum matched their students' need. After 4 years of implementing the curriculum and the increasing popularity of mobile device, the students have gotten used to working on iPads. The schools also have brought more iPads and hence achieved the goal of one student one device.

The updated sharing from teachers reveals that teachers are worried about the "digital divide" among them and the students. It seems that young students have become very sophisticated and frequent media prosumers. They are particularly strong in media and information search skill and have rich media experience. Therefore, teachers have to organize special workshops among themselves to keep up to date about media development.

As Hong Kong is moving into the digital era, they noticed that the school children spent more and more time on the digital media. Some teachers pointed out that their students did not read newspapers but watched the online animated news which is entertainment-oriented. They thought school children need guidance to deal with the new media. Media literacy skill was regarded by them as an essential life skill in the digital age.

## **Challenges and opportunities**

Using IT to teach media literacy is a new frontier. In the process, teachers are facing a number of challenges and are working together to seek solutions.

The first great challenge is to handle technical problems. In the class, the young school children use laptop computers and iPads to log onto the Web platform to watch videos, participate in discussions, do homework, and share their views. As they are not familiar with the functions of the school laptop computers and iPads, sometimes they have difficulties in logging in. Very often, they also go to the wrong webpage and delete other students' work. The teachers and technicians have to patiently give clear instructions and guide the students step by step. To overcome the technical hurdles, the teachers must arrange special classes to brief the students about equipment use.

Second, there is a "dual teacher" problem. In the traditional class, there is only one teacher. However in an IT class, the laptop computer or iPad becomes another teacher. Both teachers guide students in exploring knowledge. As the two teachers may attract students' attention at the same time, a concentration problem arises. The class observations carried out in this study show that when the real teacher is lecturing, some students are still operating their iPads. Therefore, the

teacher has to set rules to regulate students' computer use in the classroom. Interestingly, the students in the focus group say that they like the real teacher more because he or she is lively and cares for them. The interaction between the real teacher and the students is spontaneous and interesting, whereas the information from the computer teacher is fixed and static. Therefore, in their opinion, the computer teacher could not replace the real teacher. Apparently, a teacher's personality, knowledge, and teaching style are very influential. That is why some people comment that the "teacher is key" in IT classes (Sutherland, Robertson, & John, 2009).

Third, teacher development is crucial for the successful use of IT to teach media literacy. They have to be well equipped before they start the course. They need to be media literate and familiar with media education, and they also need to be experienced new media users and know how to develop an online media literacy curriculum. They also have to be familiar with the full function of the iPad and Internet operation. In other words, media teachers have to master both media literacy and IT skills. This is a big challenge, and special teacher development courses should be arranged for them.

Fourth, in primary schools it is difficult to practice student-centered pedagogy. The notion of "student-centered" means letting students initiate learning. In this project, the teachers tried very hard to crystallize this ideal, although there were several constraints. The students, aged less than 11, were too young. Not all of them were able to handle the discussion in a sophisticated way. Their language skills (understanding English and Putonghua) were also limited. They were unable to watch relevant foreign short videos. Teachers had to spend more time searching for suitable online video clips and patiently providing discussion guidance in the classroom.

Fifth, classroom management is important. The Millennials love exploring, participating, sharing, and talking. The young children in this study sometimes became overexcited and lost their discipline. They left their seats and walked around, laughing and shouting. Some of them went online secretly. As two or three students shared one computer or iPad in the classroom, they would compete for control of the device and arguments developed. If the teacher uses traditional means of controlling them, the children will lose their sense of autonomy in the learning process. Yet if the teacher does not discipline the class, it will become out of control. Therefore, teachers need to be very careful to strike the right balance.

Sixth, teachers have to handle ideological issues. Teachers and parents have their own values, world views, and ideologies. Their judgment and views may influence the judgment of the young students. Teachers reflect that very often they would hold back their values and let the students have a free discussion and debate online with their peers. It is no good to dump down their ideas to the students and hinder their interactive cyber exchange.

Seventh, the project needs to find way to have a sustainable development. When the Quality Education Funding runs out, the teachers need the support of the school management to provide resources to keep it going. The best way to get support is to make the program appealing to students and parents. The teachers also need to update the curriculum from time to time. For example, the curriculum content has to move from mass media analysis to social media analysis. The concept of media literacy has been extended from media literacy to "media and information literacy."

## Conclusion

The project examined in this study, "21<sup>st</sup> Century Skills Learning: The Creative Information Technology Education Project," shows that teaching media literacy through IT in the classroom setting is feasible and desirable. The new pedagogic approach and the open-ended learning

environment match the style and needs of the Net Generation. This generation of students is highly motivated by the new media (particularly iPads) and shows great interest in the media literacy curriculum.

Using new IT to teach media education is effective because it has the following components: (1) participatory interactivity, (2) immediate discussion and sharing, (3) the fun of the new media (e.g., iPad touching), (4) active learning by exploring, (5) students' sense of autonomy in the learning process, and (6) multimedia curriculum materials. This study finds that the innovative curriculum is regarded by the Net-Generation students as valuable, meaningful, and relevant.

The new curriculum has raised a number of challenges to media literacy teaching. Despite this, findings indicate that teachers who are involved in the projects are excited about the project and can find solutions to meet the challenges.

As the digital technologies advance, people are now living in a networked society (Rainie & Wellman, 2012). The Net-Generation school students spend more time on the digital media in their everyday lives. In the networked era, networked communication technologies are becoming part of the mobile social environment. The current school curriculum and education are already outdated and need a paradigm shift. Williamson (2013) predicted that "a wiki world of new learning encompasses a move away from seeing curriculum as a core canon or central body of content to seeing curriculum as hyperlinked with networked digital media, popular culture, and everyday interactions" (p. 8). The future of schooling itself will be a network-based distribution system of learning rather than a strictly routinized series of teaching tasks. In Hong Kong, school teachers are aware of the change. This study shows that, on the one hand, teachers are working hard to cultivate school children's MIL so that they can conduct active learning. On the other hand, they are using IT to provide an open learning platform so that students can explore knowledge in a free and collaborative way. As technologies keep on changing, the educational sector has to continue to innovate too.

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