

## APPENDICES

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## APPENDIX A

### Basic Education Standards

(Abridged from the office of the basic education commission, 2006)

#### Standards of Learner Quality

##### **Standard 1 : Learners should have virtues, morality and desirable values.**

- 1.1 Discipline, responsibility and observation of basic precepts of their religion.
- 1.2 Honesty.
- 1.3 Sense of gratitude.
- 1.4 Loving kindness, generosity, and willingness to sacrifice to the common good.
- 1.5 Thriftiness and keenness to engage in worthwhile use of personal and private resources.
- 1.6 Pride in Thai identity, appreciation of Thai wisdom, and loyalty toward Thainess and preservation of Thai identity.

##### **Standard 2 : Learners should be conscious of environmental preservation and development.**

- 2.1 Appreciation of the environment and awareness of impacts from environmental changes.
- 2.2 Participation in activities/projects of environmental preservation and development.

##### **Standard 3 : Learners should have a working skill, love to work, be able to work with others and have a good attitude toward honest occupations.**

- 3.1 Skills in managing and completing work.
- 3.2 Perseverance, diligence, endurance and mindfulness in working.
- 3.3 Working with happiness, developing their work, and being proud of their own work.
- 3.4 Working well with others.

3.5 Good attitude toward honest occupations, and searching for knowledge related to their interested occupations.

**Standard 4 : Learners should have abilities to think analytically and synthetically and a good sense of judgment; be creative and thoughtful; and have a vision.**

4.1 Ability to think analytically, synthetically, conceptually, systematically and holistically.

4.2 Ability to predict, set a goal and a method of decision making.

4.3 Evaluating and making a decision; and calmly solving a problem.

4.4 Creativity, optimism, and imaginativeness.

**Standard 5 : Learners should have necessary knowledge and skills as prescribed by curricula.**

5.1 Average achievement level of learning up to set criteria.

5.2 Average national Scholastic Aptitude Test (SAT) scores up to set criteria.

5.3 Ability to communicate through speaking, writing, or other means.

5.4 Ability to communicate through both Thai and foreign languages.

5.5 Ability to use IT technology to develop learning.

**Standard 6 : Learners should have a skill for self-learning and love to learn and self-develop continuously.**

6.1 Love of reading, writing and listening; knowing how to ask a question to learn reasons.

6.2 Being interested in seeking knowledge from different sources; ability to use a library, other knowledge sources, and media both inside and outside school.

6.3 Having their own learning methods, being able to learn with others, and loving to come to school.

**Standard 7 : Learners should have healthy habits, and good physical and mental health.**

- 7.1 Having healthy habits in taking care of their health and taking exercise regularly.
- 7.2 Having weight, height, and physical capacity up to set criteria.
- 7.3 Protecting themselves from harmful addictive substances and avoid conditions of risk related to violence, disease, accidents, and sexual problems.
- 7.4 Being confident to self-express in an appropriate way, and respect for others.
- 7.5 Having good human relationship with friends, teachers, and others.

**Standard 8 : Learners should have a sense of aesthetics and a disposition for art, music and sport.**

- 8.1 Appreciating art, participating in artistic activities, and creating artistic works.
- 8.2 Appreciating music/drama, participating in musical or dramatic activities, and creating musical or dramatic works.
- 8.3 Appreciating sport/recreation, participating in sport/recreational activities, and creating sport/recreational works.

**Standard 9 : Teachers should have virtues, morality, degrees/knowledge and competence relevant to their responsibilities; maintain steady self-development; and be able to get along with communities. A sufficient number of teachers should be available.**

- 9.1 Having virtues and morality, and behaving in accordance with a professional code of ethics.
- 9.2 Good relationship with learners, guardians, and communities.
- 9.3 Determination and devotion in teaching and developing learners.
- 9.4 Having a quest for new knowledge and techniques; listening to opinions, being open-minded and accepting changes.
- 9.5 Bachelor degree in education or equivalent.

9.6 Teaching subjects relevant to their major/minor, or aptitude.

9.7 There should be a sufficient number (of teachers and supporting staffs).



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## APPENDIX B

### A letter to seek permission for conducting the research project in the school

College of Arts Media and Technology

Chiang Mai University

239 Hua Keaw Road

Tambon Suthep, Ampur Maung

Chiang Mai 50200

July 6<sup>th</sup>, 2011

Title: Seeking permission for conducting a research project

Dear Director of \_\_\_\_\_ High School

Attachment papers: The research proposal and a questionnaire

Amarin Tawata, student code 512151006, is taking PhD program for knowledge management at college of arts media and technology (CAMT), Chiang Mai University and conducting a research project entitling “A self-directed learning (SDL) improvement system for high school students’ Internet use.

With this, CAMT is seeking your permission for the student to collect data for his research project as a thesis. He’d like to collect data of teachers from eight learning areas and students who are joining the project of “Creating media as video in a school”. For any detail, you can contact Amarin Tawata with his mobile phone (\_\_\_\_\_).

Please consider for permission

Sincerely yours,

(Dr. Pitipong Yodmongkol)

Vice Dean of Research and Foreign Affair

Acting as the Dean of CAMT

## APPENDIX C

### A letter to implement the SDL improvement system for students' Internet use from the school director

\_\_\_\_\_ High School

Chiang Rai

2012, February 29<sup>th</sup>

Title: Implementation of the self-directed learning improvement system for students' Internet use

Dear Dr. Pitipong Yodmongkol

Amarin Tawata, a PhD student of Knowledge management, College of Art Media and Technology, Chiang Mai University, had collected data and developed a self-directed learning (SDL) improvement system for students' Internet use in \_\_\_\_\_ High School in the first term of academic year 2011. Eight representative teachers from eight learning area had participated to develop the SDL improvement system. Additionally, they had learned following these.

1. SDL improvement of students leads to Internet use for learning or creative work
2. SDL improvement system matched with teachers' regular work as standards of the internal assurance. Teachers learned to collect student data, analyzing the data to be information, and applying information as knowledge. With the knowledge, teachers learned how to conduct research in a classroom. These are consistency of operation.
3. The eight teachers learned a way for conducting an activity to improve SDL for students' Internet use.
4. The teachers and participated students learned how to do a short film activity as content of a learning area. This supports students to learn from the Internet.

The information above was sent to you to inform and consider for proceeding.

Sincerely yours

(  
The director of \_\_\_\_\_ High School

## APPENDIX D

### Questions in the focus group

Questions following the ecological system of students' Internet use

1. How did the school, the parents, and the community support students' Internet use?
2. Why did they support students' Internet use?
3. How did they cooperate to support students' Internet use?
4. How did the Internet impact to students?

Questions following the ecological system of students' Internet use

1. How did the teachers take responsibilities for students' Internet use?
2. Can the teachers improve the students' Internet use?

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## APPENDIX E

### The questionnaire of students' leisure time

#### Part 1: Personal information

Directions: Please WRITE IN or CHECK one answer for each of the following questions in this part.

1. Name \_\_\_\_\_ Last name \_\_\_\_\_ (Not including for analyzing)
2. Age \_\_\_\_\_
3. Gender  Male  Female
4. Levels of education \_\_\_\_\_

#### Part 2: Students' activities in leisure time

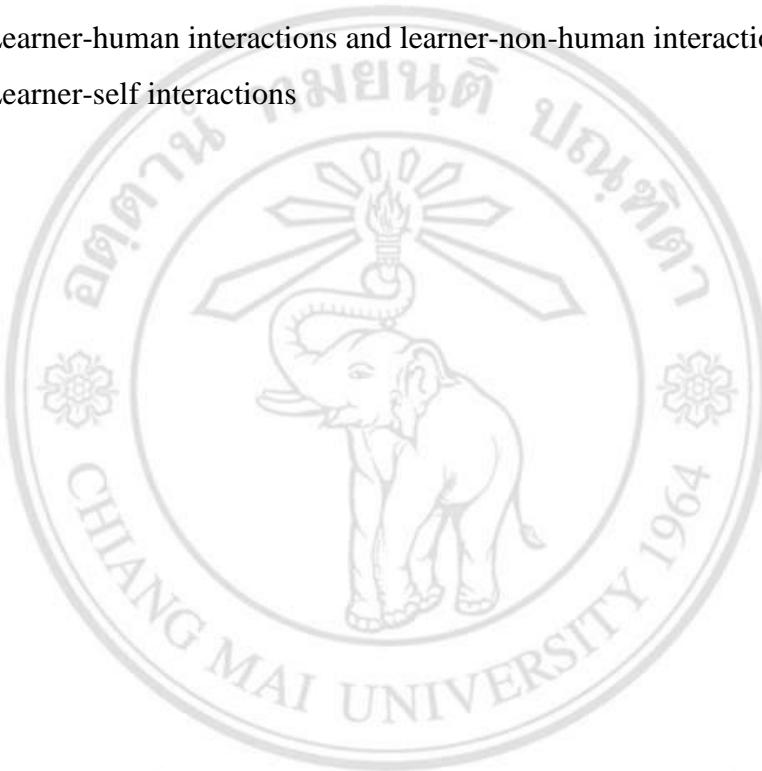
Directions: Please CHECK Yes or No for your activities in leisure time.

Activities for Students' Leisure time	Yes	No
Reading		
Playing sports		
Helping parents and/or care givers' work		
Doing housework		
Doing part-time work		
Learning on the Internet		
Playing online, computer, and video games		
Listening music and/or watching movie on the Internet		
Using social network sites		
Communication on the Internet		
Watching television, VCD, VDO		
Listening radio and/or music		
Getting with peers		
Others (Please specify) _____		

## APPENDIX F

### Questions for focus group to see students' interactions of online learning

1. What were the actions of students for interactions?
  - Learner-instruction interactions
  - Learner-human interactions and learner-non-human interactions
  - Learner-self interactions



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## APPENDIX G

### Questions for focus group about advantages and disadvantages to students

1. Did the students use the Internet for this activity?
2. What are the advantages to the students?
3. What are the disadvantages to the students?

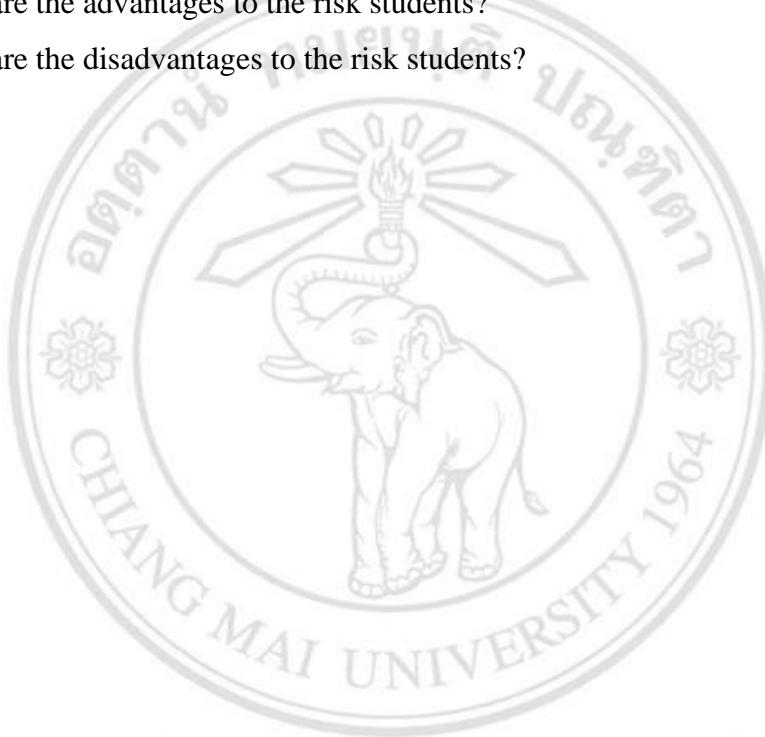


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## APPENDIX H

### Questions for triangulation interview with the teachers, the leading students, and the risk students in each group

1. Did the risk students use the Internet for this activity?
2. What are the advantages to the risk students?
3. What are the disadvantages to the risk students?



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## APPENDIX I

### An article in the International Journal of Assessment and Evaluation

Volume 21, 2014

## Adopting Short Film Production as a Tool for Leisure-Time Learning by Digital Natives

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Pitipong Yodmongkol, Chiang Mai University, Thailand  
Nopasit Chakpitak, Chiang Mai University, Thailand  
Pradon Sureephong, Chiang Mai University, Thailand

*Abstract: At present, high school students, as digital natives, generally like to use digital technologies. This creates an opportunity to further their learning using digital technologies during their leisure time. This study designed short film production as a learning activity by using digital technologies. The short film production was followed e-learning interactions. The study investigated how short film production impacted these interactions (human- and non-human-interactions) by means of triangulation interviews with participating students to explore their active learning. The results showed that the participating students took active roles in using technology for learning and learning technology use. The short film productions led to student-human interactions (between students and other humans) in online and offline settings, as well as student-non-human interactions, a term which refers to students' interactions with content and technology interfaces to fulfil learning purposes. Further, students who completed the activity did not turn off their learning when not using digital technologies. In addition, the short film production activity can be utilized to improve at-risk students' learning. These students, who generally do not like to study in the classroom but who do like spending a lot of time on digital entertainment, became active learners as a result of the activity and even acted as the leaders of their groups for the short film activity.*

*Keywords:* Short film production, E-learning interactions, Digital natives, Active learning

### Introduction

Digital natives are people born into a digital world, surrounded by digital technologies such as computers and the Internet, video games, mobile phones and smartphones, digital cameras and other electronic media devices; thus, they have come to use digital technologies at an early age (Prensky 2001). High school students can be identified as digital natives, in that they were surrounded by digital technologies and adopted technological innovation at their early age (Greenfield & Subrahmanyam 2003). As Subrahmanyam and Smahel (2011, 1–13) have noted, in the USA, Canada, Hungary, the Czech Republic, and the UK, the majority of young people who aged between 12 and 18 used digital technologies. High school students' digital activities mainly relate to applications on the Internet, such as social networking sites, instant messaging, e-mail, browsing websites, and so on.

Digital technologies that surround students can support student learning both in the mainstream education system and in the students' own leisure time. Therefore, schools often make efforts to provide these digital technologies like computers and the Internet to their students for learning purposes. **These technologies can efficiently deliver learning content and a channel to connect between students and their peers, teachers, and external experts.** These technologies can be integrated into school practices for learning activities (De Koster, Kuipert, and Volmant 2011). Students can also use them to find information and solve problems in their daily life (Timothy et al. 2010).

Teachers' new practice that concerned students' digital technology use is required in the present. Teachers take responsibility to improve students' learning. This includes students' digital technology use for learning in leisure time. Digital technologies lead to students' opportunities for learning. However, Huffaker and Calvert (2003) argued that students use digital technologies for academic purpose only for finishing their homework, and they prefer using technologies for entertainment in their leisure time. Students spend an average of six to eight hours a day for digital entertainment activities (Roberts et al. 1999). With students' opportunities for learning by using digital technology, teachers can create a learning activity for student leisure time. In this study, short film production that concerned digital

technology use was adopted to improve students' learning by using digital technology in their leisure time.

Short film production is an effective active learning approach for high school students (Kabadayi 2012). With short film production, students discover and learn on their own in learning goal. Teachers can act as a facilitator to ensure that the content of students' short films relate to target subject matter.

Short film production is a task ideally designed to foster learning among digital natives. It also affords students the chance to learn about the technologies involved. At present, short film production and distribution generally rely heavily on digital technologies, for which high school students often have a facility and affinity. Short films are often presented on the Internet, as is instructional material about short film production that can be useful for students and teachers. Sundquist (2010) has discussed examples of short films and instructions on how to produce them presented on websites such as YouTube. Students can also find learning content, learning sources and online experts for tasks related to making short films, such as creating storyboards, developing a shooting plan, sourcing locations, using cameras, handling actors, editing, adding effects, and so on, as well as samples of short films created using these methods.

## Theoretical Framework

Using digital technologies to meet a learning purpose can be referred to as 'e-learning' (Alhabshi 2004). With e-learning, students may use digital technology to interact with teachers, other students, and online experts. This delivers students' interactive as learner-centred approach. Students can integrate ideas and concepts, engage in problem-solving, and develop critical and active thinking skills (Hrastinski 2009). E-learning can also lead students to share with others in a learning activity.

Educators wishing to adopt e-learning should consider students' interactions (Moore 1989), which shed light on the degree of the students' active learning (Pop 2011; Huffaker and Calvert 2003). The concept of active learning is based on the insight that the learning process is often more important than the learning product. It can be conceived as interactions to achieve a specific learning purpose. Students interact with people via social activities (Hrastinski 2009) to meet their learning purpose. For example, they use digital technologies to communicate with teachers, peers, and experts online. In addition to interactions, the learning process also involves a reading process, in which students interact with content (Hillman, Willis, and Gunawardena 1994). Students can access online learning content by using digital technologies in anywhere and anytime.

E-learning interactions, then, comprise both 'student–human interactions' and 'student–non-human interactions'. In terms of the former, which constitute interactions between students and other humans, we should consider student–teacher, student–student, and student–other people interactions; they may also occur online or offline. In an online setting, student–human interactions can occur in a synchronous or an asynchronous way. Student–teacher interactions involve motivating and stimulating the learner and giving students learning content to clarify (Moore 1989). They can be divided into 'task-oriented interactions' and 'social interactions' (Jung et al. 2002). In task-oriented interactions, students interact with teachers only insofar as required to achieve their learning purpose, whereas in social interactions, teachers encourage students to achieve learning. Student–student interactions involve students sharing ideas and learning materials amongst themselves to meet learning goals (Jung et al. 2002). Finally, student–other people interactions involve students communicating with people outside the class, such as online experts to meet learning goals (Bonk and King 1998).

Student–non-human interactions can be broken down into student–content interactions and student–interface interactions. The former involve intellectually interacting with learning content, and the latter, with the medium in which that content is produced. When digital content is the content in question, these interactions can shed light on the students' technology use and lead to technological learning.

## Purpose of the Study

This study adopted a short film production task incorporating consideration of interactions (both student–human and –non-human, online and off) in the e-learning context in order to promote e-learning among high school students in their leisure time. That is, the study investigated how short film production affected high school students' e-learning, as determined by interviews with the students, divided into three groups by performance: 'leading students', who were doing well academically 'average students'; and 'at-risk students', who were considered to spend a lot of time on digital entertainment and have poor study outcomes.

## Method

### Site

The selected school in which this study was carried out is a high school in the northern region of Thailand. The school supports students' digital technology use for learning by following ICT policies and plans in Thailand, and meets the standards of the Thai Ministry of Education for information and communication technology by providing 100 computers connected to the Internet for 900 students. It also provides wireless Internet 24 hours a day; therefore, the students, 80 percent of whom have laptop computers, can bring them to school to connect to the Internet, which they do on both weekdays and weekends.

The students in this school like to use digital technologies for entertainment. They download music, movies, and games from the Internet. They especially like to use social networking sites for entertainment. Therefore, the school has issued rules for Internet use. It does not allow students to download music or movies or to play online games. It has also tried to ask for students' cooperation in not using social networking sites during school hours; however, students' Internet use was not monitored, and they ignored the rule. The students' Internet use consumed a lot of Internet bandwidth, leading to slow Internet speeds, and in the second semester of 2010 school administrators issued a policy prohibiting students from bringing their laptops to school. However, the school cancelled the policy later in the semester because of student complaints.

This project was supported by the Thai Red Cross Society, which aims to create activities for student development and prevent risk behaviour in students' leisure time. The Thai Red Cross donated a digital camera and a laptop to the school to support short film production. This study presents the results of a pilot project on the use of a short film production task to be completed in the students' leisure time.

### Participating Teachers and Students

Eight teachers from each learning area in the school were selected to join this project, based upon the recommendations of the school director. The eight learning areas are as follows: Thai Language; Mathematics; Science; Social Studies; Religion and Culture; Health and Physical Education; Art; Occupations and Technology; and Foreign Languages.

Students were informed by the participating teachers about the short film production activity and were invited to join voluntarily. In all, 75 students participated; they were divided into eight groups to produce short films for each of the eight learning areas. In each group, a teacher acted as a facilitator. Each group contained a leading student, multiple average students, and an at-risk student. As mentioned above, the at-risk students were the ones with a learning problem, namely that they spent too much time on digital entertainment and had poor study outcomes.

The participating teachers and students were introduced to the phases of the short film production activity as shown in Table 1 by experts from Chiang Mai University. As well, the experts presented some websites to be consulted as sources of knowledge Thaishortfilm (<http://www.thaishortfilm.com>), Krupu ([http://www.krupu.com/smedu/?page\\_id=1770](http://www.krupu.com/smedu/?page_id=1770)), Clipmass (<http://www.clipmass.com/amateur-video>), and Shortfilmtheater (<http://shortfilmtheater.blogspot.com>). Students were able to learn from these websites about shooting film and using a computer program to edit their films and add special effects. When this project was finished, the participating teachers and students were provided with certificates of participation by the Thai Red Cross Society.

### Short Film Production

Definitions of 'short films' may vary. They can be between a few seconds and one hour long (Sundquist 2010); moreover, they come in many genres, such as fiction, documentary, experimental, animation, and video-art (Kabadayi 2012; Sundquist 2010). Due to these unclear definitions and expectations, producers of short films have space to create and innovate artistically and technically (Sundquist 2010). In educational terms, creating short films can provide students with the opportunity to learn about subject matter, surroundings, and events.

Short film production can be divided into three parts: pre-production, production, and post-production (Rea and Irving 2010). First, a script providing a moment-to-moment description of the events of the short film should be developed. Then, pre-production can be conducted; this includes tasks like developing a storyboard, considering art, creating a schedule, looking for locations, and preparing

equipment. Production involves filming the actors performing the script. Finally, post-production involves tasks like editing, adding effects, and distribution.

The short film production activity conducted for this study took place over one school term, or about three months. As shown in Table 1, the activity was designed to elicit e-learning interactions so that they could be investigated.

Table 1: The Design of the Short Film Production Activity

<i>Phases of Production</i>	<i>E-learning Interactions</i>
1. Writing a script, storyboards, and a screenplay for each learning area	<ul style="list-style-type: none"> <li>- Interactions with interface and learning content on the Internet</li> <li>- Interactions with teachers, group members and experts in the community</li> </ul>
2. Scheduling short film production and allocating tasks to group members	<ul style="list-style-type: none"> <li>- Interactions with teachers and group members</li> </ul>
3. Selecting locations and shooting short films	<ul style="list-style-type: none"> <li>- Interactions with the interface and learning content on the Internet</li> <li>- Interactions with teachers, group members and experts in the community</li> </ul>
4. Editing and adding effects	<ul style="list-style-type: none"> <li>- Interactions with the interface and learning content on the Internet</li> <li>- Interactions with group members and experts</li> </ul>
5. Distribution of the short films	<ul style="list-style-type: none"> <li>- Interactions with the interface and learning content on the Internet</li> <li>- Interactions with group members and experts</li> </ul>

### Data Collection and Analysis

The data collection was undertaken three times, at the end of each month in a school term, by interviewing a leading student, an average student, and an at-risk student in each group, that is, a triangulation interview. The questions concerned the e-learning interactions of the participating students. Data were grouped by content analysis as ‘student–human interactions’ or ‘student–non-human interactions’.

The researchers also contacted participating teachers every two weeks to monitor the progress of each group’s film.

## Results

Students created eight short films for each of the school’s eight learning areas. As the interviews clarified, the participating students created short films related to their community. They spent their leisure time communicating with peers, teachers, and other people and using digital technology for creating the short films in their lunch break, after school and at weekends. They searched for information to learn from the Internet and shared this information. They communicated with their teachers. They learnt about using technology for filming, recording, and editing film, and adding effects. In addition, they interviewed people, visited various landmarks and other places, joined religious ceremonies, explained cultural practices, and made local foods in their community.

### Student–Teacher Interactions

This type of interaction occurred both ‘face to face’ and online. Students said the latter was more frequent because it allowed them to contact their teachers anywhere and anytime, being more convenient and easier than physical communication. With regard to online communication, the participating teachers and students communicated using a social networking site. Most of the at-risk students mentioned that they had not been friendly with their teachers on social networking sites before joining this project. During the project, teachers used the site to encourage students and check on their progress; students also mentioned

that their teachers identified online resources and school staff who could help the students in these interactions. Students, for their part, asked their teachers to help them come up with content for the short films and to coordinate contact with the community. Most of the students who communicated with the teachers were leading students; however, in two groups, at-risk students sometimes also replied to their teachers, telling them about their progress.

In face-to-face communication, teachers gave students ideas about potential content for their short films. Each teacher encouraged his/her students to participate in the short film production. Most teachers talked about timeframe, encouraged students to make a plan for their project, and helped students identify tasks that needed to be done. The leading student in each group was assigned to lead the groups as the director of the film. In all groups, teachers intended to meet their students in person to check up on their progress, but things did not always go according to plan and some of the meetings took place online. Nevertheless, all groups showed regular progress.

### **Student–Student Interactions**

In the online setting, student–student interactions were the most frequent. Students used the social networking site to make appointments to meet up and discuss their projects. Before joining this project, students normally used social networking sites for entertainment, for instance playing games and nonsense communication with their peers in their leisure time. During this project, they coordinated with students in other groups to share learning resources and mention useful websites and helpful school staff. Students also used this channel to complain about their group members. Two at-risk students often posted on the social networking site to make appointments to meet their groups and shared their ideas on the site.

Offline, leading, regular, and at-risk students cooperated to produce their short films. Students cooperated to write storyboards, select locations, and complete the phases of production, often on weekends. Regular students volunteered to do different tasks under the direction of the leading students, such as acting, shooting film, editing film, or helping other group members complete their tasks. All at-risk students were volunteered to technological task like shooting and editing film, adding effects, and distributing the films, and to help other group members finish their tasks. Some at-risk students took a more active role, sharing information, guiding next steps, and offering their opinions.

### **Student–Other People Interactions**

During the project, students also had to interact with other school staff, their families, and their community. This kind of interaction mostly occurred in person. There was only one group that contacted an expert on short film production online. The participating teachers suggested to their students that they meet school staff like their computer teacher and computer lab staff. They also asked for permission from students' caregivers for the students to be allowed to do this project (which was granted). The participating teachers also arranged meeting between the participating students and some people in the community. The students then interviewed and visited people in the community.

### **Student–Content Interactions**

There were two kinds of content that students had to learn, namely 'content about short film production' and the 'learning area' or target material. The students mainly used the Internet to find information because there is no printing book about short film production in the school library. They learned about the phases of short film production, which included learning about camera use, video editing, adding effects, and other technological aspects. At-risk students played a major role in learning and sharing this information with other groups in the online setting. With regard to learning area, students followed the teachers' ideas in order to create short films that related to the content.

### **Student–Interface Interactions**

In this project, students learned how to use various technologies. They had no problem using the Internet and their laptops or mobile devices to find information. The students, especially at-risk students, liked to learn how to use the digital devices. At-risk students shared information and online resources about digital device use.

## **Conclusion and Discussion**

This study follows the insight of e-learning interactions that students did learning by human and non-human interactions. The students acted an active role for learning. They learned by doing activities. The designed activity led to active participation, and helps students integrate knowledge and think critically and creatively as a result of their own practice and interest. This is consistent with active learning (Pop 2011). Studies of active learning have mostly been focused on its implementation in a classroom setting. In contrast, this project proposed implementing active learning in students' leisure time. In addition, this project showed that students' active learning can be supported by their interactions, which teachers can observe.

In short, therefore, this project promoted e-learning during students' leisure time. Students do not like to use technologies to learn in leisure time and mostly use them for their entertainment outside the classroom (Huffaker and Calvert 2003). The short film production activity was designed in part to address that issue by incorporating with e-learning interactions, and showed that students can learn in their leisure time using digital technologies.

The short film production activity was designed to support high school students' technology use for learning, viewing them as digital natives who like to use digital technologies (Prensky 2001). During the project, they communicated considerably online in support of their projects. They contacted peers and teachers using digital technology to ask questions for the learning purpose, share information, post comments and respond to questions or comments. This all involves student-human interaction. In addition, students used digital technologies to access learning content on the learning content, short film production, and the use of other relevant technologies.

The short film production activity proved that e-learning does not necessarily only occur during technology use, but can also take place during their conventional interactions with other people. Students still learn to achieve learning when they turn off their digital technologies. With this project, students had to physically meet with school staff and people in their community to complete their learning goal, and also received support from their families.

One implication of this is that measurement of e-learning should consider conventional interactions as well as online interactions. Hrastinski (2009) presented the concept of high-level measurement of e-learning, meaning the social perspectives on learning that cannot turn on or off, whether students are online or offline. In contrast, low-level measurement focuses on quantitative measures like number of times software is accessed or number of messages written. With this project, the students' e-learning to meet their purpose occurred in online and offline settings.

With regard to future work that should be conducted here, the leading students mentioned that this project interrupted their learning, which implies that they usually use their leisure time for learning. They argued they usually plan for studying on weekend and after school. In contrast, whereas prior to this project the eight at-risk students hardly learned anything in their leisure time, preferring to spend it for their digital entertainment, they showed meaningful learning in their leisure time as a result of the activity. With this project, they focused on learning using digital technologies, and in this context, they actively participated with their groups to produce their short films. This may warrant a study to identify potential learning styles of the at-risk students and see whether they prefer active learning using digital technologies to passive learning in a classroom.

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