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Video Production as Knowledge Representation of Student Learning

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Abstract: With the support from the Quality Education Funds, many Hong Kong schools including primary and secondary have been granted to set up Campus TV stations along with the school curriculum. As the number of schools setting up the Campus TV station is increasing, engaging students in video production should have achieved some learning outcomes, though little attention for studies has been paid in this aspect. Reviewing the literature, Jonassen, Carr & Yueh (1998) suggested "students as designers" approach, regarded computer as a Mindtool; students being a courseware designer would learn how to understand, organize and construct individual knowledge. Buckingham, Grahame and Sefton-Green (1995) once suggested asking students to produce video outcome would enhance their understanding on a specific topic. Throughout the video production, students would go through reading, producing and reflection; at the same time the video outcome produced by students is a knowledge representation of their constructed knowledge throughout the process. The paper is going to explore whether video production will enhance students learning: during the video production, some important thinking skills may be enhanced, and the video outcome of the production is a representation of the collaboratively constructed knowledge
Keywords: video production, knowledge construction, knowledge representation

Introduction

Vygosky (1978) believed that tool and symbol were the extension of human hands, and the purpose of using sign and symbol was to control or change the physical world, or to change human's own behaviour. If our speech matched with our action, learning and growth would be triggered. Video is a tool, and is a symbol too. When students are engaged in video production activities, if their speech and action are matched and then learning and growth will be triggered. Speech may refer to their thinking and expression during group interaction of video production. Action may refer to what the students have done during the video production and a video outcome may be produced because of the group action. The paper is going to explore whether video production will enhance students learning. The enhancement of learning would be discussed in two aspects: during the video production, some important thinking skills may be enhanced, and the video outcome of the production is a representation of the collaboratively constructed knowledge.

Kozma (1991) defined media in three aspects: technology, symbol systems and processing capabilities. Technology is the obvious characteristics of media, such as the shape or the physical features. Symbol system is about the human mental representation, including text, graphic and sentence structure etc. If learner does not know the symbol system, they will not understand the represented knowledge carried by media.

Reeves (1998) defined the purpose of media is for communication. No matter printing, graphic, animation, audio and video, they are all media having their unique media symbol systems. While technology is defined as an object carrying the media, the tool carrying media can include book, movie, TV and Internet.

Referring to the learning aspect, Reeves (1998) suggested that if teachers and students had used the media to represent their knowledge, they needed to apply the technology to carry the media for communication and sharing of knowledge. From the proposition suggested by Reeves, students should first learn the media symbol systems, and then represent their learned knowledge with media symbol system, and finally make use of the technology to share the learned knowledge with each other. In this paper, we attempt to argue:

1. Media is playing an important role in student learning, especially when students' speech match with action,
2. Production of learning outcome will trigger learning and development of a lot of important thinking skills
3. Learning outcome produced by students with media symbol system is a representation of knowledge.

Video Production and Learning

Video is a kind of media developed after the invention of Television. For decades of years, number of education research has been conducting on video effect but without concrete conclusion (Reeves, 1998; Muller & Sharma, 2005). Lately, the research agenda shifts from "learning from video technology" to "learning with video technology"; which is developed from "learning with technology" suggested by Jonassen, Howland, Moore & Marra (2003). Under this approach, students are designed to engage in project based learning and a video outcome will be produced. All these video projects share similar rational:

- students are full of enthusiasm in video production
- students are grown up with television and familiar with video symbol systems
- video outcomes produced under teachers' guidance are a kind of knowledge representation of the students
- video production is under the project based learning approach

- video equipment is powerful, inexpensive and easy to be managed by the students (Buckingham, Grahame and Sefton-Green, 1995; Buckingham, Harvey & Sefton-Green, 1999; Greenwood, 2003; Gauntlett, 2003; Davidson, 2004; Theodosakis, 2005)

As the students love video production, familiar with video symbol systems and capable to manage the video production; it is not difficult for teacher to design and arrange video production activities in or out of classrooms, and it will point to a new direction for student learning.

Video Technology as Knowledge Representation Tool

In addition to the "learning with technology" perspective, Jonassen, Carr & Yuen (1998) suggested "students as designers" perspective; technology is a tool for knowledge construction. Throughout the knowledge construction, students will take up the role as courseware designer to organize and present individual knowledge with technology. To be the designer, students should processes a lot of important thinking skills such as project management ability, research ability, organization and presentation skills and reflexive ability. Students proactively collect information from the world, analysis, undergo reflection and construct individual knowledge of the world, and at last, deep learning occurs. (Carver, Lehrer, Connell & Erickson, 1992)

In fact learning cannot be separated from the social context. Buckingham, Grahame and Sefton-Green (1995) summed up that students would be named as frequent viewers if they watched the TV frequently under the social environment where they have grown up. These frequent viewers might have a kind of "passive knowledge" of video production but are not ready to make use of. There should be a transformation from the 'passive' knowledge that is derived from viewing or reading to the 'active' knowledge that is required for production or writing. Obviously, it is impossible for students to learn from watching television; Buckingham, Grahame and Sefton-Green (1995) emphasized that learning had to involve a dialectical relationship between doing and analysing or between 'practice' and 'theory"

Merely viewing and production of video will not trigger the meaningful learning, students are expected to reflect on the video production, engage in group interaction, collaboratively construct and represent knowledge in a video outcome; and the constructed outcome in fact is the knowledge representation of group effort. Buckingham, Grahame and Sefton-Green (1995) named the reflection as "conceptual understanding". With the conceptual understanding, the video outcome produced by students represents the understanding on a specific topic, going through the process of analysis, writing, reflection and collaborative knowledge construction. And this is what Vgosky's (1978) proposition about the matching of speech and action and as a result, learning and development would be triggered.

In other words, teacher designing a project-based video production activity expects the students to understand, organize and construct a video knowledge representation on a specific topic (Jonassen, Carr & Yueh, 1998; Buckingham, Grahame & Sefton-Green, 1995). Through the video production activity, students will need to learn a series of important thinking skills which are necessary skills for the completion of video production. At the same time, students will construct their knowledge on specific topic, or so called "conceptual understanding", and the video outcome will be the knowledge representation of their learning.

Method

This is an exploratory qualitative study. From 2003 onwards, the Centre for Learning, Teaching and Technology of Hong Kong Institute of Education organizes a DV summer camp each year. The nature of the Camp is to create an authentic environment for students to produce a video outcome under project-based learning approach. Students in the Camp are divided into five to six a group, and guided to collaboratively construct a video outcome and present to other students for sharing and voting for the best video.

Participants

For the past three years, the full time HKIEd students were invited voluntarily to joint the Camp. In 2003, the DV camp was a two-day Camp while for the following two years, it was a 3-day camp. Table 1 presents the number of students participated in the Camp and their corresponding full time programmes.

Table 1*: No. of Participants and corresponding programme per DV Camp*

Year	No. of Participants	Post Graduate Diploma in Education	Bachelor of Education	Certificate in Education
2003	20	0	16	4
2004	23	5	18	0
2005	32	19	13	0

Besides coming from different programmes, the participants come from different major subjects. Table 2 lists out various major subjects of the participants. Coming from different programmes, major subjects and education background provide a good opportunity for students to actively engage in project-based learning on specific topic with video production.

Table 2: *Different major subjects of participants per year*

	2003	2004	2005
Business Studies		2	9

Information Technology			11
Home Economics	2	7	
Mathematics	5	2	5
General Studies	6	5	
Chinese	4		2
English			3
Science		2	1
Putonghua	2	3	
Creative Art	1	1	
Physical Education		1	1

All the participants were requested to write a hundred words about their opinion on the relationship between video, teaching and learning in their application forms. By doing a simple content analysis of the opinion written by the participants in 2005, 80% of the participants regarded instructional video would arouse students' interest in learning, and made the lessons more active and interesting. Only five of the participants emphasized that video production by students would enhance learning on problem solving, project planning and management ability etc. The simple analysis show that most of the participants did not have prior knowledge about "learning with technology", as a result it was meaningful and challenging to promote "learning with video technology" in the Camp.

Characteristics of DV Camp: meaningful task

The Campsite of the DV Camp was selected in Cheung Chau, a small island 60 minutes by ferry from Hong Kong Island, and it is famous for traditional market and beautiful beach. The characteristic of the Camp is to facilitate participants to make use the unique Cheung Chau physical environment to explore specific topics for video production and knowledge representation. In 2005, the Camp was designed to simulate a TV broadcasting station, participants were requested to show the video to all the other participants with fixed air time schedule.

A series of tasks were designed for the participants to engage in the Camp. Participants were free to choose from a lot of topics for their video production and knowledge presentation. No mater what topics they had chosen, participants in groups were requested to prepare a video proposal, story outline and story board. When the group submitted their video proposal, story outline and story board, tutors would try to challenge the group in the theme of the video production, ambiguous area in the proposal and what they really want to present in the video. The objective of asking critical questions is to guide the participants to analysis and reflect deeply on what they want to produce, present and represent to the

audience. At the end, members would pass through the stages of critique, refinement, production and sharing; as a result, deep learning will be enhanced.

Results and Discussion

The objective of the Camp is to create an authentic environment for students to produce a video outcome under project-based learning approach, and provide guidance to the students when it is necessary. In order to complete the project on time with limited resources, participants will find out that they have to apply a lot of thinking skills in order to produce a video outcome. The video outcome is a kind of knowledge representation of what the students have learned during the process.

In 2003 and 2005, focus group interview was conducted right after the end of the Camp in order to find out what they had learned in the camp and what kinds of thinking skills they had been used during the video production process. With coding of the focus group interview from students discourse, grouping of coding categories and analysis (Bogdan & Biklen, 1992), 4 themes of thinking skills are identified, namely, project management, storytelling, collaboration, and guided learning. At the same time, participant observation of one of the group interaction and content analysis of one of the video outcomes are used to identify whether the video outcome is a representation of students' constructed knowledge.

Project management/time management

As there was fixed time schedule for sharing the video outcome, the participants were alerted of the deadline and had tried their best to manage their project in order to present the best outcome to other participants. As a result, participants found that without project management skill, they would not have completed the project under limited time and resources.

> 2003 student A: *If we had more time, our video would have been at least 30 minutes long. Therefore time management is very important.* (DV Camp, 2003)

> 2005 student D: *As time is running fast, I have to finish the video in time, and I learn time management in the DV Camp. …without time management if we had produced 15 minutes video segment while the expected programme duration is one minute only. Because we have spent 15 minutes in shooting, 15 minutes in capturing video segment to computer, spent 15 minutes to sort out the OK take and only little time has left for editing.* (DV Camp, 2005)

2005 student F: *We worried about the manpower during shooting. As a result, we planned carefully on shots arrangement and we had engaged in problem solving.* (DV Camp, 2005)

Storytelling

Buckingham, Grahame, & Sefton-Green (1995) suggested that children are grown up with television and they are familiar with video symbol to tell their story. Through video production, passive knowledge of video production is stimulated to active knowledge. Participants expressed that they had learned to visualize the story with video, use some screen language to express their idea and simulate a broadcasting TV programme structure.

2003 group C: *Visualizing a picture and putting it in video involve a lot of thinking, and that is something I haven't experienced before.   Like if we wanted to film a story, if you put different scenes in different order, it'd become a different story.* (DV Camp, 2003)

2005 student A: *…the most interesting part is the commercial break in between the story. I have suggested to insert a commercial break and then skipped the break with fast forward effect. At that moment, tutor's mobile phone rang and it stimulated us to make us of the ring tone to produce a commercial break …I learn about how to produce a gap show, and different presenting methods with video, such as winding a watch to represent passing of time.* (DV Camp, 2005)

2003 student C: T*he theme of the story should be defined clearly first, and with story board, division of labour and collaboration, we could then construct a story in video.* (DV Camp, 2003)

Collaboration

From the discourse, it seems that a lot of participants like to use the term "collaboration" to describe the working relationship among their group members. "Collaboration" under their context might mean communication, compromise, division of labour and group decision making.

2003 student D: *I learn from the process of production that a lot of debate would arise, such as the selection of topics, the shooting sequence etc. I learn to compromise with others, and how to make up decision from different viewpoints.* (DV Camp, 2003)

2005 student B: *Initially we have selected one of our team members as the main male actor. However, he regarded the story is talking about him and as a result,*

he refused to take up the role. After some discussion and compromise, another member agreed to take up the role. Otherwise, the shooting would be delayed. (DV Camp, 2005)

2005 student C: *… at the very beginning I was not willing to raise my opinion. Then I found out after raising the ideas, our group would refine them together. The outcome is quite satisfactory, and it is better than an individual thinking.* (DV Camp, 2005)

2005 student D: *We draft the story outline together though during the process, different opinions come across and we have applied our collaboration skill during discussion …during production there is a lot of opinion comes out, I learn to compromise. Our group will choose voting, majority is the final decision.* (DV Camp, 2005)

2005 student E: *I learn about collaboration, as I do know other members before. During collaboration, we have to compromise on the issues. (DV,* Camp, 2005)

The dialogue supports that participants had worked under an authentic project-based environment, due to the limitation in manpower, time and any other unexpected limitation in the authentic environment, participants will then develop collaborative skills in order to complete the task together within schedule.

Guided learning

    Under an authentic environment, if students are allowed to explore whatever they want to, sometimes students may not learn what we expect them to learn. In the DV Camp, tutors were assigned to the group in order to guide the participants through important stages and process. From the feedback, the participants seem to have been guided to learn from the tutors' profession knowledge and working experience:

2005 student C: *Our tutor did always ask us questions and gave us a lot of inspiration.* (DV Camp, 2005)

2005 student D*: In DV camp, it is good to have a tutor who has lot of experience in shooting, he has taught us to take the same shoot in different angles, then we can have multiple angles, and this give us very good learning experience in learning.* (DV Camp, 2005)

2005 student F: *We work hard in the production and we have a good advisor to guide us on the next step.* (DV Camp, 2005)

The above discourse shows that the participants had experienced collaborative learning under an authentic learning environment. It supports the "learning with technology" approach (Jonassen, Carr & Yueh, 1998) where students had completed the task with video technology.

Organizing students in video production is a kind of project-based learning. Students are required to produce a video on a specific topic, with an expected deadline for viewing of the video by other participants.   In order to complete the video outcome, the participants had to collaboratively construct knowledge on specific topic; throughout the knowledge construction process, a series of important thinking skills have been enhanced, such as project management skill, story telling skill and collaborative learning skills etc.

Media symbol system and knowledge representation

Though the instructors had explained some important steps and procedures of video production during the camp, DV Camp participants did not have adequate prior knowledge and production experience in video production. Table 3 lists the relevant prior knowledge and video production experience of the participants in 2003 and 2005 just before attending the DV camp.

Table 3*: Prior DV production knowledge and experience of the participant*

	Have you ever attended any DV production training before?		Do you have any video production experience before?	
	Yes	No	Yes	No
2003	3	13	3	10
2005	7	23	8	20

The table indicates that most of the participants did not have any prior knowledge in DV production and little prior experience in video production; however, all groups could manage to produce meaningful video story simulated broadcasting video structure. It supports that all the participants are grown up with television and familiar with the video symbol system (Buckingham, Grahame and Sefton-Green, 1995).

Familiar with video symbol system under an authentic context in Cheung Chau, the participants passed through the stages of topic conceptualization, production, amendment and finally produced a video outcome for viewing and sharing. The produced outcome is the knowledge representation of the group input in knowledge construction. One of the video outcomes is analyzed below in respect of knowledge construction and knowledge representation.

"Summer ghost story II" is one of the video outcomes in DV summer camp 2005. Tradition market and beautiful beach are the main reasons for selecting Cheung Chau as the campsite as these would provide an authentic environment for participants finding out appropriate topics for video production project.   However, Cheung Chau is also famous for bungalow and ghost stories; therefore it is understandable that participants had chosen ghost story as the topic for video production.   In the Camp, when one of the groups submitted a proposal about ghost story, instructor then challenged the story in reference to the proposal. Questions were asked such as: why a ghost story was selected? What kind of message would you like to send out in the ghost story? Would you like to scare audience with the ghost story or would you like to stop people coming to Cheung Chau? In response to these critical questions, the group discussed again. The group then asked each other to tell one or two ghost stories that had been heard before, and started to analyze those long lasting ghost stories which had been passed around. Finally they concluded from the analysis and collaboratively constructed the storyline of the "Summer ghost story II". The story was about a family moving in a bungalow of Cheung Chau. Everyday just before evening came, the kid of the family would sit by the window and said goodbye to the empty street below. Then all the Cheung Chau citizen heard about the kid's story and scared to talk about. At the end of the video, roller credit came up and then cut back to the small kid saying, "Goodbye Uncle Sun". The objective of the story proposed that most of the ghost stories were passed around with mouth to mouth communication basing on wrong interpretation of the fact.

From conceptualization of the video story objective and story outline to the production of video outcome, the group had discussed, reflected and constructed their viewpoint on specific topic, and made use of the video to represent their viewpoint to the audience. This viewpoint is a knowledge representation of the group's collaboratively constructed knowledge on a specific topic.

Conclusion

Student discourse demonstrates that important thinking skills had been enhanced during project-based video production among the students. In order to complete the video project within deadline with limited resources, students had learned to develop various thinking skills such as project management, problem solving, collaboration and story telling skills. While with the participant observation and analysis of student outcome, it is observed that students had passed through the process of collection of information, discuss and analysis, reflection and finally the production of outcome. The outcome produced is a representation of constructed knowledge collaboratively input by the students.

As more and more funding is allocating to primary and secondary schools to develop the Campus TV activities, the effectiveness of learning with video production should be considered. However, the framework of learning with video technology is seldom discussed

and little research had been conducted on local context about learning with video technology. Video as a knowledge representation tool might suggest a framework for student learning under learning with video technology approach, and will suggest a new direction of research for the implementation of Campus TV in primary and secondary school settings.

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