Learning with Video Representation: A Case Study on the Usage of Multimodal Elements for Explaining Community Issues

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Abstract: School is under debate on the shifting from teaching to learning under global technological development and society's demand on workforce. At one hand, school is more or less the same as before with long history of curriculum designed on various fixed boundary subjects. On the other hand, catalyzed by the rapid development of information and communication technology, students are familiar with multimodal reading and representation on community issues across disciplines beyond classroom. As students are now digital natives who show great interests to communicate with social media, the multimodal representation used in social media is introduced back to school activities together with traditional literacy development on reading and writing. This paper is going to present a case study on six Hong Kong grade 10 students' learning with creating video artifacts integrating multimodal elements to explain community issues. Three levels of student performance in written examination results were compared with respect to the usage of multimodal elements and multiliteracies development. It is found that the students' written examination performance is not in correlation with performance in using multimodal elements for meaning representation on community issues as well as the development of multiliteracies.

Keywords: multimodal representation, multiliteracies, conceptual artifact

1. Introduction

Traditionally, school focuses on teaching literacy which is about the capability in reading and writing (Adams & Hamm, 2000; Bazalgette, 2008). United States Government kicked off a campaign in 2002 promoting the 21st Century skills about developing essential skills for graduates which was a sign to shift away from the major emphasis on traditional literacy and subject-based knowledge at school (P21, 2010). The Hong Kong latest Senior Secondary School curriculum reform had followed the shift and re-grouped previous non-core subjects into a new core subject called Liberal Studies in 2009. The Liberal Studies subject emphasizes six themes across various traditional subjects on history, social studies, economics and geography, etc (Education Bureau, 2007). The objectives of the new subject are to enhance students to develop multiple perspectives on community issues, construct students' own perspectives with critical mind and thinking. Both the US and Hong Kong Government were trying to shift school from focusing on traditional subject-based knowledge transmission to essential thinking skills development across disciplines (Education Bureau, 2007; P21, 2010).

Along with the global development of information technology, youth are developing multiliteracies in the social media (Jewitt, 2008; Gee, 2010). Multiliteracies are defined as the capabilities in reading and producing meanings with various multimodal elements other than written mode only, the various multimodal elements frequently used by youth in daily communication including visual, audio, gesture, action and language, etc (Jewitt, 2008). Integrating the usage of various multimodal elements for meaning representation, the final outcome is named as multimodal artifact. By means of sharing and peer feedback on students' created multimodal artifacts within the social networking environment such as freeware as Blogger, Xanga and Facebook, knowledge is constructed (Bereiter, 2003; Goldman, 2007; Jewitt, 2008), and multiliteracies are then developed. A gap is emerged between literacy learned at school and multiliteracies development at the social network environment supported by information technology. At school, students learn subject knowledge and at the same time, the assessment of subject knowledge is mainly on written mode. In the social network community, students are actively engaged in multimodal communication on daily issues which are multi-disciplinary in nature. If school is going to re-define its role in digital era, school is facing challenging roles in shifting from subject-based teaching and written mode assessment to facilitate knowledge construction on community issues and developing students' multiliteracies in creating multimodal meaning representation within classroom context.

Information and communication technology enlarges an emerging gap between student learning and classroom teaching. Under the social communication network, students organize multimodal elements to represent and communicate meanings on issues across disciplines, while school is still focusing on text-based teaching and learning under clear boundary of subjects. Though global research has started to focus on research related to multimodal representation and multiliteracies (Gee, 2010; Guo, 2010; Hakkarainen, 2009; Lusk et al., 2009; Walsh, 2009), little research has been focused on learning with creating multimodal meaning representation in local context. It is a new area to explore whether local school is ready to shift to the global trend on multiliteracies development, and whether students are prepared to adapt to digital era demanding capabilities in multimodal meaning representation.

The paper is going to report part of the findings from a multiple-case study on six grade 10 students producing multimodal artifacts on community issues in a local secondary school in 2007. The study was guided by the following questions:

- What would be the multimodal elements used by students to explain the community issues when students are engaged in classroom tasks to make enquiry and represent the community issues in video artifacts?
- Would multiliteracies be developed or enhanced by representing community issues with multimodal elements in video artifacts?
- Will students good at traditional written examination perform better in creating multimodal meaning representation?

Lankshear & Knobel (2007) stated out that there are two mindsets in facing with technological change on society. Under the Physical-industrial mindset, technology is just another innovative idea while our economy and culture have not changed much to adapt for the technological change. While in Cyberspatial-postindustrial mindset, it assumes our society has been changing greatly by technology and we should have a new way of doing things. Entering into the age of knowledge-based society, a paradigm shift in teaching and learning has been proposed (Ezziane, 2007). The above guiding questions contribute to identify what directions the classroom teaching and student learning should be shifted, whether a traditional mindset should be kept or a new approach of teaching and learning should be implemented. Focusing on knowledge construction via multimodal meaning representation on community issues across disciplines might be introduced as the new mindset preparing for the change of school under new era of digital world. Basic concepts on literacy and multimodality are reviewed below to conceptualize the study.

2. Multimodality and Multiliteracies

Before the invention of Kindle of Amazon and iBook in Apple iOS, Kress (2003) had already given a reflective remark that the whole communication and representation landscape has been changing from written mode to multimodality, from book medium to computing screen:

> *On the one hand, the broad move from the now centuries-long dominance of writing to the new dominance of the image and, on the other hand, the move from the dominance of the medium of the book to the dominance of the medium of the screen. These two together are producing a revolution in the uses and effects of literacy and of associated means for representing and communicating at every level and in every domain (Kress, p.1, 2003).*

Multiliteracies were proposed along with the shifting from written mode to multimodal representation and from book medium to computing screen. New London Group (New London Group, 1996; Gee, 2010; Jewitt, 2008) defined the term "multiliteracies" in response to the changing conditions of the global economic situation and the new demand on workforce. New Literacies Studies were introduced which was about studying students' experience in using text, media and technology as multimodal production out of school context (Gee, 2010; Lanskshear & Knobel, 2007).

Jewitt (2008) elaborated that multimodal meaning representation was generated by combining various multimodal elements including image, gesture, gaze, body posture, sound, writing, music and speech, etc. It was suggested that all multimodal elements including written mode contribute to meaning representation in different ways; while the multimodal meaning representation facilitates the development of multiliteracies which is in contrast with traditional literacy development where text is the dominant role in meaning expression (Jewitt, 2008; Kress, 2010). Since written text has been the dominated medium for teaching, learning and assessment at school for more than hundred years, Jewitt (2008) remarked that multimodal meaning representation is facilitated beyond the school context where students like to create multimodal artifacts for communication and representation. In the new digital era, students showing great interests on social media are actively participating in creating multimodal artifacts to represent their understanding of social issues (Kress, 2010; Jenkins, 2009; Jewitt, 2008).

3. Framework of the Study: From Written to Multimodality

The study is not restricted to explore the shifting of written mode to multimodality, but also focuses on student learning aspects including knowledge construction and meaning representation.

Both Bransford et al (2000) and Bereiter (2002) regarded knowledge construction is a strategy for students learning to adapt to knowledge age society. Bransford et al (2000) proposed that students should go into their community to conduct enquiry on interested topics. As a result of making enquiry on relevant and interesting topics, students will construct conceptual artifacts to explain the issues (Bereiter, 2002). Creating conceptual artifact will help to facilitate knowledge construction on the issues and the constructed knowledge is transferrable to real world context (Bransford et al, 2000). However, the modes of the process of creating conceptual artifact and the modes of final conceptual artifact have seldom been discussed and explored. It was assumed that textual communication was dominant in the process of creating artifact and textual conceptual artifacts were constructed under traditional mindset. Referring to multimodality discussed by Kress (2010), Jewitt (2008) and Gee (2010), students are familiar with multimodality rather than mono written mode during their social communication supported by technology; knowledge construction process and the production of final conceptual artifacts should also be shifted from written to multimodality under the advancement of technology.

With solid background in knowledge representation and had explored using video as a research tool, Goldman (2007) further conceptualized the process of knowledge construction to making enquiry with video production and representation.

Goldman (2007) regarded that a video artifact can be the outcome of creating conceptual artifact to explain the world issue. In order to clearly separate the process of creating representation and the outcome of representation, Goldman defined "re-presentation" as the initial artifact created by the interaction between an external visual image and initial perception of the visual in our mind (Figure 1), while series of re-presentations can be produced by continuous interactions and finally a final and refined representation is constructed to help to explain the world issue. With the purpose of explaining a community issue, the final representation serves the same function as a conceptual artifact (Bereiter, 2002). The process of iterative creation and refinement of re-presentations on world issue can be named as knowledge representation.

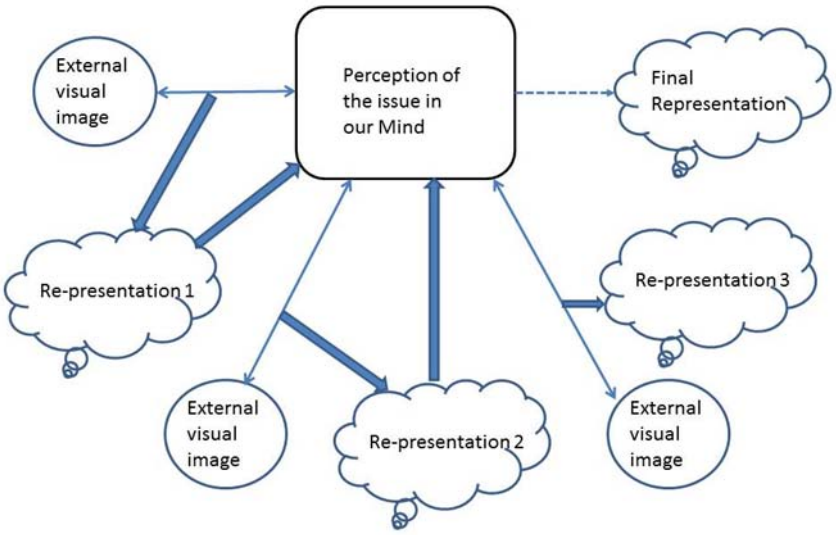

Figure 1. Re-presentation and representation framework proposed by Goldman

Goldman claimed that creating video artifact to represent community issues involved a lot of video interviews and video segment selections. In conducting video interviews, different experiences or layers of meaning interpretations on world issues were collected and constructed. The selections of video interviews in the final artifact are actually creating one's meaning interpretations on the world issues (Goldman, 2007).

4. Methodology

4.1 Case Study

Multimodality and multiliteracies are new research agendas in local secondary school context, research on these agendas are under development. Intrinsic case study method (Stake, 2005) was applied to develop the issues, contexts and interpretations on the multimodal artifacts and the students multiliteracies development at Hong Kong secondary schools. In preparation for the new curriculum reform in Hong Kong, a local secondary school H was invited by Education Bureau (EDB) to conduct a non-written mode Independent Enquiry Study (IES) Report project guiding students to make enquiry and create video representation on community issues in 2007. At the same time, school-based rubrics assessment on the non-written mode IES report was developed and applied. A class of grade 10 students from School H was selected to participate in the project. Considering the depth of data research, the management of data collection and the availability of students for observation and interview, purposive

samples were considered (Stake, 2005). With the consideration of the relationship of students' performance in written examination and multimodal meaning representation, two students who showed good performance in the grade 9 final written examination, two students showed above average performance, and two students showed below average performance in grade 9 written examination were identified as samples for study. The purposive samples might not be typical among the class but these six students were willing to be observed and interviewed, they showed great potential for researcher to learn on the cases which are more important than the issue of representativeness (Stake, 2005).

4.2 Research Design

The whole research focused on engaging students to produce video artifacts to explain community issues to peer and teachers. In producing a video artifact, it involves the process of creating video representations. The process of video representation includes the iterative construction process of creating re-presentations and representation in a final video artifact which is composed of various multimodal elements (Goldman, 2007, Jewitt, 2008). At the same time, four teachers from school H were invited to develop assessment rubrics to evaluate the process of creating re-presentations and final video artifacts. Various tasks were then designed to facilitate the process of re-presentations and the final video artifact. The designed tasks and corresponding rubrics assessment are listed at Table 1.

Table 1. Various tasks and corresponding rubrics assessment on multimodal production

	Tasks	**Assessment Tool**
Stage One	Re-presentation 1: Written enquiry Proposal Re-presentation 2: Verbal presentation with PowerPoint	Rubrics on enquiry proposal Rubrics on verbal presentation
Stage Two	Re-presentation 3: PowerPoint Proposal on data collection Re-presentation 4: Verbal presentation on the data collection	Rubrics on PowerPoint Rubrics on verbal presentation
Stage Three	Final Video artifact: 2-minute video	Rubrics on video artifact

In this paper, the rubrics scoring on the final video artifacts were compared against students' performance on previous written examination result. In a traditional mindset, students showing good performance in written examination should perform well in other areas such as creating video artifact explaining community issues.

The assessment criteria and corresponding scoring developed by the four teachers on the final video artifact:

Table 2. Assessment criteria on final video artifact and scoring distribution

Assessment criteria on final video artifact	**Scoring (Total 60)**
Usage of collected data	10
Data analysis with multiple perspectives	10
Critical mind, logical argument and conclusion	10
Enquiry capability	10
Presentation technique (organization)	15
Usage of multimodal elements (Narration, interview, sound effects or music)	5

As the IES report was designed to have school-based assessment required by EDB, the assessment criteria were developed by teachers according to their knowledge and requirement of the final video artifacts on making enquiry of the community issues. Without any background in using multimodal elements for meaning representation, the teachers focused on the usage of collected data, multiple

perspectives, logical argument and enquiry capability, while the usage of multimodal elements were given the least portion of scoring. In other words, teachers focused on the student learning on enquiry capability and argument presentation, and had put less attention on the development of using multimodal elements for meaning representation.

4.3 Data Collections

Besides the collections of rubrics scoring on each final video artifact, the video artifacts were collected for multimodal analysis on the usage of multimodal elements for meaning representations. The rubrics scoring and multimodal analysis were then triangulated with reference to previous written examination performance.

4.4 Data Analysis

The video artifacts were coded with qualitative analysis method and pattern of categories (Huberman & Miles, 1994) on the usage of multimodal elements were generated for analysis and discussion.

Adapted from Iedema (2001), Jewitt (2008) and Kress and van Leeuwen (2006), a multimodal discourse analysis framework on the usage of multimodal elements: audio, screen composition, screen movement, people movement and gesture, etc., was proposed to analyse the students' final video artifacts. Patterns of multimodal elements used for meaning representation are identified from the six video artifacts for further analysis. The observed usage of multimodal elements is listed at Table 3.

Table 3. Identified Multimodal Elements on a video artifact

Multimodal elements conceptualized from literatures	**Observed multimodal elements used in the video artifacts**
Text mode	Caption and subtitles
Verbal mode	Dialogue and narration
Audio mode	Music and sound effect
Screen composition mode	Camera shot size People and object position
Screen movement mode	Camera movement People gesture and action
Visual effect	Fast speed motion

5. Findings

5.1 Multimodal Analysis of the Video Artifacts

The six video artifacts were coded according to the usage of multimodal elements for explaining community issues. Three categories of video artifacts are identified from the coding.

Category 1: Using various multimodal elements to explain community issues
Under this category, students had made use of various multimodal elements and demonstrated competency in managing these elements to represent meanings explaining the community issues. The explanations represent students' own understanding on the issues generated from their understanding on the issues. Two video artifacts are coded under this category: "Youth Pressure" and "Daydream". "Youth Pressure" was produced by Amy, who showed below average performance in previous written examination. "Daydream" was produced by Daisy, who showed above average performance in previous written examination. The summary of multimodal elements used by one of the videos is listed below as an example of the category.

"Youth Pressure": Summary of multimodal elements used for meaning representation

The video has made use of screen movement, people movement, gesture, screen composition and music to explain different pressure faced by the youth at school. The video clearly explains that youth pressure comes from parent and teachers' expectations on examination result, one's expectation on examination result and peer daily interaction.

Category 2: Using multimodal elements to describe community issues but could not give meaningful explanation on the issues

Under this category, students showed intention to make enquiry to understand the community issues, but they were lack of basic skills, knowledge and capability to conduct enquiry and as a result, no meaningful representation could be perceived from the final video artifacts. Two video artifacts were identified under this category: "Earn Your Living" by Bruce and "Public Study Room" by Cathy. Both students showed good performance in previous written examination. The summary of multimodal elements used by one of the videos is listed below as an example of the category.

"Earn Your Living": Summary of multimodal elements used for meaning representation
The video had made use of screen movement and people movement to represent the busy lunch time in a food court. However, shaky pan shot, dark environment and too noisy background sound were perceived which had sidetracked audience's attention to understand the meaning represented by the multimodal elements. Bruce had tried to conduct interviews on people's perception on the concept of "busy" but the video showed that he was lack of knowledge in asking open-ended questions to trigger explanatory answers and as a result, audience could not perceive any unified meaning to explain further on the busy lunch time.

Category 3: Using multimodal elements to describe community issues but had not explained further on the issues

The video artifacts had made use of various multimodal elements to create a descriptive video to audience. The students just captured what they had seen on locations and did not try to explain further on what they had captured by camcorders and any implications of his or her captured scenes. Two videos are identified under this category: "Old people" by David and "Staff Room" by Eric. David came from below average performance in written examination while Eric came from above average performance in written examination group. The summary of multimodal elements used by one of the videos is listed below as an example of the category.

"Old people" Summary of multimodal elements used for meaning representation
The video demonstrated various skills in managing screen composition, subtitles keying and background music to show different recreational activities of old people in the community. The wide shot of old people situated at the community has given a meaning of lonely, while the close up on the facial expression creates impact to audience about the lonely living of the old people. However, the video just showed the activities of old people in the community and had not provided further information to explain the issues of lonely.

5.2 Rubrics Scoring on the Final Video Artifacts

Four teachers had graded the final video artifacts with reference to their rubrics assessment criteria. The average rubrics scoring given by the four teachers on the six video artifacts are listed at Table 4:

Table 4. Rubrics scoring on the six video artifacts

Name of the video artifact	**Average Rubrics scoring (60)**
Youth pressure (BA)	39.5
Old people (BA)	37.3
Daydreaming (AA)	37
Public study room (GD)	34.4
Earn your living (GD)	32.8
Staff room (AA)	21.8

GD – Good in written examination performance
AA – Above average in written examination performance
BA – Below average in written examination performance

Looking into the criteria of the usage of multimodal elements for meaning representation, the six students' average scores on the usage of multimodal elements are tabled below.

Table 5. Rubrics scoring on using multimodal elements for meaning representation of the six video artifacts

Name of the video artifact	**Rubrics scoring on using multimodal elements for meaning representation (5)**
Daydreaming (AA)	4.75
Youth pressure (BA)	4.25
Public study room (GD)	3.75
Old people (BA)	3.5
Earn your living (GD)	3.25
Staff room (AA)	2.5

5.3 Triangulation of the Two Sources of Findings with My Guiding Questions

5.3.1 Multimodal Elements Used by Students for Meaning Representation

It is found that though students did not learn the usage of multimodal elements from the school curriculum, most of the students could make use of various multimodal elements for meaning representation. The identified usage of multimodal elements includes text mode such as caption and subtitles; verbal mode such as dialogue and interview; audio mode such as music and sound effect; screen composition mode such as shot size, people and objection objections; screen movement mode such as camera movement, people gesture and movement and visual effect mode such as fast speed motion. All the modes are integrated into video artifacts to represent meanings to the audience. Some students could successfully explain community issues to audience, while some students could only represent what they have observed and could not explain further on their observation. As the knowledge of multimodal production and representation are not within the school curriculum, the findings show that some students had already developed knowledge on multimodal meaning representation beyond the school curriculum.

5.3.2 Usage of Multimodality and Multiliteracies Development

For those students identified in category 1, they have successfully explained the community issues with the usage of multimodal elements. The explanation demonstrated that they had performed higher multiliteracies development in managing various multimodal elements for meaning representation. The rubrics scoring given by teachers supported that category 1 students not even perform better in usage of multimodal elements, they could also perform better in creating final video artifacts to explain community issues, with respect to scoring in data collection, critical mind and logical argument. Students showing higher capabilities in using multimodal elements have performed higher capabilities in explaining communities in video artifacts. The usage of multimodality could enhance the development of multiliteracies.

5.3.3 Written Examination Performance and Multiliteracies

Comparing the multimodal analysis and rubrics scoring, both students, Bruce and Cathy, showing good performance in written examination could not demonstrate good performance in both the usage of multimodal elements to represent meaning, and the creation of final video artifact to explain community issues. The findings imply that students' performance in written examination is not correlated with the

performance in using multimodal elements to create meaning representation, and the development of multiliteracies.

On the other hand, a student, Amy, showed below average performance in written examination, could make use of various multimodal elements to explain a community issue to audience, and at the same time, received higher rubrics scoring on the final video artifact graded by teachers. It further supports that performance in written examination is not correlated with the performance in using multimodal elements to explain a community issue to others.

6. Discussion

6.1 Using Multimodal Elements for Meaning Representation

Referring to the multimodal analysis of the six video artifacts, it is found that some students are familiar with using multimodal elements to explain the community issues, performed prior knowledge of using multimodality for meaning representation which must be learned beyond existing school curriculum.

Looking into individual case, such as Bruce, he was lack of adequate knowledge and skill in managing video camcorder to produce a steady pan shot, to control optimum lighting for video recording and to get audible dialogue from noisy background environment. On the other hand, Amy and Daisy demonstrated more capabilities in managing video camcorder, screen composition, screen movement and audio mixing to present meaningful stories to audience. Bruce, Amy and Daisy received the same school curriculum and additional workshops on making video on community issues, and Bruce was assumed to have higher learning capability by showing better performance in written examination. The better performance of Amy and Daisy in multimodal representation implies both students had learned the multimodal representation knowledge out of the school context. Further research should be conducted to explore whether students could develop multimodal representation in social media communication.

6.2 Multiliteracies and Written Examination Performance

It is found that the performance in written examination is not correlated with the development of multiliteracies, as multiliteracies are defined as the usage of multimodal elements for meaning communication and representation. If a knowledge-based society demands workforce having knowledge on multimodal meaning communication and representation, the findings imply that our students showing good performance in written examination are not well prepared for the knowledge-based society, or there is a missing gap in our traditional literacy curriculum which could not prepare students to facilitate the development of multiliteracies.

6.3 Enquiry-based Learning in Secondary School

Global literatures support that the advancement of information technology has provided new opportunity of student learning with making enquiry (Chang & Wang, 2009). The video representation on community issues in fact is trying to explore how to make enquiry on community issues and represent the enquiry outcomes with multimodal elements. The identified category 1 shows that students had performed understanding and had explained the community issues with multimodal artifacts. For example, Amy had explained the sources of pressure at school, while Daisy had explained the phenomenon of daydream at classroom and the topics of daydream made by students. Such explanations showed that both Amy and Daisy had observed, and asked relevant questions in order to understand the issues. For category 3, the students produced descriptive video without giving any explanation on their description, or they did not try to make any enquiry to understand the topics. They just saw whatever appeared and shot into final video artifacts. Only the two students showing good performance in written examination had tried to conduct enquiry on community issues but in vain. Both Cathy and Bruce did observe and ask questions in order to understand the issues, but they were lack of

knowledge on how to get useful information to understand the topics. As the non-written IES report project was an add-on project into normal classroom activities, the teachers did not have any planned curriculum to develop students' enquiry skills. More staff development programmes should be organized to enhance secondary school teachers' knowledge on teaching how to make enquiry on community issues.

7. Looking Ahead

With the limitations on purposive sampling on the six cases of students, it is not valid to generalize my findings beyond school H. However, the latest curriculum reform on the local new senior secondary school curriculum has opened the door to enquiry based learning with multimodal production and representation. The curriculum of Liberal Studies has been promoting students going into the community to make enquiry. The blooming of social network such as Facebook has helped to speed up the enquiry process and sharing of learning outcomes in multimodality among the youth. While the school curriculum is still focusing on traditional literacy on textual reading and writing. In fact, students are developing multiliteracies out of school; school should consider how to shift the curriculum to enhance multiliteracies within the context of classroom learning. Engaging students to make enquiry on community issues are shifting to student-centered knowledge construction on multi-disciplinary topics. Integrating information technology into education has been promoted for more than 10 years in Hong Kong, multimodal production on community issues and multiliteracies development provide more concrete directions for enhancing student learning across disciplines fitting to the knowledge-based society. It is expected that more research should be conducted on student learning with creating multimodal artifacts on community issues.

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