



Assessing Student Learning In Designing Instructional Video: A Case Study

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Abstract

The study of student learning in ICT learning environment has always obtained the centre stage for cooperative learning, self-reflection, and creative thinking that enhance higher order thinking skills. Student learning will be improved if a teacher adopted strategies of learning theories and effective student assessment. A pre-experimental design study was carried out as a one shot case study. The purpose of the study was to investigate the relationships of student-centred approach (strategies of instructions) that helps to stimulate self-regulation among students, metacognitive process towards student engagement. Quantitative and qualitative data collections have been adopted. A survey of 64 students was carried out at the end of the 12th week using a self-constructed questionnaire based on the previous related literatures. Qualitative data was based on discussion with other lecturer, blog entries from the students and personal journal entries. The triangulation was used to provide in depth understanding of the teaching process and their reflections on learning. The research provides information for further intervention in improving teaching strategies.

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Introduction

Assessing effective teaching in ICT learning environment is crucial to achieve the market and global demand among students in higher learning institutions. Educators must not only assess student learning but also the teaching strategies. Thus, there is a need to review the curriculum by placing video project as part of the subject area to be learnt. Previous researches have shown that self-confidence factor was predicted by accuracy of performance, metacognitive awareness, and beliefs of competence in reasoning ability (Kleitman & Stankov, 2007). However, these researches were based on surveys without any intervention of teaching strategies. This present research has focused on the creation of video designed for student-teachers taking the course of Instructional Technology at International Islamic University, Malaysia. The main objective of the research was to reveal an in-depth information of student-teacher's knowledge and applications of principles in designing videos by using the Internet technologies to upload and how it can be applied in the school learning environment. By introducing the video editing skills as part of the visual literacy competency, this research has investigated on the effectiveness of teaching strategies and assessment plan, self-regulated learning towards interest in learning. This study will contribute to the application of Gagne nine events of instructions in the technology learning environment. Hence the study can enrich the student-centred approach in future teaching and assessment strategies.

Theoretical Framework

This research has utilized the Instructional strategies of Gagne' (1985) nine events of instructions and student centered assessment approach of Brown, Rust, and Gibbs (1994) where they include the steps of :

- i. involving students when the task is set;
- ii. involving students when the task is completed.

Based on the behaviourist learning theory, Gagne' nine events of instruction can be expanded to the technology based learning environment which encompasses cognitive information processing and constructivist approach where students learn by discovering their own knowledge. The sequential events were arranged according to:

" 1) gaining attention 2) informing the learner of the objective 3) stimulating recall of prior knowledge 4) presenting the stimulus material) providing learning guidance 6) eliciting performance 7) providing feedback 8) assessing performance and 9) enhancing retention and transfer"

(Gagne & Dick, 1983).



Gaining attention relates to the process of perceptions. This includes prompting student curiosity in learning, grasp their attention and interest, and inspire students to be persistent in learning. Gagne adopts the term *activates receptors* to reveal the step in gaining attention. Informing learner the objectives must be given in the teaching strategies. This ensures students to know on what to expect in learning the subject matter. Thus, students are able to prepare themselves and strategize the steps to be taken in order to fulfill the learning task. Presenting the stimulus material requires teacher to provide information in chunks and recall students' prior knowledge. This ensures the short term memory is activated. Gagne also indicates learning guidance to ensure students are able to absorb new information and sustain in long term memory. In eliciting performance, Gagne includes the step of allowing students to do the task and ask related questions in order to solve the problems. Thus, students are able to verify their understanding and remembering in a long term basis. Lecturers or teachers then have to give feedback to ensure reinforcement to take place. As part of the final evaluation, students must be tested in order to retrieve their final understanding of the content that being taught in class. Learning will not be meaningful if teaching does not allow students to relate with real life context. Thus, the last stage of enhancing retention and transfer is about asking students to do it and carry out the task related to real world problem.

Based on constructivist approach of student centered assessment of Brown et al (1994), the two processes of student involvement provide autonomous learning where Deci and Ryan (1995;2000) relate to intrinsic motivation. Based on Brown et al (1994), the first stage of student involvement includes the choice of task given, setting the assessment task and set the assessment criteria. In this research, the students were given the choice of choosing the title of the video that relate to any subjects related to school curriculum. They were also given the opportunity to form groups with any member that they like. The researcher cum the lecturer designed the assignment where students in groups have to develop instructional video and presented in front of the class. However, the researcher has discussed on ways and means of evaluating good videos. The assessment criteria were then decided together with the students.

The second stage of student involvement includes students' participation in giving comments during planning stage and after the completion of the video project. Students revised their plans based on the peers' feedback. Then, after completion of the final project, the students were given the opportunities to improve their work. Students were also asked to give marks to their friends' group video projects. These student centered strategies have shown effective approach to learning which associate to interesting, exciting learning, boost up confidence (Lea et al, 2003; Hall & Sauders, 1997) and involve meta cognitive processes. Meta-cognitive relates to the ability to monitor, regulate and direct oneself to a desired end (Ridley et al, 1992; Grabinger, 1996). They refer to the strategies of student control of her learning, planning and selecting strategies, monitoring the progress of learning, correcting own mistakes after getting feedback, selecting the effective learning strategies. However, student-centered learning has some barriers which include lack of familiarity and too much emphasis given to individual learners (Simon, 1999; Edwards, 2001). In this context, they relate student centered learning as individual approach. Thus, the researcher has included group work as compulsory so that students will not be in isolation. In the context of culture as cited in O'Neill and McMahon (2005), O'Sullivan asserted that student-centered learning may be cultural oriented where he includes the reason of limited resources in certain countries. In Malaysia, computer technologies in schools and universities are given priorities by the Government with millions of investments having been placed in the ICT development. Therefore, based on the framework of student centered teaching assessment which involve before and after task completion, this research adopted the constructivist approach of discovery learning, active learning and participation.

Instructional Designs and Research

Instructional design such as ADDIE (Dick & Carey, 1996) of system approach involves a detailed linear process that cannot be independent from each step. Hence, the teacher or designer cannot skip any of the steps in designing instructional materials. Further, it relates the feedback given by the learners from both formative and summative evaluations in order to revise the instructional materials which consumes more time. ADDIE is more compatible for a larger group and big projects involving professionals rather than students who are new in the technical knowledge. On the other hand, Gagne nine events of



instructions emphasize on the outcomes resulting from training or teaching through the process of motivation, reinforcement, retention and transfer of knowledge.

Parallel with Gagne (1987), Brophy (1998) agreed that by attracting students to learn is the first step that will influence their engagement in learning which lead to their persistence, interest and enjoyment. Thus, teachers should design an element of attraction in the learning environment which includes the information of the significant of watching the video and technical aspects such as good combination of colours, music, and attractive slide transitions. In the process of engaging students, the teacher must alert on the content to be learnt whether directly or indirectly. This will create the expectation of learning (Gagne, 1987), determine the best way to learn (Dick & Carey, 1996) and able to measure on the achievement of learning (Bloom, 1956).

There have been mix findings of the impact of instructional video on learning. Instructional video can influence satisfaction and better learning outcomes when they are interactive (Zhang et al, 2006), expose language learners for authentic cultural information (Herron et al, 2000), students become autonomous by empowering learners become teachers (Wenden, 2002) and foster metacognitive processes (Baylor, 2002). The metacognitive processes involve awareness of the knowledge (what I know), what I want to learn and what I have learnt. Whatever advantages the instructional video has will depend on the quality of the design and implementation. It involves time, planning, cooperation and high quality feedback and assessment from the facilitator. Theories and instructional designs are crucial to be conceptualized as different purpose requires different strategies.

Research Design and Methodology

Quantitative and qualitative research methods have been utilized to triangulate the findings. Adopting an experimental design, the research was based on the quantitative and qualitative feedback after seven classes of teaching instructional technology subject with the outcome of instructional video for the students to develop. Thus, students were exposed to the concept of instructional technology, instructional design and the step by step of using Ulead Video editor version 10. The students were provided with desktops of trial version installation. Students were given two to three weeks to design and create videos that were related to the school curriculum. At the 7th week, students have to present their videos in groups. All the students were given the opportunity to evaluate their peer's project based on the assessment criteria given by the researchers.

Quantitative design

A self-constructed questionnaire of 20 questions has been designed with regards to student perceptions of effectiveness on teacher as facilitator, the student involvement, metacognitive and engagement in learning. The questionnaires were distributed after the students have completed their task. The questions are revealed in Table 1.0.

Qualitative design

As according to Gibbs (1994), student centred approach involved different ways of assessment which include portfolios, blogs and etc. Thus, students were asked to create a blog for each group. The students were made compulsory to have blog entry for reflections. The feedback included their learning process, difficulties and feelings. Further personal diary of the researcher was utilised to record every week progress and problems.

Validation of experimental design

Two lecturers involved in this research. In order to address the validity of the findings, both lecturers have experience in teaching the same course (Instructional Technology) at International Islamic University Malaysia. They also have been exposed to the same video training production and Instructional design workshops. Hence, the second researcher evaluated the videos together with the first researcher during student presentation. Discussions were made together after the student class.



Sampling

The samples include 64 student-teachers of different specialization namely English and Arabic language. Two classes were involved. The samples were selected based on the enrolment of the course in the respected semester.

Table 1 Items in the self-constructed questionnaire

Student-centred approach (teaching strategies)	<ol style="list-style-type: none"> 1. extend more classes for developing video (negatively worded) 2. enough technical guidance 3. overall planning is provided 4. given opportunity to correct my mistakes 5. prefer title is given by lecturer (negatively worded) 6. need more information rather to discover by ourselves (negatively worded)
Metacognitive process	<ol style="list-style-type: none"> 1. help to improve my skills in planning 2. aware the importance of knowledge sharing 3. aware of how I am accessed 4. enables me to cooperate with friends 5. aware of the learning objectives 6. can learn better when my friends give comments 7. can communicate better with friends 8. improve my skills in planning
Student engagement	<ol style="list-style-type: none"> 1. satisfied to learn 2. happy to learn 3. persistent despite challenges 4. not a waste of time to learn 5. enjoy in class 6. look forward for next class when it ends

Analysis Procedure

Base on the experimental design, descriptive statistics, and linear regression were used to reveal the distribution of data and the relationships between teacher as facilitator, self-regulated learning (student involvement), metacognitive process, student efficacy and student engagement. The results given from both researchers regarding the student score of effective instructional; video. This was to ensure the reliability of the results given. Further, all the factors of student centred learning were analysed using linear regression. In-depth information has been gathered to report their experience of interest, persistence and enjoyment from the blog entry.

Results

Descriptive data

The quantitative results have shown the distribution of data and the relationships of the factors involved. Student engagement became the dependent variable and self-regulated (student involvement), teacher as facilitator and student metacognitive were the independent variables.

There were 64 students (48 females and 16 males) involved in the study. All of them were majoring language (English or Arab) with Instructional Technology as a minor subject. Table 2.0 reveals the mean and standard deviation distribution of each item.

Table 2.0 shows that lowest mean score is **Prefer lecturer to give title** (2.67) indicating that the students prefer the lecturer not to provide them titles as they want to have freedom to decide. However, there is a variation that shows different views with standard deviation is 1.286 despite the number of sample is low (64 students). On the other hand, majority of students have agreed that the lecturers allowed them to



correct their mistakes (Mean is 4.58, S.D is 0.558). All the scores of the items were above the anchor point of 2.5 indicating they agreed upon the teaching methods being given and engagement in the classroom teaching. All the items reveal consistency of questions with reliability test of 0.7772 (Cronbach's Alpha).

Table 2 Mean and standard deviation distribution of each item.

	Mean	Std. Deviation
extend more classes for video	3.53	.992
enough technical guidance	4.11	.567
prefer lecturer to give title than choose ourselves	2.67	1.286
prefer lecturer gives more info than for us to discover ourselves	3.19	.941
develop my confidence	3.98	.630
improve planning skills	4.41	.526
aware of importance on knowledge sharing	4.47	.563
enable to cooperate with friends	4.56	.500
aware of how our video will be accessed	4.06	.710
able to correct mistakes based on lecturer's comments	4.58	.558
aware of learning objective	4.14	.560
given the plan to develop video	3.95	.602
learn better from friends' comments	4.16	.718
feel skillful in using video editor	4.06	.664
satisfied with steps taken by lecturers to teach	4.00	.642
happy to learn to develop video	4.22	.678
persistent to learn despite difficulties	4.16	.761
not a waste of time	4.17	.551
enjoy being in class	4.11	.693
look forward next lesson	3.83	.725
Valid N (listwise)		

Note: Alpha reliability is 0.7772

Relationships of the Factors in Student-Centred Approach

Student-centred approach have been explored in the context of teacher being a facilitator, teacher provide opportunity for student involvement where students are aware of their thinking through meta-cognitive (able to be self-regulated, students feel competent and confidence in the technical and application knowledge as well as aware the knowledge of what I know, what I want to learn and what I have learnt (metacognitive). By accommodating these factors, students are engaged in learning.

Table 3 Mean and standard deviations of item

	Mean	Std. Deviation
CENTRED	3.1797	.58667
META	4.2691	.34563
ENGAGE	4.0807	.46195
Valid N (listwise)		

Further analysis has been carried out by recoding the negatively worded questions. Then the mean score for each factor was computed (Table 2.0). It was found that metacognitive process shows the highest score (4.26911) and the lowest is teacher-centred strategies (3.5104). To identify the relationships of the



factors, the data were analysed using linear regression. The results show that the model can be explained by 61.9% ($R=0.619$). It was found that only student-centred teaching strategies did not influence student engagement ($p>0.05$). Only meta-cognitive influenced student engagement by standardized coefficient of 0.602 (see Table 3.0)

Table 4 MRA results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.344	.619		.555	.581
	CENTRED	.095	.079	.120	1.193	.237
	META	.805	.135	.602	5.985	.000

a. Dependent Variable: ENGAGE

The results did not satisfy the previous research findings of Piaget (1950); Vygotsky, (1978); and Lea et al (2003) that student centred and constructivist approach will ensure student engagement in learning. Thus, it can be concluded that learning computer technology such as video development and design using unfamiliar software requires more assistance from the teacher and less autonomy and freedom in learning. Students will feel alone and isolated despite support given by the teacher cum lecturer. Student-centred approach may affect engagement in different context than learning technical computer skills. The finding from the blog entries include:

- *“I have difficulties in adjusting myself to the software. Why can’t we just use Window Movie Maker? Anyway, I do appreciate your teaching. Thank you so much”*
- *“ In the beginning, I feel lost. However, after getting help from my friends, I can understand better. I learn more from my friends than from the lecturer”*
- *“ The lecturer teaches too fast! Sometimes I cannot catch up. There are so many information to digest. Please give us more time”*
- *“ You need to stress on the skills of inserting the wording in order to make it look interesting. The comments given by you are good. I can make use of it”*

These blog entries have proven further that teacher or lecturer needs to address further on the technical aspect of the video editor. Despite just becoming a facilitator, she needs to adjust the teaching when help is needed. The verbal explanation will not be enough and future teaching in later semester must include printed notes to assist them. Further, lecturer assumed that students can discover themselves on other technical skills. Yet, the students expected more from the lecturer. This indicates that discovering knowledge approach in technical learning environment must be carefully addressed as students have different learning styles. Lecturers have to reach out further beyond the technology in order to assist quality instruction for all learners (Cooze & Barbour, 2005)

Further discussion from the second lecturer reveals that student should be given the titles based on the school text books. He disagreed with my approach of allowing a broad freedom to choose any title from the school curriculum. Also, he disagreed with assessment criteria as he requested to have technical skills be emphasized instead the product based on the theories only. He was not happy with the shaking or excessive movements of the video recording. This implies of my inability to acknowledge the students about using the tripod when capturing the video.

I have also experienced that students kept changing the title given earlier. This shows that not all students can utilize the freedom to learn as they cannot decide by themselves. On the hand, they did not come to see the lecturer whenever they have problems. Based on the feedback during the class, students have mentioned that they prepared the video at last minute since there were other assignments that need to be completed for other classes. They requested that this subject should not be given exam as they can concentrate on the task given.



Student Assessment in Video Production

Since students were allowed to make amendments for the video production, all of them obtained good grades with the least was B+. The students however, mentioned in the blog entry:

- “ *Why the weak students are given more time to make amendments and able to achieve like we do?. We have taken a lot of effort to develop and finish on time and yet they managed to do it again*”

Students were not aware that in constructivist learning, students should be allowed to achieve the objectives as learning process is important. Thus, I explained that I wanted everyone to achieve the learning goal. Therefore, the exam at the end of 14 week is important to place where the students' positions are. Based on Gagne' nine events of instructions as a guideline, we make an agreement to get a consensus from the lecturer friend of giving the marks. We both discussed together in order to do justice to the students. I found that he is more strict than me in giving marks as he was looking and the aspect of technical knowledge.

Discussion and Conclusions

Student-centred learning has always been emphasized in the higher learning institutions. The active and discover their own learning (Vygotsky,1978; Piaget, 1950), aware their own knowledge and thinking (Baylor,2002), and; students are autonomous and responsible for their own learning (Lea,et.,al.,2003) reveals the characteristics of the student-centred approach. However, the issue of the extent on students being responsible and autonomous are still vague especially when dealing with different learning styles and computer technical learning. Not only students have to struggle with the technical problems, they at the same time need to apply the theories and design at short time given. Thus, future teaching requires more assistance and notes to help students to learn more effectively.

Gagne nine instructions have been adopted in the structure of teaching strategies in instructional video production. All these elements were also used as a criteria to assess students work. Thus, students are able to assess not only their own work but to evaluate others. The criticism given by students will ensure active participation,critical thinking and students are responsible for their own learning. These abilities of awareness of students' thinking, able to manipulate, enable planning, set a goal are referred as metacognitive skills (Roberst & Erdos, 1993) will promote students to success in learning (Borkowski et al, 1987; Garner, 1990).

The findings have also indicated that teacher being the facilitator was not able to enhance student engagement in learning. Autonomous learners must be able not just to be responsible to his own learning but also must have *wants, needs* and *interest* (Breen & Mann,1997). Taking into account the culture, the Malaysian students are still lacking in creativity and thinking skills and they may not yet ready to indulge in the 'discovery learning' method.

The findings have also revealed that despite the challenges and problems in designing and developing the video, they enjoyed themselves especially when they successfully accomplished the goal. They proposed the Instructional Technology and computer skill subjects to be full task base rather than having exam. This will ensure more time can be spent in engulfing the technical skills. The student-centred assessment was not well received by the students since they were allowed to make amendments despite failed to accomplish the learning goal. Further, they have mix responses when receiving comments from their peers. This study provides an implication toward teaching strategies in learning computer technologies. This study becomes a benchmark for future research in student-centred learning in computer technologies environment. However, the findings must be carefully addresses as pure experimental design by comparing groups of treatment and control group were not carried out. The research findings can be used only to assist further intervention of teaching strategies in future.

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