Improving Educator Development by Innovation in Teaching Activity via web 2.0

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Abstract. Preparing insightful teaching and learning materials for a lesson does need the effort from the educators. Educators should make some research of suitable ways to improve their teaching and learning sessions. In this 21st century, technologies are widely used as tools for education. Even so, there are educators that willing to support and some who do not agree to change. The aim of this study is to develop an innovation teaching materials by applying web 2.0 tools. The intention is to broaden knowledge and in the same time getting response and feedback from people regarding the teaching and learning session materials produced with proper instruction. Action research was used to give a structured flow of this study. The outcome of this study was encouraging and the reflection of this study can help educators in improvising their teaching and learning sessions and materials using action research.

1. Introduction

Being educators is a big job and responsibilities are on the educators shoulder especially to educate multiple generations such as Baby boomers, generation X and generation Y with their own differences in characteristics. The educations now are moving towards 21st century and educators need to move faster and prepare their lessons based on 21st century education. A student need electronic tool to support students’ learning and professional growth [1]. Therefore, conducting learning session is more feasible to student’s current needs. Web 2.0 is used in this study as it emphasize user-generated content, usability and interoperability for end users. Meanwhile Web 1.0 refers to the first stage in the World Wide Web, which was entirely made up of Web pages connected by hyperlinks. Although the exact definition of Web
1.0 is a source of debate, it is generally believed to refer to the Web when it was a set of static websites that were not yet providing interactive content. In Web 1.0, applications were also generally proprietary.

2. Objective and Methodology

This study is focusing on the development of teaching material and applying web 2.0. Action research was implemented in which participants examine their own educational practice systematically and carefully, using the techniques of research. It is based on the following assumptions [2]:

- Teachers and principals work best on problems they have identified for themselves
- Teachers and principals become more effective when encouraged to examine and assess their own work and then consider ways of working differently
- Teachers and principals help each other by working collaboratively
- Working with colleagues helps teachers and principals in their professional development

According to Ferrance [3], action research specifically refers to a disciplined inquiry done by a teacher with the intent that the research will inform and change his or her practices in the future.

3. Past Paradigms and Anomalies that occurred in Instructional Technology

Paradigm in education keeps shifting until recent years and Instructional Technology in education is one of the important matters that have experienced various paradigm shifts [4]. Technologies are being used in order to support instruction. The popular technology used in instruction is of course the computers. Before computers, there were numbers of other forms of technology used in instruction such as radio, television and film been introduced into classroom [5].

Anomaly that occurs at that particular era was as described by Cuban [5] which he argued that the failure of various technology-driven initiatives to achieve an appreciable impact has been due largely to a failure on the part of the designers to fully appreciate the expectations and requirements of classroom practitioners. Lack of appreciation of classroom practitioners has caused a failure to a technology in instruction. Therefore, in the next segment, the researcher would like to describe more on anomalies in the use of instructional technology focuses on higher education.

The rationale for formulating 21st century skills has been summarized in the table based on Dede’s [6] comparison between 20th century & 21st century skills. From Table 1, it is obvious that the difference between 20th century and 21st century skills is at the usage of technology. The knowledge communicates in schools for 21st century skill is towards creating new contextual skills that suitable for 21st century learning environment.
Table 1. Summary of the difference of 20th century and 21st century

|                                | 20th century skills | 21st century skills |
|--------------------------------|---------------------|---------------------|
| Capabilities people need for   | ✓                   | ✓                   |
| work                           |                     |                     |
| Citizenship                    | ✓                   | ✓                   |
| Self-actualization             | ✓                   | ✓                   |
| Emergence of every             |                     | eg: types of work done by people-as the kinds of labor done by machines-shifted as computers and telecommunications capabilities can accomplish human tasks |
| sophisticated information and communication technologies |                     |                     |
| Knowledge communicated in      |                     | Creating new “contextual” skills unique to millennium work and citizenship |
| schools                        |                     |                     |

4. Results and Discussion

There are four basic themes in action research that are empowerment of participants, collaboration through participation, acquisition of knowledge, and social change [3]. In conducting action research, educator structure routines for continuous confrontation with data on the health of a school community. These routines are loosely guided by movement through five phases of inquiry. The five phrases of inquiry are simplified to better understanding as in Figure 1, the action research cycle.
To make the class lively, the instructor must prepare activities that can attract students and entice them to actively continue to learn. According to Swanson, Cano, Samy, and Hynes [7], the use of the term “active learning” by educators relied more on intuitive understanding than a common definition. Thus, many educators claim that all learning is essentially active and students are actively involved listening to formal presentations in the classroom [7]. Students must do more than just listen [8]. They must read, write, discuss, or be engaged in solving problems. Therefore, strategies that promoting active learning be defined as instructional activities involving students doing things and thinking about what they are doing [8]. Therefore, educators must be creative and advance in creating a better teaching and learning session to make learners more engaged and gain meaningful lessons.

After identifying all the problems stated in previous section, the researcher has done an action research to improve teaching and learning session in vocational education. The researcher has the idea of upgrading the traditional lesson to using web 2.0 tools to expose the lesson to other learners not specifically to vocational learners and instructors only but to other audience.

4.1 Preparation of Learning Material

In this study, a lesson of cooking was selected to be improved in vocational education. The old method that still being applied today is instructor do the demonstration to the students and students try to follow the steps. At the end of the class, the objective to make the cake has been reached but only to that extent. The researcher wanted to broaden the classes to be online and can be watched by other people too. The idea is by recording the lesson, and publish it online using Web 2.0.
The benefit of using web 2.0 is to get feedback from the viewer where they can post their comments and we can reply the comments. These threads of constructive comments are used as reflection of the lesson itself and how the lesson can be improved next time. As this activity will involve instructor and learners, a suitable theory has been chosen. Activity Theory is chosen because the intention of the researcher is to create a social constructivist learning environment. Therefore, activity theory is suitable to be applied in this study.

In the work of Lorna Uden and Valderas [9], they explain that activity theory focuses on the interaction of human activity and consciousness within its relevant environmental context. The basic structure of an activity for this study can be illustrated as in Figure 2.

![Figure 2. Activity system for peer review assessment video](image)

The researcher used almost all tools in the while editing the videos such as cutting the video length, adjusting the audio (high or low), put captions for easy and clear tracking by using callout tools, use title clips for every intersections of the videos, use transitions and basic video editing functions such as blurring and fading the video.

4.2 Publishing into web 2.0
After the video production processes were done, it is time to publish the videos to any online video streaming such as YouTube and Vimeo video sharing. The researcher preferred Vimeo since the layout is more interesting and colorful. Besides, the user friendly environment offered by Vimeo has attracted the researcher’s interest to upload the videos into Vimeo. In order to upload the videos, the researcher need to sign up an account and it is free, and Vimeo has given 500 megabyte of space for users to upload their videos. The important reminder from Vimeo is that the videos uploaded must be original from the users. The process of uploading the videos depends on the length of the videos itself. When the uploading process between user’s computer and Vimeo are done, the user need to wait for another approximately 33 minutes for the videos to be posted on Vimeo and can be viewed online (Figure 3 & 4).

Figure 3. Video editing process (post-production) using Camtasia Studio software
4.3 Review of the video on Vimeo

User can send invitation to other colleagues and students and also other audience to view the videos by entering email addresses of the person. Vimeo will automatically send invitation emails to the specified person. If the user set the videos as private, then password are required for other person to view the videos. As for the researcher, the videos are set to Public so that not only specified person can view, but other viewers can also view the videos without needing to enter password. The intention is to share the knowledge with the world as a big community.

The real intention of producing the videos was to get feedbacks and comments from colleagues and students who viewed the videos. Viewers can interact with the user by posting their comments in the comment box. Users can reply each of the comments by easily clicking the ‘reply’ button on the left of the comment box post by the reviewers.

The process of posting comments and giving feedbacks are the most important process in gathering information of the current method used by the educator. From the comments, the instructor can find out the strength and weaknesses from the lesson. Therefore, after identifying all the strength and weaknesses from the video, the educator can make a self-reflection in order to improve the next
lesson. As for the researcher’s videos, positive comments and ideas were posted by the viewers and those comments surely reflect the teaching and learning process occurred in the videos. The researcher was excited to get more and more comments and feedback from the other viewers so that amendments can be done in the next lessons.

From the thread of comments in Vimeo, it shows that viewers are actively concentrating on the videos. There were positive comments and also some viewers posted ideas regarding the improvement that can be done for the next video production. Researcher has had a great experience in doing the whole process starting from planning until the reflection and improvement to be done. Some comments that can improve the video productions for educational purposes. Some of the comments are as follows:

“The instructor used authentic learning by having the training of preparing a cake in a kitchen. The introduction is clear and it was confidently and naturally presented. The whole video presentation looks professional. You could also use some camera angle techniques to improve the presentation. I looks like instructor is not only teaching the people she has invited but also the audience who is watching the video. Good work.”

“Student gave innovative suggestion to replace the cake batik with other ingredient, instructor didn't encourage new innovative and creativity; even though instructor explain why other ingredient was not suitable.”

The educator will definitely list the weaknesses with the purpose of making improvements in self teaching and learning session. Important aspect as pedagogy in teaching cannot be left as second priority. All these processes are actually a good approach of learning and embedding technologies in daily lessons as experienced by the researcher. The combinations of ideas to improve teaching and learning session using technology in order to promote 21st century education can be seen positive by the application of action research done by the researcher. What educators should do is find ways to always improve the current practice in teaching and learning so that the meaningful learning can occur. Students in the 21st century are active and full of commitments. Therefore, it is the role of educators to be ahead of the students to give motivation and engagement to the learners towards knowledge taught. Educators also need to look in broader view. Educator needs to put more effort in sharing their knowledge to produce quality graduates [10].

5. Conclusion
To conclude, each of the educators in 21st century should be aware of the ICT transition. Students are now attracted to interactive contents and mobile learning. This effort could safe cost, time and the
knowledge could be shared to the entire technology world [11]. The development of online material does support the 21st century education and also enhance the educator’s skill in using web 2.0 tools in making learning session meaningful with proper instructional technologies [12].

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