A framework of project-based learning for enhancing student competencies through digital video production

Lim Seh Hoe[1,*], Tay Choo Chuan[2], Hanipah Hussin[3]

[1] Institut Pengurusan Teknologi dan Keusahawanan, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia
[2] Fakulti Kejuruteraan Elektrik, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia
[3] Pusat Bahasa dan Pembangunan Insan, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100, Durian Tunggal, Melaka, Malaysia.

*Corresponding e-mail: limsehhoe@gmail.com

Keywords: Competencies; project-based learning; framework

ABSTRACT – This study research was aims to provide a framework, a set of guideline for secondary school pedagogical change. Thus, project-based learning(PBL) is a key to support students more competitive in an external environment. Students produce an educational video based on the topic they are learning. Integrating technology in PBL to enhance student competencies based on education curriculum Malaysia, which consist of communication, collaboration, creation, critical thinking. The data were collected through a questionnaire for 63 respondents. The results show significant positive results in terms of student competencies. PBL framework provides appropriate structure for determining all level of student competencies.

1   INTRODUCTION

In today's global economy, a nation's success depends fundamentally on the knowledge, skills and competencies of students. [1] There is a need to develop students' competencies for 21st century era in order to support the change of global competition and challenging workplace in the digital world.[2] The Malaysian educational system is currently undergoing transformation, one emphasis of which is to create a generation who can communication, collaboration, think creatively, innovatively and critically . This curriculum will still stress student-centred and differentiated teaching, but have a greater emphasis on project-based work. School-based assessments will also shift their focus to testing for higher-order thinking skills. [1] Thus "transmission pedagogy" has prepared high-achieving student for increasingly complex life and work environments in future. It has claimed should be shaped the creative, flexible and high performance workforce Malaysia now needs to meet the challenges of globalization.

PBL increased student motivation by organizing their own learning in solving real-world problems. Students develop competencies to develop new ideas and products and ability to work with a variety of technologies.[3] Video can be part of immersive simulation environments; can be embedded in more complex virtual learning environment with text, pictures, graphics, and so on .[4]

The framework is aimed at helping future leaders to provide a more complete, holistic, and systematic sustainability education. To better develop mind-sets and actions of future generations, we must provide students with a complete set of sustainability competences. PBL framework as shown in Figure 1, need to ultimately serve as a guide to learners and educators to fulfil learners' need, moreover to achieve desired educational outcomes in student competencies.
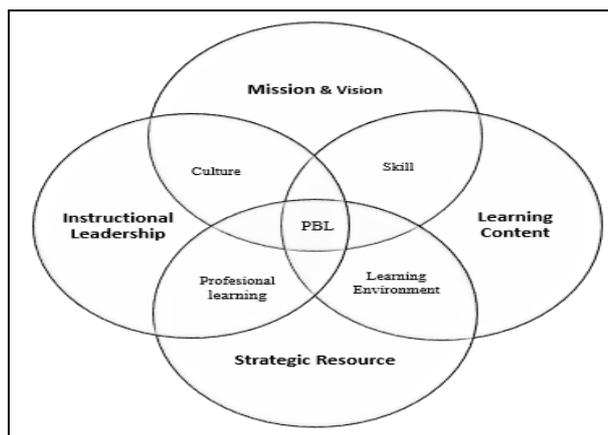

Figure 1 Adopted from Transformational framework in effecting whole school change[5]

Framework of PBL highlight the key organizational structure as develop Table 1, however element of framework of PBL shown in Table 2.

Table 1 Key organizational of framework of PBL

Mission	Instruction Leadership	Strategic Resource	Learning content
• Student has a strong sense of wellbeing.	• Professional Learning Team	• Appropriate use of a device	• culture
• Student are effective communicators	• Administrator	• Wireless infrastructure	• Team building
• Student are confident and involved learners	• Instructional Walks	• Learning management system	• Responsible life
Student are concerned with and contribute to their world	• Individual	• Textbook	

This framework will help students become the leaders of the future as well as citizens who are knowledgeable and understanding of the natural world and the environment. Procedural and conceptual learning concepts are vital and essential tools to use in improving learning at the secondary school level.

Table 2 Element of framework of PBL

Culture	Profesional Learning	Learning Environment	skill
Peer-coaching Student-centred Group work	Timetable Development program	Classroom Computer lab home	Communication Collaboration Creation Critical Thinking

2 METHODOLOGY

A study was conducted to identify the processes involved when applying the PBL approach. There are 63 students as respondents. The respondents were given 4 weeks to plan and organize the video project. This study was conduct to collect quantitative data. A researcher made Likert-type questionnaire is developed to identify students' viewpoint of the PBL that support student learning of the competencies. The questionnaire used by Hixson et al. [6] was modified based on student competencies in this study. The PBL survey instrument is use as the primary source of data collection.

3 RESULTS AND DISCUSSION

The data analysis of the questionnaire suggests that using technology on PBL in 4 competencies. Figure 2 showed at 86% of the participants agree PBL enhancing their communication, whereas more than 91% of respond agree PBL develop their critical thinking, collaboration, and creativity. As Figure 2 shows, we found that most respondents believe that digital video production in PBL to enhance their competencies regard collaboration, critical thinking and creation.

Data is given for four weeks according to project based learning at group.
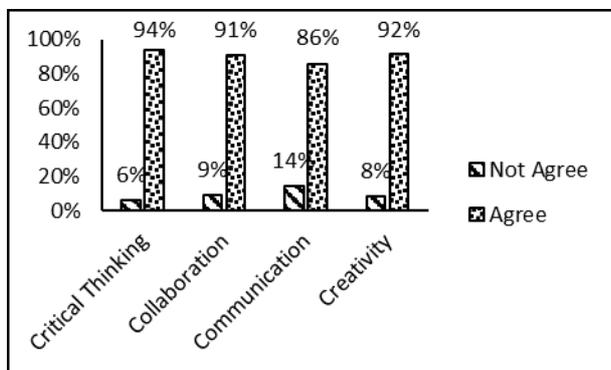

Figure 2 Project-based learning for enhancing secondary student competencies

Teachers might have liked to see a framework on project-based learning before teaching it themselves, and that it would have helped to work with other teachers to plan tasks and group learners. Data research from secondary school for development of the framework, these shows that the propose framework can be use in Malaysia secondary school, as a quality framework of successful research product. A framework on PBL practice will contribute towards the quality of teaching and learning. The framework serves as a reference to facilitate the relevant policy- making and contribute to education secondary school. This study contributes to the understanding how PBL should be implemented in the classrooms to encourage students to pursue STEAM majors at the high level.

4 CONCLUSIONS

Teachers use methods that are proved effective through scientifically based research the framework for 21st Century Learning, which offers guidelines for how to prepare learners with the skills they will need to be successful in the 21st century. Video production supporting them in the expression of their understanding about the subject matter As previous study Prensky [7] asserted, the education systems and the learning processes of the student should be revised accordingly, considering that the minds and perception structures of the student, who have been born into technology, have changed too. Spin offs of this project can include project-based educational practices that take market demands and leverage graduate student experience and knowledge to collaboratively develop innovative pathways to student success. Education and the policies that facilitate the process of innovation and knowledge creation have profound effects on the long-run economic growth and development patterns. [7]

REFERENCES

[1] M. Malaysia Education Blueprint, "Malaysia Education Blueprint 2013 - 2025," *Education*, vol. 27, no. 1, pp. 1–268, 2013.

[2] S. Soparat, S. R. Arnold, and S. The, "The Development of Thai Learners ' Key Competencies by Project-based Learning Using ICT The Development of Thai Learners ' Key Competencies by Project -based Learning Using ICT," *Int. J. Res. Educ. Sci.*, vol. Volume 1, 2015.

[3] S. Dole *et al.*, "Transforming Pedagogy : Changing Perspectives from Teacher-Centered to Learner-Centered The Interdisciplinary Journal of Problem-based Learning Transforming Pedagogy : Changing Perspectives from Teacher-Centered to Learner-Centered," *Interdiscip. J. Probl. Learn.*, vol. 10, no. 1, 2016.

[4] P. M. Rasi and S. Poikela, "A Review of Video Triggers and Video Production in Higher Education and Continuing Education PBL Settings," *Interdiscip. J. Probl. Learn.*, vol. 10, no. 1, pp. 5–6, 2016.

[5] A. Hendry, G. Hays, K. Challinor, and D. Lynch, "Undertaking educational research following the introduction, implementation, evolution, and hybridization of constructivist instructional models in an Australian PBL high school," *Interdiscip. J. Probl. Learn.*, vol. 11, no. 2, pp. 7–10, 2017.

[6] S. Achievement, "Extended Professional Development in Project-Based Learning."

[7] S. Masino and M. Niño-Zarazúa, "What works to improve the quality of student learning in developing countries?," *Int. J. Educ. Dev.*, vol. 48, pp. 53–65, 2016.