A Framework of Project-Based Learning for Enhancing Student Competencies through Digital Video Production

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Abstract—**This study research was aims to provide a framework, a set of guideline for secondary school pedagogical change. 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.**

Keywords—Competencies; project-based learning; framework.

I. 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. Project-based learning was introduced in secondary school curriculum in terms to produce creative and innovative secondary students. This curriculum will still stress student-centered 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 challenges of globalization. The demand for knowledge and skilled workers is growing due to the economic really in future.

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 use of the instructional frameworks is generally viewed as an successful way to allow proficient arranging through a systematic procedure that assesses potential occasions against an concurred set of predetermined target [5]. The framework has improved competencies for students with long term conditions.

PBL framework that helps in considering which students and staff should be partners, when and in what ways, is the participation matrix. Not using the framework were lack of awareness of a new version and lack of involvement in formal instruction.

The instructional framework is gone for helping future leaders to provide a more complete, holistic, and systematic sustainability education. To better develop mentalities and activities of future generations, we should furnish 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. Competence is the ability to undertake responsibilities and perform activities to a recognized standard on a regular basis. It combines practical and thinking skills, knowledge and experience.
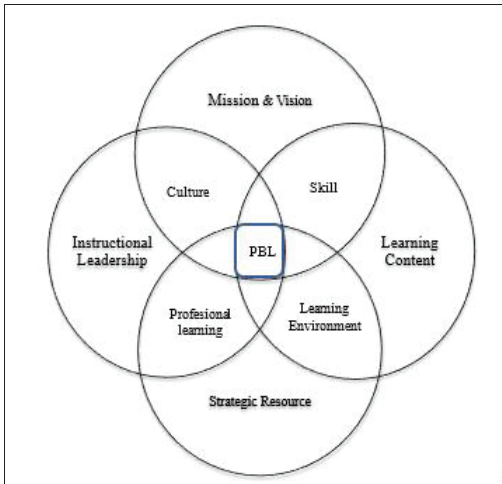

Fig 1: Adopted from Transformational framework in effecting whole school change[6]

TABLE 1. Key organizational of framework of PBL

Key organizational	Description
Mission & Vision	• Student have a strong sense of wellbeing • Student are affective communicators • Student are confident and involved learners • Student are concerned with and contribute to their world
Instruction Leadership	• Professional Learning Team • Administrator • Instructional Walks • Individual
Strategic Resource	• Appropriate use of device • Wireless infrastructure • Learning management system • Text book
Learning content	• Culture • Team building • Responsible • Life

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

Student-centered learning environment enable individual to address unique interests and need, productively engage complex. Furthermore, students obtain competencies and the capability to learn in in different contexts, new situations and unfamiliar environments. Consequently, self-determined learning supporting within formal education, but also for informal and lifelong learning.

TABLE 2. Elements of Framework of PBL

Elements	Description
Culture	• Peer-coaching • Student-centered • Group work
Professional Learning	• Timetable • Development program
Learning Environment	• Classroom • Computer lab • Home
Entrepreneur skill	• Communication • Presentation

Learning with understanding and the important of social and culture context in learning was emphasizing by student-centered learning perspective. The learning environment is organized in a "student-centered" way. Students memorized the concepts and other things, also study deeply among the learning material. In other words, they get a opportunity to practice their comprehension on the learning material with project-based method.

The student roles were to make the artifacts or products in the projects within the social setting. PBL carry out student role becomes self-determined learning, defining their own roles, learning how to produce. The students in each group fundamentally pivoted their own demonstrations of planning, creating, reflecting, and publishing inside the cycle and could be identified with each progression as appears in Figure 2.
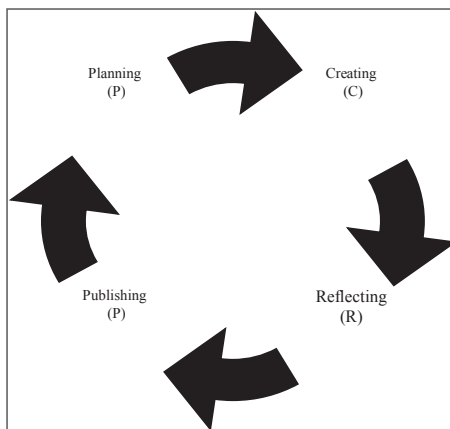
1) Planning (P); student needed to think collaboratively to set their group objectives, plan and structure the tasks to meet their objectives. This stage must ensure that just the required information is verified appropriately. The students choose how the information will be introduced.

2) Creating (C); the students pursued the plan by utilizing fitting media and innovation. When students encountered the issues in this progression and attempted to solve the problems, this drove them to make a new arrangement.

3) Reflecting (R); The students address errors and right mix-ups. This was a very essential advance that students utilized for discussing and evaluating their own or others' tasks for development.

4) Publishing (P); Students utilized this progression to introduce their thoughts, artifacts, or products. They attend to the final product ensuring it meets the desires of the beneficiary.

Fig. 2 PBL carry out student role

II. METHODOLOGY

This study was conducted to identify the processes involved when applying the PBL approach. A kind of descriptive study intend to examine the students regarding the project-based leaning. 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. [7] was modified based on student competencies in this study. The PBL survey instrument is use as the primary source of data collection. The questionnaires were distributed during the class and the students were give 20 minutes to answer the questionnaires. The questionnaire was designed to get students' responses about students' problem solving skill during the Project-Based Learning implementation in terms to support a proposal framework for secondary school system.

The study, a kind of descriptive statistics as frequency, percentage, mean was used to analyze the variables. The data were analyzed with SPSS version 23 for Windows (Statistics Package for the Statistical Analysis). The questionnaire was consisted of five-point Likert scale. It was designed to measure various dimensions, and the interpretation of mean scores of each variable used in accordance with the range of scales.

III. RESULT AND DISCUSSION

The study concluded that there were four elements that significance Project-Based Learning in the secondary school. The four elements are (1) critical thinking about Project-Based learning, (2) collaboration, (3) communication (4) creativity, that been performed at Table 3. T The data analysis of the questionnaire suggests that using technology on PBL in 4 competencies. Figure 3 showed at 86% of the participants 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. A learning framework to focus project-based learning as learning method for supporting the students' development of key competencies. PBL framework as a specific document that provides educators with additional guidance on ensuring learning progress for motivation to learn in a self-directed and self- determined way. Heutagogy can serve in PBL framework that can be applied across the educational and can generate learning environments in depth leaning for students. Guiding students through projects bring them to the power of self-determined learning This study contributes to the understanding how PBL. should be implemented in the classrooms to encourage students to pursue science, technology, engineering, art and mathematics (STEAM) majors at the high level.
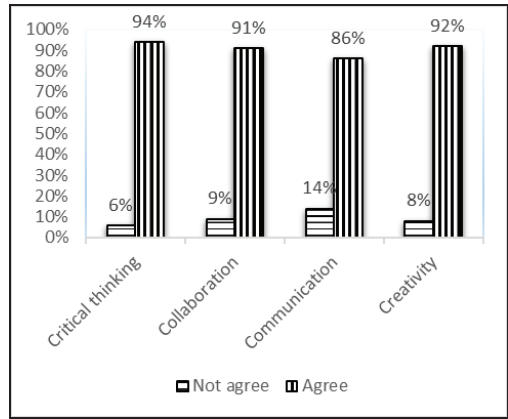

Fig. 3 Project-Based Learning for Enhancing Secondary Student Competencies

IV. 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[8] 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.

A study concludes that a framework of project-based learning should be implemented by teachers themselves. A framework to enhance teachers' skills and quality of students learning, through effective teacher professional and quality of teaching, effective.

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