

## **'HOW TO CHANGE THINGS WHEN CHANGE IS HARD': THE IMPLEMENTATION OF PBL IN UNIVERSITY OF ZAWIA**

**Hameda Suwaed<sup>1\*</sup> and Wesam Rohouma<sup>2</sup>**

<sup>1</sup>College of Arts, Sabratha University, Sabratha, Libya,

<sup>2</sup>Engineering Faculty, University of Zawia, Zawia, Libya

---

**ABSTRACT:** *Research indicates that there is a significant gap between the knowledge and skills that college students need for life and in the current state of education in higher education. Educators and researchers agreed that more must be done to prepare students for future jobs. It is clear that the traditional methods of teaching are not going to improve such skills. A growing body of academic research supports the use of project-based learning which has been considered as a teaching method for closing the gap between current students' learning of knowledge and skills needed for the 21<sup>st</sup> century. The main objective of this research is to investigate the benefits and the challenges of the implementation of PBL in the higher education institutions in Libya mainly in three colleges at the University of Zawia as a case study. The participants of this study are 6 teachers from different departments in University of Zawia. The data analysis of the gathered data evolved that, the PBL as a teaching method, supports, facilitates and improves the learning process. It also allows students to work collaboratively and enriches their creativity.*

**KEYWORDS:** Project-Based Learning, 21<sup>st</sup> Century Skills, In-Service Training

---

### **INTRODUCTION**

Moylan (2008) has found that there is a gap between the skills learned in educational institutions around the world and the skills needed by businesses in the 21st century. Moylan states that educators and businesses have outlined the following as the most important skill sets students entering the workplace should have: time management, group work, and creativity.

It is clear that the traditional methods of teaching are not going to improve such skills. A growing body of academic research supports the use of project-based learning to motivate students, and improve their academic skills [11]. The PBL method has become widely used in many institutions worldwide. This approach to learning is an educational strategy in which students work in groups to learn more about the problem and everything related to it, conduct research, communicate with each other, and apply essential skills in a collaborative learning environment. The teacher plays the role of a facilitator and motivator guiding students' learning towards intended learning objectives or outcomes [24].

This research aims to investigate the benefits and the challenges of implementing the PBL in the University of Zawia.

### **LITERATURE REVIEW**

Project-based learning (PBL) is a model that organizes learning around projects [27]. According to Moylan (2008) “

Project Based Learning (is) a systematic teaching method that engages students in learning essential knowledge and life-enhancing skills through an extended, student-influenced inquiry process structured around complex, authentic questions and carefully designed products and task.

Thomas (2000) sets five criteria for PBL: projects should be central to the curriculum, focused on problems that drive the students to struggle with major concepts, involve the students in constructivist investigation, student-driven, and realistic. Furthermore, Grant (2002) discusses that common features to PBL implementation are: a task, an investigation, the use of resources, scaffolding, collaboration, and opportunities for self reflection.

As a teaching method, PBL has several benefits on the learning process [19]. However, it also poses challenges to teachers. To shed the light on what teachers face when using PBL in the classroom, this literature review will focus first on the advantages of PBL on learning; second, it will focus on the challenges that teachers encounter in PBL implementation.

### **The Benefits of PBL**

Based on a number of studies that investigated the effect of PBL on learning outcomes, Project-based learning has several advantages. Wolk (1994:44) describes PBL as an “outlet for every student to experience success”. In PBL, students gain knowledge and skills through being involved in different activities. In addition, they develop feelings such as self-esteem and self-confidence, [13].

Similarly, Hernandez-Ramos and Pas (2009) indicated that students learning through PBL, were more motivated about working collaboratively on their presentations, and expressed a more positive attitude towards learning. In addition, Noe and Neo (2009) stated that students’ interest, critical thinking abilities, presentation skills and communication skills, and their ability to work effectively on a team were enhanced when they worked on a PBL activity.

Moreover, teachers also relate perceived positive outcomes of PBL on the learning process. Asking teachers about their use of PBL, Ravitz (2008) stated that the strongest reasons given by teachers for PBL use was the teaching of skills beyond the content, making learning more personalized and more varied, as well as teaching academic content more effectively.

### **Challenges in Implementing PBL**

When teachers choose to use PBL in their classroom, they might face certain challenges such as how to adopt the new technique, selection of topics, how to manage, design projects and assess them, applying the constructivist approach, (Blumenfeld, Krajick, Marx, & Soloway, 1994; Kolodner et al., 2003; Mitchell, Foulger, Wetzels, & Rathkey; 2009).

In a review of literature on PBL, Thomas (2000) argued that some of the challenges that teachers face in their implementation of PBL are the conflict it brings to teachers' beliefs in their approach of teaching and their understanding of their roles. Most teachers rely on the transmission of knowledge approach, the way they have been used to teach (Blumenfeld et al., 1994). They need time to transition towards the constructivist approach of PBL, whether it is in sharpening their skills or changing their beliefs. Moreover, Grant and Hill (2006) explained that teachers must be able to recognize and accept a shift in their role and become more comfortable with implementing student-centered approaches, such as PBL.

However, teachers might not find it easy to do so. For example, Hertzog (2007), reported that teachers find it time consuming to implement PBL and that they are concerned about losing control over the topic, as well as the behavior of the students. As a result, teachers had difficulty giving their students the time needed to build their skills. Therefore, to achieve the goals of PBL with its student-centered approach, teachers of PBL have to be motivated and open to a change in their teaching practices.

Another challenge that the teachers face is that teachers do not always adopt new techniques seamlessly. Rogers et al (2010:905) investigated how three teachers implemented PBL for the first year. They reported that the teachers had different views on their roles; different views on teaching and learning, and difficulties in helping students “adjust to a new style of learning”. Teachers need to know how to apply the new methods in their classes and need guidance on what instructional strategies to use to support the implementation of PBL. Furthermore, teachers may be challenged by not having enough experience in designing project-based activities, (Akinuglo, 2008; Kolodner et al., 2003; Snyder & Snyder, 2008). Teachers also face the challenge of the successful implementation of all the stages of project-based learning (Krajcik et al., 1994; Snyder & Snyder, 2008), for instance, the teacher' ability to manage projects in a large classroom, (Kolodner et al., 2003).

As a constructivist instructional model, PBL involves group work. Kapp (2009) described students' ability to work together as the most difficult aspect of PBL. when teachers lack the skills in creating a classroom culture of collaboration where students learn from each other, they might feel challenged by this aspect of PBL, ( Kolodner et al 2003).

In order for teachers to implement PBL successfully, they need to be able to overcome these challenges. Therefore, the purpose of this study was to investigate the benefits of implementing PBL at the university level in Libya and the challenges that the teachers face? This study fills a gap in the literature related to PBL practice and outcomes in Libya and the Arab world in general. Two research questions guided this study:

-what are the advantages of PBL?

-what are the challenges that the teachers face in their implementation of PBL?

## **METHOD**

### **Design**

Because this study is investigating the benefits and challenges of teachers' implement of PBL, a case study approach was used to answer the research questions, (Creswell, 2007; Stake, 2003)

### **Data Collection**

Two data collection methods were used: interviews and document review.

### **Interviews**

A semi-structured individual interview was carried out with each of the participants. The interviews lasted between 20–45 minutes. The interview questions (see Appendix A) were pilot tested prior to data collection.

## **Document Collection**

Planning materials such as lesson plans and evaluation sheets were also collected from the teachers. The documents collected from the teachers to look for similarities with the content of the interviews on the design of the PBL lessons or activities, evaluation methods, or examples of projects. The collected materials varied in the type of information they provided. Nevertheless, they were helpful in corroborating the data collected from the interviews.

## **Data Analysis**

The collected data from the participants were carefully studied. We have grouped the points and divided into sub-groups.

## **Participants**

A purposeful sample of 6 teachers, who satisfied the criteria for selection, was chosen for the investigation of the research questions. The criteria for selection were as follows:

1. Teachers had to be involved in PBL training course to represent novice teachers who have no prior experience in implementing PBL.
2. A diversity of specializations and colleges were sought.
3. Teachers were willing to participate in the study.

Teachers were contacted by email to introduce the research topic and to set the appointments for the interviews. The resulting sample of teachers covered 6 teachers included four females and two males, and represented 3 colleges. The teachers selected ensured variation in the sample between gender, background and teaching experience. All the teachers were exposed to professional development course on PBL which was a pilot course introduced by the International Cooperation Office in Alzawia University.

## **FINDINGS AND DISCUSSION**

Research Question 1: what are the advantages of implementing the PBL method?

The findings of this research question is quite similar to previous studies which confirms that that 'PBL is an effective and enjoyable way to learn - and develop deeper learning competencies required for success in college, career, and civic life' (Padma and Sridhar 2015). In their answers, most of the interviewed teachers mentioned the following advantages: motivation and engagement, support and facilitation of the learning process, differentiation and creative abilities and collaboration.

### **Motivation and engagement.**

All the participants revealed that using the PBL method increased their students' motivation and engagement. T5 explained,

“They’re motivated to do this rather than it being imposed upon them.” Describing the attitude of his students when he tells them that they will be working on a project he said, “You could almost see a shift that was like yes we can do them’. Moreover, teachers reported that, in PBL,

students took ownership and pride in their work; they got a chance to show their learning and talents. Therefore, teachers liked to use PBL, not only because they perceived it to have a better impact on the learning process, but also because it motivated their students, kept them engaged, and gave them a sense of ownership. This also speaks to preparing students to be independent lifelong learners, which is seen as a 21<sup>st</sup> Century skill.

### **Support and facilitation of the learning process.**

When involved in a project, students' performance was improved, they worked harder and they gave better quality of work. Moreover, teachers found that their students learned more, and got a better understanding of the topic in a PBL activity.

T1 said: *'They were ready to answer questions about their project. They were very informative about the topic.'*

In addition to the increased performance, and improved learning, the teachers mentioned that their students acquired a variety of skills in PBL such as research skills. For example, T3 said,

*'in normal situations, students will wait for the teacher to give them all the information about the topic. However, now they are reading about the topic, finding information and writing them'.*

Therefore, change in students' roles and their increased effort to learn and the variety of academic skills are what teachers perceived as the facilitation and support that PBL brought to the learning process.

### **Social skills**

Other important skills that the teachers mentioned that were developed during PBL were time management, research skills, communication skills, and cooperation skills. All the interviewed teachers asserted that they taught their students how to communicate, group setting, and conflict effectively. Describing the project her students were working on, T2 explained:

*'it was the first time for most of them to work as group but they managed to work really well'.*

Similarly, T5 added, *"students learned not just the information, but some life skills such as time management and teamwork in the whole process'.*

This creativity and the learning of different skills brought about by PBL lead to the ability of the teachers to differentiate their teaching techniques and their assessment. Students' different abilities would remain unnoticed in a traditional learning and testing environment. Therefore, through PBL, teachers found a way to have students choose the way of learning they are most comfortable with and assess abilities that may be unveiled in traditional learning settings.

Another skill learned by students as they worked in groups in PBL is collaboration. This is a skill which most teachers gave great importance.

T7: *'it is important to encourage students to work in groups, and they are able to accept each other's ideas. Their social learning is as important as academic learning.'*

All the teachers elaborated on the advantages of PBL as a teaching method that improved the learning process and allowed students to be creative, and self confident. In their work on the

projects, students acquired the necessary life skills for working environments. Here, teachers' answers are similar to what has been reported in the literature on the advantages of PBL and the perceptions of other teachers of the advantages of PBL (Grant & Branch, 2005; Neo & Neo; 2009; Ravitz, 2008; Wolk; 1994).

### **Research question 2: What are the challenges that you faced?**

Several studies reported results on how teachers begin to use PBL after they have been exposed to it through professional development training. Most of these studies showed that teachers struggled when trying to implement PBL in the classroom even after being interested and enthusiastic about it during the training (Ravitz, 2003; Ravitz et al., 2004; Rogers et al., 2010; Vratulis et al., 2011). In fact, Levine et al. (2010) specifically pointed at the struggle in playing the new role required by teachers in PBL, the struggle in managing the project environment, in scaffolding, and in assessment. It is interesting to notice the contrast of the findings of this research to the previous studies. The teachers in this study did not show concern over the challenges that they did face and that they managed to deal with them. Most of them applied all the stages of PBL and showed interest with the change in their students' motivation and level.

However, the main challenge that the teachers faced mainly at the beginning was group formation.

*T5: 'dividing them into groups was very tiring experience. They keep changing their groups and there was conflicts and arguing'.*

*T2: 'I struggled at the beginning with group formation. Even when I asked the students to choose their groups, they continued to change their groups for different excuses'.*

This is mainly because students are not used to work in groups and they feel insecure if they work with people that they do not know well.

The assessment in PBL was one major challenge for most of the participants for differentiating among students. As it is new method and all teachers use it for the first time. Teachers mainly used rubrics to assess the PBL activities. The rubrics were shared with the students before the project in order to clarify the expected quality of the end product. Several skills were assessed as well as group and individual contribution. In addition to assessment sheets some teachers invited critical friends to attend the students' presentation.

*T6: students had chance to critique their own work and the other groups as well.*

## **CONCLUSION AND RECOMMENDATIONS**

To conclude the teachers in this study described the PBL as a teaching method that supports, facilitates and improves the learning process. It also allows students to work collaboratively and enriches their creativity.

In addition, teachers evaluated both individual and group skills and they allowed for reflection during and at the end of the project. An important aspect of their role in PBL was their collaboration with other teachers and their effort to integrate different subject matters in one project.



Observing the learning achievement of students and teachers' views about PBL in the findings of this study may provide the following recommendations:

Professional development courses about how to implement PBL should be provided for university teachers. These courses should encourage teachers to share their experience and encouraged in the community of practice. Ravitz (2010:10) reported 'it does not seem reasonable to expect teachers to learn about and use this approach entirely on their own.....effective use of PBL requires extensive planning and professional development'.

## REFERENCES

- Akinoglu, O. (2008). Assessment of the inquiry-based project application in science education upon Turkish science teachers' perspectives. *Education*, 129(2), 202–15.
- Blumenfeld, P. , Krajcik, J. , Marx, W., & Soloway, E. (1994). Lessons learned: How collaboration helped middle grade science teachers learn project-based instruction. *The Elementary School Journal*, 94(5), 539–51.
- Bradley-Levine, J., Berghoff, B., Seybold, J., Sever, R., Blackwell, S., & Smiley, A. (2010). What teachers and administrators “need to know” about project-based learning implementation. Paper presented at the Annual Meeting of the American Educational Research Association. Denver, CO.
- Creswell, J. W. and V. L. P. Clark (2007). "Designing and conducting mixed methods research."
- Denzin, N. K. and Y. S. Lincoln (2008). *Strategies of qualitative inquiry*, Sage.
- Grant, M. M. (2002). Getting a grip on project-based learning: theory, cases, and recommendations. *Meridian: A Middle School Computer Technologies Journal*, 5(1).
- Grant, M. & Branch, R. (2005). Project-based learning in a middle school: Tracing abilities through the artifacts of learning. *Journal of Research on Technology in Education*, 38(1), 65–98.
- Grant, M. & Hill, J. (2006). Weighing the rewards with the risks? Implementing student-centered pedagogy within high-stakes testing. In R. Lambert & C. McCarthy (Eds.) *Understanding teacher stress in the age of accountability* (pp. 19–42). Greenwich, CT: Information Age.
- Hernandez-Ramos, P., & De La Paz, S. (2009). Learning history in middle school by designing multimedia in a PBL experience. *Journal of Research on Technology in Education*, 42(2), 151–73.
- Hertzog, N. (2007). Transporting pedagogy: Implementing the project approach in two first-grade classrooms. *Journal of Advanced Academics*, 18(4), 530–64.
- Initiative, P. o. t. I. E. (2007). Designing Effective Projects: Characteristics of Projects Benefits of Project-Based Learning. Intel Corporation.
- Kapp, E. (2009). Improving student teamwork in a collaborative project-based course. *College Teaching*, 57(3), 139–43.
- Katz, L. & Chard, S. (1992). *The project approach*. (ERIC Document Reproduction Service No. ED340518).
- Kolodner, J. Camp, P. Crismond, D., Fasse, B., Gray, J., Holbrook, J., Puntambekar, S., & Ryan, M. (2003). Problem-based learning meets case-based reasoning in the middleschool science classroom: Putting Learning by Design™ into practice. *The Journal of the Learning Sciences*, 12(4), 495–547.

- Krajcik, J. S., Blumenfeld, P. C., Marx, R. W., & Soloway, E. (1994). Model for helping middle grade science teachers learn instruction. *The Elementary School*, 94(5), 483–97.
- Mitchell, S., Foulger, T. S., Wetzel, K., & Rathkey, C. (2009). The negotiated project approach: PBL without leaving the standards behind. *Early Childhood Education Journal*, 36(4), 339–46.
- Moylan, W. (2008). "Learning by project: Developing essential 21st century skills using student team projects." *International Journal of Learning* 15(9): 287-292.
- Neo, M. and T.-K. Neo (2009). "Engaging students in multimedia-mediated Constructivist learning—Students' perceptions." *Journal of Educational Technology & Society* 12(2): 254-266.
- Padma, M. and V. Sridhar (2015). "Integrating Mini Project Based Learning Approach in Teaching-Learning Process." *Journal of Engineering Education Transformations*: 270-275.
- Park Rogers, M. A., Cross, D. I., Gresalfi, M. S., Trauth-Nare, A. E., & Buck, G. A. (2010). First year implementation of a project-based learning approach: The need for addressing teachers' orientations in the era of reform. *International Journal of Science and Mathematics Education*, 9(4), 893–917.
- Ravitz, J. (2003, March 26). Balancing teachers' willingness to change with classroom realities: Moving towards an error model in professional development research. Paper presented at the Annual Meeting of the Society for Information Technology in Teacher Education, Albuquerque, NM.
- Ravitz, J. (2008, March 27). Project based learning as a catalyst in reforming high schools. Paper presented at the Annual Meeting of the American Educational Research Association, New York.
- Ravitz, J., Mergendoller, J., Markham, T., Thorsen, C., Rice, K., Snelson, C., & Reberry, S. (2004, October 21). Online professional development for project based learning. Paper presented at meetings of the Association for Educational Communications and Technology, Chicago.
- Savin-Baden, M., and C.H. Major, "Foundations of Problem-Based Learning", Maidenhead, Berkshire, England: Open University Press, 2004.
- Snyder, L. G., & Snyder, M. J. (2008). Teaching critical thinking and problem solving skills. *Delta Pi Epsilon Journal*, 50(2), 90–99.
- Tamim, S. R. and M. M. Grant (2013). "Definitions and uses: case study of teachers implementing project-based learning." *Interdisciplinary Journal of Problem-based Learning* 7(2): 3.
- Thomas, J. W. (2000). A review of research on project-based learning. , Report prepared for The Autodesk Foundation.
- Vratulis, V., Clarke, T., Hoban, G., & Erickson, G. (2011). Additive and disruptive pedagogies: The use of slowmation as an example of digital technology implementation. *Teaching and Teacher Education*, 27(8), 1179–88.
- Wolk, S. (1994). PBL: Pursuits with a purpose. *Educational Leadership*, 52(3), 42-45.