PROBLEM BASED LEARNING: USING PBL IN SCHOOL BASED ORAL ASSESSMENT

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Abstract

The 21st century learning requires the pupils to possess certain skills that allow them to function the real world. One of the critical skills is communication skill. In Malaysian education system, the communication skill or oral skill is assessed through school based oral assessment or SBOA by offering the teachers and pupils four different models. However, are the archaic models of assessment relevant in the 21st century? This study seeks to find if problem based learning or PBL has an impact on the performance of the pupils in SBOA. The implication of this study provides a starting point for the need to revamp the assessment method to align with the 21st century classroom.

Keywords: Problem based learning; School based oral assessment; 21st century learning; Oral performance;

1.0 INTRODUCTION

As we sail into the 21st century, the Malaysian government has taken measures to ensure the education system works with the time. 21st century classroom concept was introduced, and this has changed the way teachers teach and the pupils learn. But how much of the changes have taken place? Are there any more rooms of improvement in order to achieve a 21st century teaching and learning?

21st Century Teaching and Learning

According to Saadiah Baharom (2013) [1], the 21st century learning requires the students to make their own meaning making and constructing their own knowledge, encouraged through a process of "student-teacher active interaction and social negotiation among peers" (p.47). The Pacific Policy Research Center states that the 21st century learners are expected collect, organize and manage information, evaluate the relevance of the information gathered and produce accurate information needed (2010) [2]. This was further explained by listing the critical skills needed by the students such as communication and collaboration, communicate clearly, collaboration with others, critical thinking and problem solving, creativity and innovation, leadership and responsibility, productivity and social and cross cultural skills. This is supported by Nabi and Bagley (1998) who listed "personal skills, communication skills and problem solving skills" (p.572), cited in Sulaiman Yasin et al, 2008 [3]. Crosbie further listed, among few, collaborative/teamwork, communication skills, initiatives, leadership ability, planning and organizing and presentation skill (2005) [4].

From the various list, it can be clearly seen that communication skills, problem solving skills, collaborative skills and information planning skills are

among repeatedly mentioned. This shows that these skills are highly regarded in the 21st century, thus requiring the teachers to coach the students accordingly.

School Based Oral Assessment

The school based oral assessment or SBOA, was implemented in Malaysia in 2002. This is aligned to the "communicative teaching approach adopted in Malaysian schools" [5]. For the upper secondary pupils, the assessment is conducted three times; twice in form four, and once in form five.

The score for SBOA is given by referring to a set of rubrics known as Criteria of Assessment – ULBS. This criteria of assessment considered different rubrics to assess the performance of the pupils when performing their oral assessment. The rubrics are (a) converse on a topic effectively with appropriate response, (b) speak fluently using correct and acceptable pronunciation, (c) speak coherently, (d) speak the language using a wide range of appropriate vocabulary and (e) speak using correct grammar.

Problem Based Learning

Problem Based Learning or better known as PBL is a tried and tested teaching approach. Savin-Baden (2000) [6] defined PBL as flexible and diverse and can be implemented in a variety of ways for different subject, discipline and context [1]. The PBL promotes the students to "work together as a team in solving real life problems" [7]. It is "focused, experiential learning" which involves "investigation, explanation and resolution of meaningful problem" [8], [9], [10].

By implementing PBL in the classroom, the pupils will be active learners, problem solvers, developing their own strategies to construct knowledge and motivated to learn [1], [9], [10], [11], [12], [13], [14]. The goal of PBL is to (a) construct and extensive and flexible knowledge base, (b) develop effective problem solving skills (c) develop self-directed, lifelong learning skills, (d) become effective collaborators and, (e) become intrinsically motivated to learn [10].

The PBL approach consists of a series of steps known as the PBL tutorial process. The process begins with the presentation of the problem. The pupils then identify fact by analyzing the problems before generating the hypotheses about possible solutions. At the same time they will identify the knowledge deficiencies of the problem which is known as learning issues. The pupils will then apply this knew knowledge, evaluate the hypotheses and finally reflect on the knowledge gained.

An important characteristic of PBL is the reflection at the end of the cycle. The reflection is needed to support the extensive yet flexible knowledge of the problem [15] and helps the pupils to understand the relationship between what they have learned and the problem-solving goals [10].

2.0 EXPERIMENTAL

Implementation of PBL in the Classroom

This study was carried out among the form four students of SMK Tiram Jaya, Tanjong Karang, Selangor. The school is situated in a rural paddy plantation area, where English conversation outside of the English Language lesson is very minimal.

The pretest for the both groups was conducted in May 2016. To assess their performance, the individual model was chosen. Participants for both groups were given a topic and time to prepare their text and practice. The theme environment was chosen.

For the posttest, the controlled group was assigned to perform the assessment by using student-teacher model. This time round the teacher choose the people as the theme and giving direction was chosen as the activity.

The experimental group on the other hand was exposed with PBL technique. The theme chosen was still environment. The teacher first distributed handouts containing information such as brief historical background of waste management, the recycling program all over the world and the Separation-at-Waste campaign in Malaysia. Then the pupils were challenged with a question. What are we going to do with the recyclable wastes that have been separated into different categories? Then, the pupils were randomly assigned to different groups of four by drawing lots. In the new formed groups, they kicked off their research. During this session, a small whiteboard was distributed, to be used to write down all the information gathered and discussed. The teacher acted as an active facilitator, guiding each group to understand the question. Table 2 shows the detailed activities conducted during PBL. As the class progresses, teacher's contribution to the discussion lessen, offering the pupils independence in decision making and only facilitate the discussion when required.

Table 1. Implementing PBL activities

Date	Activities
24 August 2016 *(80 minutes)*	Introduction to the problem Groups assignment Initial research
25 August 2016 *(40 minutes)*	Individual Research

30 August 2016 (80 minutes)	Group discussions Preparation for presentation
1 September 2016 (40 minutes)	Group discussion Preparation for presentation Introduction to journal
6 September 2016 (80 minutes)	Group discussion Preparation for presentation Journal writing
7 September 2016 (80 minutes)	Group presentation
8 September 2016 (40 minutes)	Journal submission

During the presentation, the group members present their findings, and were required to prepare powerpoint slides. Each group was given between 10 to 15 minutes for the presentation. At the end of the presentation, the floor is open and the rest of the audiences are required to ask questions regarding the presentation.

Then, they were given a set of questions and answered them. The answers became their journal and their responses were not guided by the teacher.

Methodology

This experiment was conducted by adopting the randomized pretest-posttest control design. 44 form four students were selected. They are 20 students of science stream class and 24 of art stream students. These pupils randomly divided into 2 groups, resulting 24 pupils in the experimental group and another 24 pupils in the control group.

Table 2. Number of pupils involved

Science Stream Class	Art Stream Class	Total
20 pupils	24 pupils	44 pupils

Table 3. Number of pupils involved in the controlledgroup and the experimental group

Types of Group	Number of Pupils	Reference Symbol
Experimental group	22 pupils	E1 – E22
Controlled group	22 pupils	C1 – C22

Both groups are taught by two different teachers. However, there are some considerations of controlling the variables to minimize the threats to internal validity.

Table 4. Controlling the threats to internal validity

	Teacher Experimental Group	Teacher Controlled Group
Experience teaching form four English Language (year)	9	11
English Language optionist?	Yes (Local university)	Yes (Local university)
Number of students per class	24	24
Time allocated to learn English Language per week	2 x 80 minutes lesson 1 x 40 minutes lesson Total = 200 minutes	2 x 80 minutes lesson 1 x 40 minutes lesson Total = 200 minutes
Period of pretest	4th – 14th May 2016	5th – 16th May 2016
Period of posttest	25th August – 8th September 2016	28th August – 4th September 2016

During the experiment, both groups were given a similar pretest and were assessed by performing SBOA Model 1 (Individual).

For the posttest, the controlled group was not given any treatment and was assessed by performing SBOA Model 2 (Teacher – Student). However, the experimental group was treated with the PBL method prior to their assessment.

Table 5. The research design

Experimental Group	R	O	X	O
Controlled Group	R	O	C	O

The oral performance of the pupils of both groups was assessed using the Criteria for Assessment – ULBS English from the Ministry of Education. The score are given based on five constructs; appropriateness of response, fluency and pronunciation, coherence, vocabulary and grammar. The maximum score for each construct is 6 while the lowest score is 1. The score are tabulated and the grand total is produced.

3.0 RESULTS AND DISCUSSION

Statistical analysis was conducted to see the effects of PBL in school based oral assessment. Descriptive analysis of the Statistic Package for Social Sciences (SPSS) were used in organizing, summarizing and presenting the data that have been collected.

Table 6. The results of pretest and posttest for experimental group and controlled groups

Experimental group	Pretest	Post Test	Controlled group	Pretest	Post Test
N	22	22	N	22	22
Sum	350	442	Sum	305	346
Highest score	22	28	Highest score	21	22
Lowest score	10	12	Lowest score	7	7
Mean score	15.91	20.09	Mean score	13.86	15.73
Standard deviation	3.83	5.48	Standard deviation	4.39	4.53

Table 6 shows the grand score for pretest and the posttest for both experimental and control groups. From the table, it is clearly shown that the highest score is 21. The lowest score for the experimental group is 10 and the lowest score for the controlled group is 7. This is interesting because even though the participants of the groups were randomly assigned, the proficiency level is almost similar.

Table 7. The sum of scores for pretest and posttest

	Experimental group	Controlled group
Sum of score for pretest	350	305
Sum of score for posttest	442	446
Difference	70	40

Table 7 shows the differences in the score in pretest and the posttest for both groups. The experimental group has increased from 350 marks to 422 marks, resulting in difference of 70 marks. The controlled group started with 305 marks and increased to 446 marks, with a difference of 40 marks. This shows that both experimental group and controlled groups experienced an increase of score from pretest to posttest, but the experimental group showed a larger difference after being given the treatment. This proves that there is a better improvement in the performance of the pupils after the treatment was given.

Table 8. The mean score for pretest and posttest

	Experimental group	Controlled group
Mean score for pretest	15.91	13.86
Mean score for posttest	20.09	15.73
Difference	4.18	1.87

Table 8 shows the mean score for pretest and posttest of each group. The pretest mean score for experimental group is 15.91 while the pretest mean score for the controlled group is 13.86. This indicates that the experimental group fared better that the controlled group with the difference of 2.05 of the mean score during the pretest.

The posttest mean score for the experimental group is 20.09 and the posttest mean score for the controlled group is 15.73, with a difference of 4.36. Compared to the comparison of mean score for the pretest, the difference in mean score for posttest is larger and more significant. This shows that with treatment, a bigger difference was recorded in the mean score during the posttest.

The table also shows the difference between the mean score of pretest and posttest for each group. During the pretest, the experimental group mean is 15.91. After the PBL treatment was given to the members of the group, the mean for the posttest is 20.09. The difference of mean score for this group is 4.18. The controlled group pretest mean score is 13.86 while the mean for posttest is 15.73. The difference between the mean scores is 1.87. From the findings, it is evident that both groups experience an increase in the mean score during the posttest. However, the increase of mean score for the experimental group is more significant. This may be an indicator that the treatment has an effect in the improvement of the performance of the pupils. With this information, refer to Table 10.

Table 9. The sum of pupils scoring above mean for pretest and posttest

	Experimental group	Controlled group
Pretest (mean)	15.91	13.86
Pretest (sum above mean)	12	11
Posttest (mean)	20.09	15.73
Pretest (sum above mean)	13	11

Table 9 shows the sum of each test score above the mean scores. There are 12 pupils who score higher the pretest mean (15.91). The posttest indicates there are 13 pupils score higher than the mean (20.09). This shows an increase of one pupil. The table also shows 11 pupils scored above the mean score for the pretest (13.86) and there are 11 pupils scored higher than the posttest mean (15.73). This shows that there are no improvements in the sum of pupils that score above the mean score.

From this data we can conclude that there is no significant difference in the sum of pupil scoring above mean for each test. However, the mean for experimental group posttest is significantly higher than the mean for the pretest. This indicates that even though the quantity of the pupils does not change significantly, the quality of the oral

performance has increase. Higher mean means there are more students getting better marks than during their pretest. Although there is an increase in the mean of controlled group posttest, the sum of students scoring above the mean score does not change. This shows the increase in the score is not as significant as the score of the experimental groups.

4.0 CONCLUSION

This experiment was conducted with the purpose to see whether PBL has an impact on SBOA among the form four students. From the data gathered, it is safe to conclude that there are improvements in the oral performance in both groups, but the group which took part in PBL showed better performance compared to the group without the PBL treatment. It is hope that this experiment will be an indicator that in order to have a 21 century learning environment, the assessment method should change as well. Allowing the pupils to solve real life problem, we allow them to experience autonomy in their learning, creating a non-threatening environment for them to practice the language and in the end improve their oral performance.

Acknowledgement

References

[1] Saadiah Baharom, Balachandran Palaniandy, "Problem-based learning: A process for the acquisition of learning and generic skills," in The 4th International Research Symposium on Problem-Based Learning, 2013, pp. 47-55.

[2] Pacific Policy Research Center, "21st century skills for students and teachers" in Research & Evaluation, 2010, pp. 1-25.

[3] Sulaiman Yasin, Fauziah Abu Hasan, Wan Amin, Nur Amiruddin, "Implementation of generic skills in the curriculum" in EDU-COM International Conference. Sustainability in Higher Educations: Direction for Change, 2008, pp.571-582.

[4] Crosbie, R. Learning the soft skills in leadership, Industrial and Commercial Training, 37(1), 2005, pp. 45-51.

[5] Hamzah Md. Omar , Paramasivan Sinnisamy, Between th Ideal and Reality: Teacher's Perception of the Implementation of School-Based Oral English Assessment, The English Teacher, 38, pp. 13-30.

[6] Savin-Baden, M., Facilitating Problem-Based Learning: The Impact of Tutor's Pedagogical Stances, Journal of Excellence College Training, 2000, 11(2/3), pp. 97-111.

[7] Nora Abdul Hak, "PBL promotes teamwork among students: an experience in Ahmad Ibrahim KUlliyyah of Laws, IIUM" in Workshop on Problem Based Learning, Ahmad Irahim Kulliyyah of Laws. Unpublished, 2004, pp.1-12.

[8] Barrows,H. S. (2000). *Problem-Based Learning Applied to Medical Education*, Southern Illinois University Press, Springfield.

[9] Torp, L., Sage, S. *Problems as Possibilities: Problem-Based Learning for K–12 Education*, 2nd edn., ASCD, Alexandria, VA, 2002.

[10] Hmelo-Silver, C.E. (2004). "Problem-Based Learning: What and how do students learn?" Educational Psychology Review, Vol 16, pp.235-266.

[11] Cognition Theory Group at Vanderbilt. The Jasper Project: Lessons in Curriculum, Instruction, Assessment and Profesional Development, Erlbaum, Mahwah, NJ, 1997.

[12] Colins, A., Brown, J. S., Newman, S. E., Cognitive apperenticeship: Teaching the crafts of reading, writing and mathematics, in Resnick, L. B. Ed. Knowing, Learning, and Instruction, Essays in Honor of Robert Glaser, Earlbaum, 1989, pp 453-494.

[13] Kolodner, J. L., Hmelo, C. E, Narayanan, N. H., "Problem-based learning meets case-based reasoning" in Edelson D. C., and Domeshek,E. A. Eds. Proceeding of ICLS 96, ACCE, Charlottesvilles, VA, pp. 188-195.

[14] Duch, B. J., Groh, S. E., Allen, D. E., The Power of Problem-Based Learning, Stylus, Steerling, VA, 2001.

[15] Salomon, G., and Perkins, D. N. (1989). Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon. *Educ. Psychol.* 24: 113–142.