



Feedback and Reflection through the e-Learning Platform: A Window into Students' Acquisition of Soft-Skills

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Abstract

In UPSI, MyGuru2 serves as the e-learning platform in a blended learning approach adopted by the university. This research analyses the feedback and reflections of students attending an education course that adopts a Problem-Based Learning (PBL) approach. A total of 111 students enrolled for this course and had gone through six weeks of the PBL process. The feedback was administered as an online survey of 15 items on a five point Likert Scale with 96 responses obtained. Six open ended reflection questions were given through the Forum module of MyGuru2. Three important soft-skills dimensions namely communication, problem solving and team-work skills showed very encouraging results. 97% of the respondents agreed that PBL allowed them to develop problem solving and reasoning skills. 96% of the respondents agreed that the approach helped them develop team-work skills while 80% agreed that PBL promotes their communication skills. Qualitative analyses identified key soft skills development such promoting interpersonal skills, searching and managing information, and leadership skills. This research clearly suggest that online feedback and reflection provided students an ideal platform for the expression of their thoughts and elicitation of ideas. Too, being Asian students, they found it easier to express their thinking and analysis of situations via MyGuru2.

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Introduction

Implementing a students' centered approach to teaching and learning demands ample support in terms of a conducive infrastructure, technology rich learning environment and enriching reflective activities. Problem-based learning (PBL) promises an approach that could develop the learner in acquiring an integrated body of knowledge, essential skills in thinking critically and creatively, ability to collaborate as a team and valuable life-long learning attributes. These are amongst key competencies sort for in students in this global and fast-changing world. Research studies clearly provides evidence of the effectiveness of PBL in retaining factual knowledge (Norman & Schmidt, 1992), ability to relate theory to practice and improved ability to remember and re-use knowledge (Breton, 1999; Darvill, 2003). PBL has also proved to be the most effective methodology employed to date, to promote students' research and collaborative team work skills (Murray-Harvey & Slee, 2000).

A problem-based learning approach is one that captures many of the key principles of a constructivist learning (Savery & Duffy, 2001). A key element in a PBL approach includes the presentation of a teaching stimulus in the form of problem scenarios which drives inquiry learning with students taking up active roles and responsibility for their own learning. PBL stimulates learning through social interactions and negotiations, discussions and intellectual discourses, and valuable self-directed learning skills. The affective outcomes of learning through PBL manifests itself in values such as cooperativeness, tolerance and respect. Students become better self-reflectors of their own learning which provides opportunities for self-improvement. This study tries to analyse areas of soft skills elicited by PBL through their feedback and reflection.

PBL also provides a constructivist referent for teacher preparation where graduates of teacher education programs need to have the necessary skills, attitudes, and disposition to deal with the complexities of the present-day classroom. (Goodnough, 2003). According to Wiles and Bondi (2001) PBL may stand a better chance at fulfilling the middle school promise and address the cognitive and affective needs of the young



learners. Educators must therefore discover relevant curriculum that enables constructivist pedagogy and 'real world', technology rich, authentic assessment that address national content standards

Objective

The objective of this study aims at:

1. eliciting feedback via an online evaluation on an education coursework that implements a PBL approach
2. identifying soft skills developed by students as they go through the PBL process

Method

This study employs a survey that includes a 15 item online survey that evaluates the use of PBL and six open ended questions for reflection. The sample consist of 111 students who enrolled for the 'Teori and Practice in Science Education' (TSP 2013). A portion of 30% of the course assessment was allotted for a PBL assignment where students were given a problem scenario of an authentic classroom teaching dilemma entitled '*Jamilah's Teaching Blues*'. The PBL implemented was adopted from the MacMaster PBL model which involves a seven phase PBL process. Students were given six weeks to come up with a problem solution. During the first week students formed a group of five/six and started on group introduction and ground rules. This was followed by the problem analysis and development of the FILA chart.

Brainstorming sessions and discussions were held in and out of the classroom to decide on the focused learning issues. Facilitations were done during lecture and tutorial hours during the first two weeks into the course. The facilitation revolves around understanding the problem, identifying ideas, making decisions on learning issues and actions to be taken. Students were given two weeks of self-directed learning gather information and consolidate findings. Group presentations of the problem solution follow thereafter. On completion of the presentations, feedback and evaluation on the PBL process was carried out online through the MyGuru2 e-Learning platform. Students' assessment were based on several aspects of the PBL process which included; (1) the FILA chart – 5% (2) teamwork – 2.5% (3) written report – 10% (4) group presentation – 10% and (5) peer assessment 2.5%.

Responses to the evaluation items were automatically analysed in terms of percentages while open-ended responses were printed for analysis and categorization. Soft skill identified were matched to the soft skills categories as outlined in the Soft Skill Development Module for the Institute of Higher Learning Malaysia (KPTM, 2006). Four major soft skill constructs identified were (1) communication skills (2) critical thinking and problem solving skills (3) team work skills and (4) Life long learning and information management. Several sub-skills which includes the 'Must Have Soft Skills' (Kemahiran Insaniah Mesti – KIM) – were clearly identified from the open ended responses.

Results and discussion

Results from this study was presented in two main sections; 1) Evaluation output from the online evaluation of the PBL process analysed in percentages of responses and 2) open ended written responses printed out, analysed and categorised into the soft skill constructs based on the soft skill module (KPTM, 2006). From the responses the researcher identified four of the seven main constructs of the soft skill namely (i) communications skills (CS) (ii) critical thinking and problem solving skills (iii) team work skills and (iv) life long learning skills (LL).

Online Evaluation Through MyGuru2

The online evaluation uses a five point Likert scale to gauge students' responses. The responses were recoded to give three main responses which are 'Agree', 'Neutral' and 'Disagree'.

Communication Skill (CS)

Figure 1 showed that 94.8% of the students agreed that PBL promotes and helped them develop their communication skills. Being trainee teachers in the sciences, many of the respondents are apprehensive about their inadequacy to efficiently deliver teaching of science in the English language.

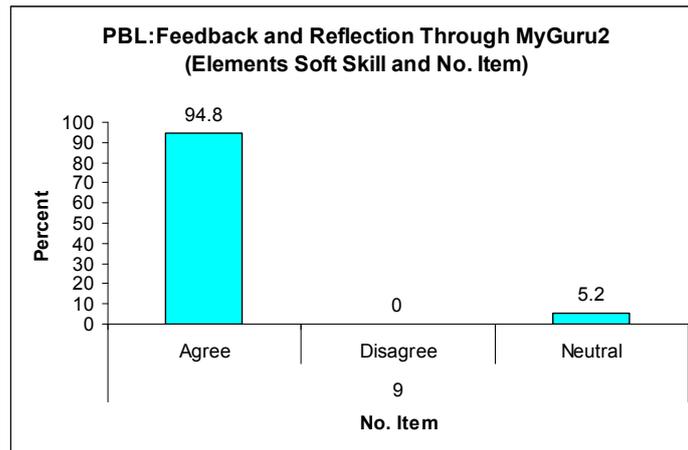


Figure1 Responses for communication

Item no. 9 : The problem allowed me to develop communication skills

Implementing an approach where chances of developing proficiency, articulation and confidence in using a foreign language could further develop their self-esteem. This is evident in some of their written responses:

“ it improves my soft skill because we have to present the report in class. So each of us and everyone of us have to talk by hook or by crook. While doing presentations, we have to be confident and look convincing. We also have to overcome the feeling of nervous. And this is what a teacher should do.” (R025)

“ Before this I am quite shy and even sometimes being reluctant to present. Now I think I have improved myself and will be able to present anything in future (R071)

Critical Thinking and Problem Solving

Figure 2 shows very positive responses to improvement in critical and problem solving skills. These responses suggest that students are better able to manage problems, acquire new knowledge, develop reasoning and problem-solving skills and analysis of problems. The mentions skills are imperative, being future education teachers having to prepare teaching in an educational environment that is most likely to be different from the environment in which they were learners before. In this aspects UPSI hopes to equip future teachers to acquire higher order thinking and decision-making skills that

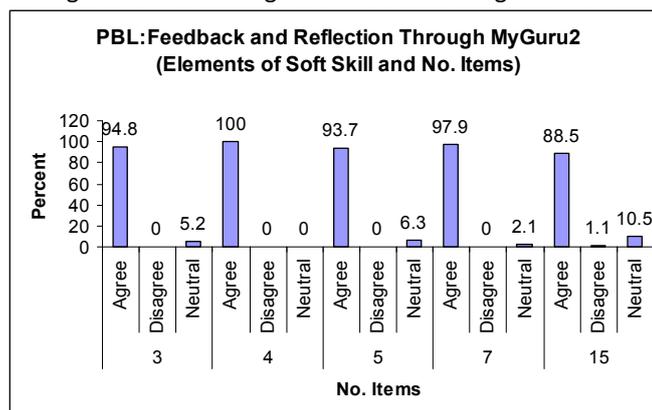


Figure 2 Responses for critical thinking and problem solving

Items:

- *no. 3 : I was motivated to manage the problem*
- *no. 4 : The problem allowed me to acquire new knowledge*
- *no. 5 : The problem allowed me to develop reasoning skills*
- *no. 7 : The problem allowed me to develop problem-solving skills*
- *no.15: My knowledge level of the problem at the end of the semester has improved*

Team Work

Group work featured strongly in this study. Figure 3 suggest that a PBL approach most definitely help students in brainstorming idea, compromise and negotiate meanings, and make group decisions in proposing the problem solution.

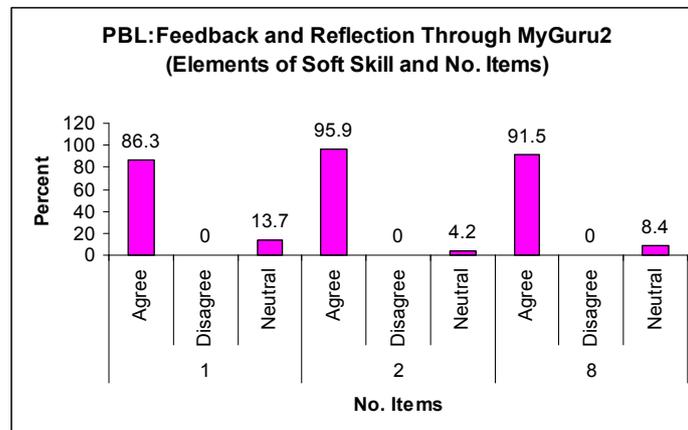


Figure 3 Responses for Team Work

Items:

- No. 1 : I came prepared for the problem discussion
- No. 2 : I participated actively in my group discussion
- No. 8 : The problem allowed me to develop collaboration skills

Value of working as collaborative team was expresses in the following responses:

“ The interesting that we have faced when going through the process is we can sit in group and discuss idea together to find the answer to solve the problem given. It also helps in building team responsibility to each other to finish the session. Besides that we have to define what we know, generate ideas, derive learning goals and organize further work together and also give chance to we to share our ideas” (R006).

“ For me the most interesting about PBL session is working in group. Which is discussion group can help us to understand about the problem clearly and otherwise we can exchange our information and knowledge among us. We become friendly to each other” (R045)

Life Long Learning and Information Management

Responses for life long learning and information management items also showed positive effects. Figure 4 indicates as high as 94.6% of the respondents agree that PBL improved their self directed learning (SDL) skills. SDL skills promotes self reliance and independence in making wise decisions during learning. Learners with good SDL attributes manages their learning more effectively as compared learners who do not. Item 13 with a percentage of only 58.5 suggest that time could be a challenging factor in completing the assignment. 80% of the respondents agree that enough learning resources were available at hand.

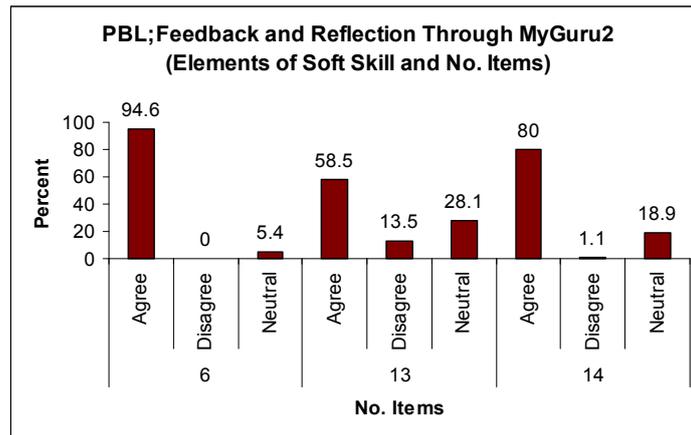


Figure 4 Responses for Life Long Learning items

Items:

- No 6 : The problem help me develop self directed learning skills
- No. 13 : I had sufficient time to manage the problem
- No. 14 : I could find the leaning resources for the problem

Open ended written responses

Communication sub-skills

Figure 5 identified six of the eight sub skills for communication. Two of the ‘Must Have’ communication skills, CS1 and CS3 were clearly evident from the students’ responses. Of the total no of students, 65% were identified as displaying the ability to present clear ideas, being effective and showed confidence in communicating, while 66% displayed the CS3 level of communication skill. However only 5.4% mentioned about being able to practice active listening and giving feedback. Only 7.2% mentioned the use of technology (CS4) while other communication sub-skills were mentioned sparingly. These responses suggest that group discussions is one of the effective ways that allows student to contribute to the development of knowledge and sharing information with one another. These experiences are highly valued and diminish ‘self-consciousness’ and shyness among students. Students are able to express themselves openly among peers and do not feel intimidated by a higher authority. The researcher’s experience trying to get open responses in the classroom could not gather a good indicator of attainment of students’ communication skill due to the mentioned constrains.

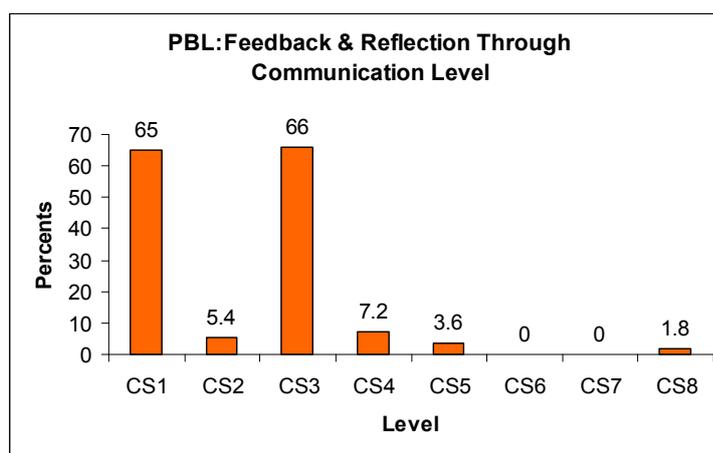


Figure 5 Responses for the sub-skills of communication

Several responses from students for the various communications sub-skills are as listed Table 1.

Table 1 Responses for communications sub-skills

Level of Communication Skill	Responses
<p>i. CS1 – Ability to present clear ideas, effective and with confidence in writing or graphics (Kebolehan menyampaikan idea dengan jelas, berkesan dan dengan penuh keyakinan, secara lisan dan bertukis)</p>	<p>“.....i also can improve my communication skills and build my self-confidence when doing the group discussion”. (R060)</p> <p>.....“how to communicate with other group members, built confident to give an idea in a group and talk in front of others, and help a lot especially to generate an idea on how to solve a problem”. (R062)</p> <p>.....“I’m also can improve my confident level in communicate with my peer and speak in front..” (R066)</p>
<p>ii. CS2 – Ability to practice active listening skills and giving feedback (Kebolehan mengamalkan kemahiran mendengar yang aktif dan memberi maklum balas)</p>	<p>.....“in the class presenting.....this is because from here we can hear many ideas that come out from different group. So we can generate and synthesize new knowledge and information from that”... (R070)</p> <p>.....“and listen other group presentation”. (R016)</p> <p>.....“.....how they present.....i can take the comment from the instructor as guidance for the next presentation”...(R088)</p> <p>.....“other friend will give the respond and ask the question if they do not understand”.... (R108)</p>
<p>iii. CS3 – Ability to confidently and clearly do a presentation suitable for the level of the audience. (Kebolehan membuat pembentangan secara jelas dengan penuh keyakinan dan bersesuaian dengan tahap pendengar)</p>	<p>.....“our confident level in front of the crowd as we will be teaching in front of the class”. (R047)</p> <p>.....“I am able to present my ideas.....i can present in front of the class without worrying.....my confident level to be a confident person”(R 051)</p> <p>.....“make me more confident when I speak in front the class”.(R052)</p> <p>.....“presentation part.....we are given the opportunity to improve our soft skill.....how to deliver the information and that we know our weaknesses.” (R059)</p>
<p>iv. CS4 –Ability to use technology in presentations (Kebolehan menggunakan teknologi dalam pembentangan)</p>	<p>“ ..learnt a lot of attractive methods such as using graphics and animation, analogy and diagrams that can be applied in future..”(R055)</p> <p>“..help me to learn problem solving...use of facility with computer” (R054)</p> <p>“...I’m ready to run a PBL class with the help of technology and resources now days” (R077)</p> <p>“...can use technology or any sources to get information..”. (R089)</p> <p>“...power point slides can show some different in slide background.....”(R094)</p>

Table 1.1 continued

<p>v. CS5 –Ability to dicuss and negotiate agreement (<i>berunding dan mencapai persetujuan</i>)</p>	<p><i>“....communication between the members of my group had really makes me interested to learn”. (R013)</i> <i>“skill development.....decision-making, conflict-resolution.....”(R020)</i></p>
<p>vi. C8 – Ability to use non-verbal skill (<i>Kebolehan menggunakan kemahiran bukan lisan</i>)</p>	<p><i>“.. helps improve report writing skills.....” (R006)</i></p>

Critical thinking and problem solving

Analyses of the sub-skills for critical and problem solving identified the ability to identify and analyze ill structured and complex problems and make justified evaluation (CTPS1) as getting the highest percentage that is 53%. Other responses were related to sub-skill CTPS4 (17.1%) and CTPS7 (9%). Promoting critical thinking and problem solving has always been a challenge in teaching and learning. Any positive indicators of its' success or its presence in a teaching and learning activity suggest that the implemented approach could help foster these skills. Responses from the respondents indicated that PBL could be a successful approach in inculcating critical and problem solving skills. This possibility is integrated in the PBL process where the teaching and learning episode starts with a problem being presented to the learner. Learners with the support from facilitators and group members must somehow think deeply in coming up with a problem solution.

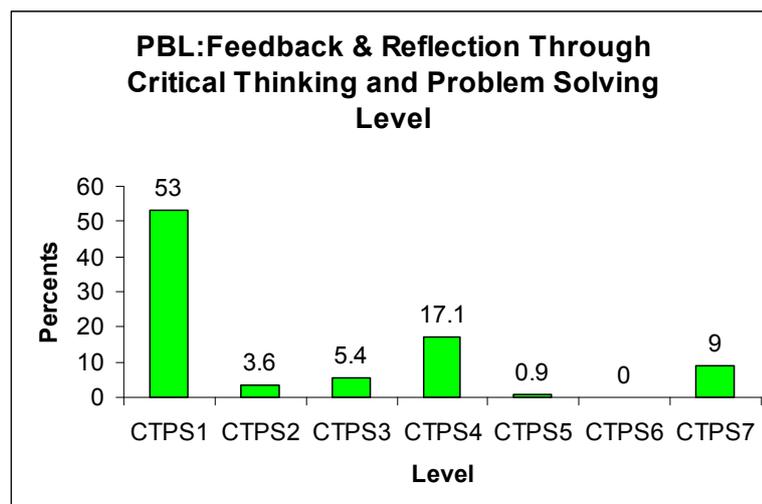


Figure 6 Critical Thinking and Problem Solving responses using PBL

Several responses from students for the various critical thinking and problem solving sub-skills are as listed Table 2

Table 2 Responses for the critical thinking and problem solving

Sub-skills for critical thinking and problem solving	Responses
<p>i. CTPS1 – Ability to identify and analyse ill structured and complex problems and make justified evaluation (<i>Kemahiran mengenal pasti dan menganalisis masalah dalam situasi kompleks dan kabur, serta membuat penilaian yang berjustifikasi</i>)</p>	<p><i>“...able to think critically and analytically in order to solve the problem....”(R033)</i> <i>“I am able to seek, evaluate, analyze and synthesize new knowledge to manage the problem.....”(R050)</i> <i>“.....students to think analytically, critically, deeply and solve the problem that are</i></p>

	<p>given.....”(R081) <i>“PBL also make students think and think to get ideas or solution for the problems”....(R089)</i></p>
<p>ii. CTPS2 – Ability to develop and improve thinking skills such as explaining, analyzing and carrying out discussions. (Kebolehan mengembang dan membaiki kemahiran berfikir seperti menjelaskan, menganalisis dan membuat perbincangan)</p>	<p><i>“can improve student thinking skill....cooperation among student....team work skill”....(R034)</i> <i>“....the scenario given can be used to build on and develop ideas.”(R073)</i> <i>“.....the problem enables me to generate hypothesis for the solutions with my group members”....(R046)</i></p>
<p>iii. CTPS4 – Ability to think out of the box (Kebolehan berfikir melangkaui batas)</p>	<p><i>“.....PBL could create higher order thinking skills in order to solve.....”...(R091)</i> <i>“.....students will think out of box to get the best method....”(R092)</i> <i>“.....it requires to think hard and out of box to solve the problem scenario.....”(R096)</i></p>
<p>iv. CTPS7 – Ability to understand and adapt to the culture of the community and new working environment (Kebolehan memahami dan menyesuaikan diri kepada budaya komuniti dan persekitaran kerja yang baharu)</p>	<p><i>“train the students and make them familiar to the problems which they may be facing when they step into the community of real world after graduated”.(R081)</i> <i>“.. can hear ways from other group PBL presentations. All of the ways of teaching are really useful for my teaching process when I am posting to school”.. (R009)</i> <i>“.....the solution and ideas given can applied in my future....”(R089)</i></p>

Team work skills

The sub-skill TS1 for team work was identified in 85% of the responses. This finding suggest that students when assigned to work in groups would be able to display the ability to develop good relationships, form good interactions and work together effectively to achieve a common goal. Most respondents mention that compatibility among team members improved as the PBL process progresses. Such positive development in a learning experience could be a truly valuable asset for students to survive their future career. Excerpts from the open ended responses documents the sub-skills for team work.

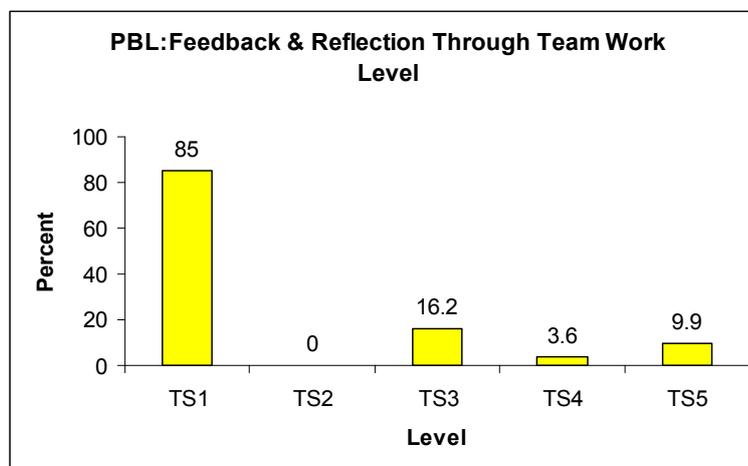


Figure 7 Team Work responses using PBL

Several responses from students for the various critical thinking and problem solving sub-skills are as listed Table 3.

Table 3 Responses for team work skills

	Responses
i. TS1- Ability to build good relationship, interact with other people and work effectively together to achieve a common objective. (<i>Kebolehan membina hubungan baik, berinteraksi dengan orang lain dan bekerja secara efektif bersama mereka untuk mencapai objektif yang sama</i>)	<i>"...work in group cooperatively to solve a problem given PBL.....to generate their idea and find some information to get their solution"(R042)</i> <i>".....to work as a group member and help each other to solve the problem arises"..(R053)</i> <i>.....".....should discuss problems, define what they know, generate hypothesis, derive learning goals and organize further work".....(R060)</i>
ii. TS3 – Ability to recognize and respect behaviours and beliefs of others. (<i>Kebolehan mengenali dan menghormati sikap, kelakuan dan kepercayaan orang lain</i>)	<i>".....how to respect other member opinion's....."(R043)</i> <i>".....i can get more information from my friends and share my knowledge to them"...(R061)</i> <i>".....i have to be tolerate person when they give their idea and learn how to respect people when she or he giving opinion"...(R069)</i>
iii. TS4 –Ability to contribute in planning and monitoring of group output (<i>Kebolehan memberi sumbangan kepada perancangan dan menyelaraskan hasil usaha kumpulan</i>)	<i>".....active learning develop and test their hypothesis so they can arrive at solutions.(R021)</i> <i>".....Having discussion.....is in generating facts and ideas.....we work extra hard to find clues and we really give our effort this assignment"...(R012)</i>
iv. TS5 – Being responsible for group decisions (<i>Bertanggungjawab terhadap keputusan kumpulan</i>)	<i>".....in building team responsibility....."(R014)</i> <i>".....each group member help each other and have taught the meaning of cooperation in making a best decision".....(R066)</i> <i>".....through my attitudes and responsible to my group.....".....(R105)</i>

Life long skills and information management

Figure 8 records a 17.1% of responses for LL1 sub-skill and 11.7% of responses for the LL2 sub-skill of life long learning and information management. Since a PBL assignment is ill-structured and open-ended, students must have all the relevant information and knowledge to solve it. This entails good information management

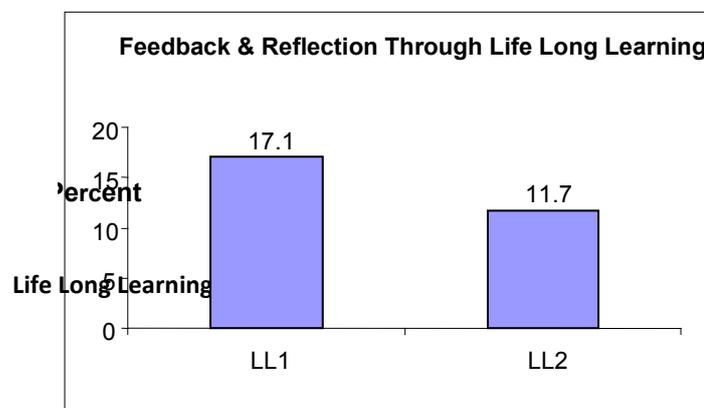


Figure 8 Life Long Learning sub skill responses using PBL

skills and abilities to skillfully search information, selectively decide relevant data, systematically organize and consolidate information and finally present information in a logical sequence. Due to its nature the PBL promises is a fertile ground for developing such skills.

Table 4 shows student's responses that pictures life long learning and information management skills acquired through PBL.

Table 4 Responses for life-long learning and information management skills

Life long learning and information management sub-skills	Responses
<p>i. LL1 – Ability to find and manage relevant information from various sources (<i>Kebolehan mencari dan mengurus maklumat yang relevan daripada pelbagai sumber</i>)</p>	<p><i>".....stimulates me to take responsibility for my own learning.....".....(R065)</i> <i>".....need to surf internet, read rooms books and find related journal and articles.."..(R078)</i> <i>".....it requires us to think and find the valid resources in books and surfing internet...."....(R079)</i> <i>".....more initiative by finding information from internet, references book or library that is related to the topic or problem..."... (R085)</i></p>
<p>ii. LL2 – Ability to accept new ideas and have the potential for autonomous learning. (<i>Kebolehan menerima idea baharu dan berkeupayaan untuk pembelajaran autonomi</i>)</p>	<p><i>".....development of habits of mind that can last a lifetime and guide learning...."(R082)</i> <i>".....PBL had leaded me to self-directed learning and search internet and find book library".....(R094)</i> <i>... ".....PBL help me to be more independent in learning and not just rely on other person....."(R008)</i> <i>"In PBL student assume increasingly for their learning, giving them more motivation and feelings of accomplishment, setting the pattern to become successful life-long learners" (R090)</i></p>

Conclusion

Feedback and reflection responses from this study clearly illustrate that PBL allows students to develop their soft skills through active participation in the learning process. It has allowed students to analyze authentic problem situations, work collaboratively in a team and achieve common understandings in developing problem solutions. In the process student acquire invaluable soft skills and become life long learners. To remain competitive and relevant to this ever changing and challenging world, student teachers must continue to acquire relevant knowledge and sufficient soft skills to be successful teachers. Technology rich environment enables students to efficiently search, organize and share for information. An e-Learning platform, such as MyGuru2 not only serves as a communication medium for students-lecturer interaction but also provides a non-threatening platform to provide elaborate reflections on their PBL experience. This allows for a better and clearer assessment of students soft skills.

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