Problem-Based Learning: 'One for All and All for One'

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ABSTRACT

Problem based Learning (PBL) is Learner Driven Learning that engages students to learn domain knowledge to solve real world problems in groups. Group work is not an option in PBL but in reflective journals, some students expressed a lot of frustration at having to work with others as with a student who lamented that "I didn't even realize he was one of our group members until the day of our presentation". From a PBL practitioners' point of view, the researcher views with frustration the situation where a single uncooperative group member can affect group learning and the success of the completion of their PBL projects. An informal questionnaire given to 58 students indicate mixed opinions regarding working in groups. All of them do not deny the benefits of group work over the lecture mode of teaching but many indicate a preference for working individually. The results indicate a need for PBL practitioners to monitor group performance during the PBL learning process outside of class time. Monitoring forms for the 3 stages of the PBL process: the group meeting at the problem stage (Form#1), the individual researching stage (Form#2), and finally, the group leader's report (Form#3). Reading the forms allowed the researcher, as the PBL facilitator, to provide feedback, ask questions, reprimand slackers and praise those working well.

Keywords: group work, problem based learning, self-directed learning

INTRODUCTION

Problem based learning (PBL) initiated by Howard Barrows for medical students in the 70's at McMaster University in Canada is a student centered instructional method. In PBL, real world problems are used to enable students to learn both domain knowledge and soft skills like working collaboratively in groups (interpersonal skills), communication, problem solving, self-directed and lifelong learning so vital in the working world. The success of utilizing real world problems to drive learning has indicated that students learn more meaningfully through PBL. A meta-analysis of evaluative research on medical education by Vernon and Blake (1993) reported that PBL is superior to the traditional lecture method of teaching although medical students learn more content (basic science knowledge) in the traditional method.

PBL requires students to employ a different learning process which is facilitated. The PBL learning process involves searching and sifting through a vast amount of information followed by synthesizing and organizing the information to complete an assigned task or project. The learning is self-directed and students participate in a lot of discussion. A lot of research has been done on the implementation of PBL and PBL facilitators' experiences managing the PBL learning process in tutorials. However, Krishnan, Gabb and Vale (2011) noted that there "are almost no published reports of research into how students work outside of formal group meetings – the self-directed study phase of the PBL process". Moust et al (2005) found that students become bored with the repeated prescribed PBL process for each problem. Students may skip a few stages because the facilitator does not manage their learning process outside of tutorials. This inability to remain motivated to follow through the PBL process could affect the outcome of their learning.

To date, research into how PBL groups function outside of class is negligible. Schmidt and Moust (2000) discovered that the little research that is available show students do not follow through the PBL process.

Studies that aim to discover how students perceive PBL and respond to it is vital in enhancing the effectiveness of group work. Finding out if students are willing to work in groups and by monitoring outside class interactions may provide a 'window' into how groups work outside class. The question then is how do PBL practitioners' monitor PBL groups when they work outside of class?

In Krishnan, Gabb and Vale's (2011) research, it was discovered that students new to PBL and unused to not being guided closely by the facilitators "constructed their own varied understandings of what PBL required of them". They discovered three types of group working/learning culture: (1) finishing culture – focus on finishing individual tasks resulting in a team product that is a mosaic of individual contributions and finishing individual portfolios, (2) performing culture – focus on comprehensive solutions to the problem and preparing impressive individual portfolios and (3) collaborative learning culture – focus on learning collaboratively and accumulating evidence for the individual portfolio where team work is a collaborative effort. The collaborative learning culture is ideal for the success of PBL but Krishnan, Gabb and Vale's (2011) findings show that the students did not adopt the collaborative learning culture: "the real challenge for practitioners of PBL is to prepare students for group work and to monitor group processes…". They suggest that students have to be taught "how to work effectively as a team, including valuing, [and]sharing".

The aim of this exploratory study is to find out students' attitudes towards group work and also to find out if the use of self-constructed facilitation forms through the 3 stages of the PBL process will help the PBL practitioner understand how the students work as a group outside of class time akin to long distance PBL facilitation. The 3 forms will indicate how far they have gone through the process and how much they have completed. During the PBL process, students have to report and reflect upon their learning as an individual and as a group through the 3 forms.

METHOD

An open ended questionnaire was given to 58 students; however, only 37 were returned. The reason for choosing an informal questionnaire was to allow students to freely respond without restricting them to fixed statements as in a close ended questionnaire. As an exploratory study, the use of an open ended questionnaire and an interview with the group leader of a group that completed their project 3 weeks before the deadline will provide PBL practitioners with students' views about having to work in groups and the informal interview of the group leader can help PBL practitioners understand the characteristics of an effective group leader who is crucial to the success and the completion of the project.

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The aims of this exploratory study are:

1.   to find out students' views about having to work in groups.

2.   to find out characteristics of an effective group leader.

3.   to find out if self-constructed facilitation forms can help the PBL practitioner/researcher to understand how the PBL groups work outside of tutorials.

For the first research aim, the following are the 2 questions in the open ended questionnaire:

1.   Do you prefer to work individually or in a group?

2.   Do you think your lecturers should 'teach' you all how to work in groups so there will be fewer problems working together? What should the lecturers teach?

For the second research aim, the only question asked was: how did your group manage to finish the project 3 weeks before the deadline?

For the third research aim, which addresses the question of how PBL facilitators can monitor PBL groups when they work outside of class, 3 facilitations forms were constructed for the 3 stages which are: (1) the meeting and understanding the problem stage- Form #1; the individual stage of gathering information (Form #2); and the last stage (Form #3) where the PBL groups meet to put together their individual tasks towards the completion of the project. Forms #1 and 3 were filled in by the group leader while Form 2 was filled in by each individual student. All the forms were then collected after which feedback was provided by the researcher and the forms were returned before the students proceeded to the next stage.

RESULTS

Question: Do you prefer to work individually or in a group?

Out of 37 students, 19 (51.35%) preferred to work individually; while 11 (29.72%) preferred to work in groups and 7 (18.91%) students indicated that they can work either individually or in groups.

The following are opinions from a selected few students who prefer to work individually.

S1:   *Individually. The first reason would be miscommunication. There is bound to be problems when the other person is not listening when you are talking and explaining. And when the problem occurs, quarrel ensues and people starts to blame each other. Next, is not achieving the other group members' standard. You would feel guilty and sad when you are given the cold shoulder, ignored and blamed for affecting their marks. It is very frustrating to deal with this kind of people. Sigh.*

S2:   *I prefer to work individually because I am more comfortable in working at my own time and pace.*
       When working in groups, I would have to work at the same time as the other group members.
       Sometimes the work might not be finished on time when working in groups.

S3:   *I prefer to work individually as it is much easier. I don't have to stress myself dealing with sleeping partners. Sometimes in groups, people don't really want to listen to your opinion. If I work in a group, there are many different opinions that I have to deal with.*

S4:   *I prefer to work individually because I can work at my own pace. I don't have to ensure that my other group mates are doing their work or not. The outcome of the unfinished work is more synchronized than a work that was completed by a group. I can also make my own decisions without having to consider and compromise with others' views and opinions.*

S5:   *I prefer to work individually. This is because I like to do my work at my own pace. Furthermore, I will give my all when doing my work individually because I will never jeopardize my marks. If I have to be in a group, it will make it difficult if some of the members are not very cooperative.*

The following are opinions from a selected few students who prefer to work in a group.

S6: *I prefer to work in groups because it is more fun and I can interact with people plus it enriches my ideas when doing group work as we can discuss with each other.*

S7: *It makes life easier as there is less work to do. More effective as two brains are better than one.*

S8: *I prefer to work in groups because we can help each other when we are stuck in a problem. There are also a lot of ideas can be contributed when we having discussion; therefore, variety of new information can be gained.*

The following are opinions from a selected few students who can work individually or in a group.

S9: *I can work in both, depends on the assignment. If it's theoretical and very scientific, requires a lot of reading, I prefer to do it in a group. But for creative writing, etc where I have to produce something out of creativity, I prefer to do it individually because different people have different thinking, so it would be difficult if a story is created by a few people.*

S10: *I prefer both. Working individually will allow me to use my own opinion and I can do the work anytime I want. Working in groups is also interesting because we can share a lot of information which will make the tasks easier to be done.*

S11: *I sometimes prefer to work individually and sometimes in groups because there are assignments that can be done easily in group than individual and vice versa. For me I like working in both situations.*

S12: *Both. When I work individually, I get the freedom to do things on my own and what I like to do. But when I am in a group I get to hear other people's opinion and it'll help me to learn to accept new things and ideas.*

Question: Do you think your lecturers should 'teach' you all how to work in groups so there will be fewer problems working together? What should the lecturers teach?

14 (62.16%) students responded 'yes' while 23 (37.83%) students responded 'no'.

For those who wrote 'yes', the following responses indicated reasons for their choice.

- *Yes perhaps lecturers could teach students how to work in group because from what I am experiencing, even though I am working in a group every member of the group are doing individual task. I believe when working in group, the members should help each other out by brainstorming all the ideas and points together today*

- *I think lecturer should teach us how to work in group because sometimes there are few people who are not well aware of their responsibility in group and lecturer should teach common sense to us*

- *I think what lecturer can teach is the responsibility as a member of a group. All members need to do his or her job and don't just depend on other members. We should be responsible to avoid any miscommunication and problem.*

- *YES! Because some people take group works for granted and leave all the work to certain people in the group. So it is unfair! I think everyone already knows their own job working in a group but they choose to ignore it and take the easy way out – by being the sleeping partner.*

- *Yes,…maybe during the formation of groups is the best time where the lecturers should teach us how to work in groups. The lecturers should teach and tell the roles of each member so that the works are distributed equally.*

- *Maybe the lecturers could teach us how to deal with the possible issues when working with other group mates. Usually, most students*

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are having a hard time dealing with other members (specifically those who are lazy or choose not to participate), thus it would be a great help if we are given 'exposure' in dealing with them.

- *Yes, maybe if any member does not contribute anything to the group, the group should immediately report him/her to the lecturer.*

For those who wrote 'no', the following responses indicated reasons for their choice.

- *I would not say they need to teach us that but perhaps guide us or monitor us. I prefer if the lecturers ask out about our progress or how the group mates are interacting. This is so they can know who do work and who don't. Sometimes when we are grouped with problematic people, WE WISH THAT THE LECTURERS TO INTERVENE AND PROVIDE US WITH SOLUTION.*

- *There is no need as we are already matured enough to think of our responsibility when we work in groups*

- *No. I think the lecturer should allow the students to have their own problems while working together. The experience will help to make us better when they be in a group later in the future. Let them learn from themselves.*

- *No. I think the ability or skills to work in groups depend on the individual himself. One should be able to be more open towards opinions and suggestions to avoid arguments among group members. The student also need to realize that in group work, everyone needs to do or contribute something.*

- *No, I don't think so. Skills for working in groups should be acquired personally. Since students will be working with different people for different assignments, the needs for a particular group can be different compared to other groups.it depends to the assignment as well as members of the group. Hence, it should be acquired personally.*

- *I personally believe that lecturers should not teach us how to work together but perhaps if we encounter problems within the group they can open up and listen to our problems. Moreover, perhaps they should consider "critical students" to work alone when they either a)prefer to work alone or b) people do not want to work with them.*

- *No. Students actually know what to do but sometimes they choose to be less cooperative and irresponsible.*

- *I don't think it is necessary to do so. It's more to common sense and some people (no matter what) they cannot work together.*

- *I don't think so the lecturers should 'teach' us to work in a group because this is the time for students to learn and be independent by themselves as well as discover their own flaws.*

- *Not teach but guide and give advice. They can monitor our progress by asking questions and asking their students to share their experience and opinions on working in a group*

- *No. there is no clear direct way to teach how to work in groups. However, the lecturer should closely monitor and ask how things are… if there are problems, try to get more insight to know what's going on*

- *In my opinion, I don't think that lecturers should 'teach' us how to work in groups as it actually depends on us how we are going to work with other people. It all depends on out attitude and how we tolerate with each other. So, even if the lecturers teach us how to work in groups but at the end of the day, it all depends on the students' attitude*

The following section has some extracts of the monitoring of the PBL process through the forms.

One of the questions in Form #2 is where the individual group members report on their individual progress. The following question asked them to assess their own performance as a team member and report how well they worked in the group.

One student wrote*: Ok, I guess. No one else in the group had complained about me so I guess I did ok.*

The researcher wrote in his form: But you have not done much at all; what exactly have you finished?

Another student wrote: *I need to spend more time with my group mates so we can discuss this topic thoroughly.* The researcher's response: YES. DO NOT PROCRASTINATE!

The following student provided a very honest opinion of her performance:

- I can communicate well with other members
- I am able to share and accept ideas
- If necessary, I am able to lead discussions
- My progress is a little bit slow but in an acceptable pace
- My work is organized. It helps other members to keep track of things

In Form #2 the students were asked: Do you wish to change to another group? None of them wanted a change.

One student wrote: *This is my first time working with A and SY and we seem lost because the three of us are not taking this work seriously. I am not telling this in the hope that that I can change to other group but I want to make it successful despite all challenges we have now.*

The researcher's response: Please sit together and show what each has done. I have told SY that he has not made progress and he has to start working now; if not he will have to complete the project individually.

Another honest assessment: *I can accept instructions from my group leader well. But honestly I feel that my progress is quite slow. Perhaps because I have many pending assignments that sometimes I overlook this assignment especially since it is due later in the semester.*

The following is a detailed Form #2 is by a very efficient group leader. She wrote that she has completed the following tasks:

- *I have assigned specific tasks to each member*
- *I have done my research: regarding to the topic –past articles; any case study relating to the issue*
- *I have searched for information needed in carrying out the project and creating a timeframe for others (targeted task to be completed for each week)*

And she wrote about what she still needed to do:

- *find statistics of gender biasness (in Malaysia)*
- *find newspaper articles or youtube materials that could be used in the multimedia project*
- *set time and place to conduct our interview (need to be finalized with the subjects, which will be confirmed by other group member)*
- *compile all information and start editing video*

When asked to assess her own performance as a team member and how well she worked in the group, she wrote:

- *My performance is not that great, but I'm trying to work on it.*
- *I need to be more efficient and fast in completing the task in time*
- *I am still able to work it out with the help of my members*
- *We understand each other well and able to talk things out*
- *I am able to communicate with them and deliver my points with ease*
- *I am able to assign the tasks accordingly, thanks to my understanding members*

When asked if she should continue to work as she is doing now and whether things need to be done differently to help towards the completion of the project, she wrote: *I think we just need to be more efficient in completing our work. Like stated before, we need to work faster in order to complete the project in time. With academic exercise and etc it might be hard to work on the task especially at the end of the semester.*

The following is the response from the group leader's interview.

Question: how did your group manage to finish the project 3 weeks before the deadline?

The group leader said "We have the same mindset or goal; we organize our work and distribute work equally.

She gave a very clear explanation of her group's amazing performance.

* Same Mindset/Goals: *it is important for everyone to have the same goal or mindset. As an example, for my group, we have the same aim to finish this assignment as quickly as we can before we get bombarded with other assignments later on. When we have the same goal, cooperation would come very easily. There will be no arguments when we need to do last minute meeting or extend our discussion time. Besides that, when there's cooperation any issues or disagreements can be solved easily. We aimed to help one another, thus we would produce a good quality product.*

* Organization: *My group mates told me that it is very important for a group to have a strong leader, when they appointed me. As a leader, I am strict or disciplined with the timeline that I had planned for the project.my timeline usually will result in the project being done weeks before the deadline. If one of my group members asked me about the deadline, I would give them a date based on my timeline rather than the real deadline.*

* Distribution of work: *In addition to creating a timeline, a leader should also distribute the work equally among the members. It would be better if the leader knows their group members' skills or strong points as they will be more motivated in doing their work which helps in increasing their work pace.*

DISCUSSION

Regarding students' views about having to work in groups, the findings show that more than half the students do not like to work in groups; this does not augur well for PBL as working in groups is not an option. If more than half of the students in this study do not like to work in groups, the success of the completion of projects and the desired learning outcomes will be affected. Some of the students' inability to prioritize the completion

of the group project over their individual comfort and preference ruin the *esprit de corps* much needed for PBL

Regarding the characteristics of an effective group leader, it is to be noted that for the success and completion of a PBL project, leadership is very important. A strict leader working with group members equally motivated to complete the task is extremely crucial. In addition, a group leader who knows how to utilize each member's strength and distributes work equally will help the group to progress well. Lastly, when all the members relinquish their individuality and work towards the common goal, the group succeeds.

To find out if self-constructed facilitation forms can help the PBL practitioner/researcher to understand how the PBL groups work outside of class, the researcher's experience as a PBL facilitator using the 3 self-constructed forms provided a clear picture of how well the students work outside the classroom. Although the reports are contingent on the honesty of the students, the researcher had no grounds to doubt the students' honesty. Many were willing to admit 'quietly' their tardiness and the researcher's reprimands and comments helped to 'move' the groups faster towards task completion. As an example, one group arranged to meet right after class upon receiving their forms with the researcher's feedback. It can be assumed that the researcher's comments spurred the group to resume their work.

CONCLUSION

The intention to use forms to monitor the PBL learning process can be considered a success as to how well the group worked and the effort put towards the completion of the task was made possible through the reporting and reflection done by the group members. Although many students indicated that they do not like to work in groups, once they are aware that the problems they have with lazy and irresponsible members will be monitored by the PBL facilitator, they will be more willing to accept working in groups. Working in groups is not an option in PBL and facilitators have to find ways and means to make PBL groups work. Rarely does an individual work by himself or herself to complete a project in the working world. Hence, collaboration is a skill to be embraced and group members have to learn to work with others.

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