

STUDENT PERCEPTIONS OF THE ADVANTAGES AND DISADVANTAGES OF PROBLEM BASED LEARNING

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This paper aims to outline some of the advantages and disadvantages of the implementation of a problem based learning approach to education. A questionnaire was devised which consisted of five open-ended questions that explored students' perceptions of PBL and was distributed to first year and second year speech and language therapy students at Trinity College Dublin. Some of the advantages found in teaching psychology through PBL were as follows: the learning is deeper and more meaningful; the learning is fostered by a problem which is relevant to the students' profession and solutions are generated as a result of teamwork, analysis and synthesis. Some of the disadvantages can include: a lack of meaningful interaction between students until the process itself had been learned and a perception of increased workload. The results indicate that while some of the practical issues of PBL, like workload and the ambiguity of the learning issues, are seen as disadvantages by the students, they appreciate on problem resolution that they have explored the issues more thoroughly and have thereby learned more deeply. **Keywords:** Problem based learning, education, speech and language therapy.

Introduction

Problem Based Learning (PBL) has become a popular method of instruction among educators in the healthcare professions (Dahlgren, 2000; Dahlgren & Dahlgren, 2002). The problem based learning approach has flourished in medical and professional schools. Although the sciences and the humanities have slowly begun implementing PBL, discovery based learning has not been the traditional method of instruction for speech and language therapy students. The purpose of this article is to report on the students' perceptions about the advantages and disadvantages of learning through the PBL method. This paper reports on a study of first and second year speech and language therapy students who were enrolled in PBL psychology courses at University of Dublin, Trinity College. The School of Clinical Speech and Language Studies offer a mixed traditional and problem based learning curriculum. Some of the courses lend themselves more to traditional lecture-based methods of instruction while most of the courses are more suited to a hybrid PBL approach to learning. As the students are exposed to both passive and active learning environments in the programme, they are

uniquely positioned to comment on their perceptions of the PBL process, using their experience of traditional methods as their benchmark of initial expectation (Lieux, 1996; Matlin et al. 1998).

The core of the PBL model consists of the following characteristics:

- Learning is student centred and takes place in small groups;
- Lecturers are facilitators and guides;
- Problems form the organising focus and stimulus for learning;
- Problems are the vehicle for the development of problem solving-skills;
- New information is acquired through self-directed learning (Barrows, 1985; 1986; 1996).

Problem based learning begins when students in groups of six to eight meet an ill-structured problem (Barrows, 1996; Connor-Greene, 2002) which is ambiguous, difficult to define and has many possible solutions. Next the students define the problem, and build hypotheses that steer the direction of their learning and investigation. Finally they decide on the required action to solve the problem. Following a period of self-directed learning, the students generate possible solutions, examine their qualities and propose the most appropriate solution. A debriefing and a statement of new learning objectives is the last step in the process (Edens, 2000). A common form of assessment in PBL is the *Triple Jump*, which can take place in three parts over the course of one day. Early in the day students are given the problem, which is the first jump in the triple jump assessment. In the second part of the day, during the second jump, the students work together on researching information for the resolution of the problem. The final part of the day, the final jump, is spent in group presentation of the resolution of the problem (Rangachari, 2002).

Blue et al. (1998) highlighted some of the common features inherent in the PBL process which all contribute to the better understanding and recall of information by students. These features include the opportunities for elaboration of information, discussing tangential issues of the problem, asking and answering questions from teachers and critiquing peers.

However, Edens (2000) highlighted some of the common features inherent in the PBL process that create difficulties for students. Students dislike ill-structured problems that are intentionally ambiguous when they are initially introduced. These ill-structured problems frequently elicit a request from students for more structure and guidance. Learning to work together in small groups can also be difficult for PBL undergraduate students.

The relationship between content and process is fundamental to the PBL philosophy (Kingsland, 1996; Jones, Margetson & Bligh, 1998; Hillard, 1999). Although students often rate conceptualisation, reflection and deep learning as important approaches to learning, they also rate lectures and teacher directed formats higher. The conflicting self-rated perceptions that students report highlights students' uncertainties about the value of PBL (Deretchin et al. 1999). This article endeavours to explore some of the conflicting perceptions and uncertainties about the value of PBL. By asking students about their perceptions of the advantages and disadvantages of learning through the PBL method, this study seeks to clarify the students' positive and negative attitudes to this innovative method of learning.

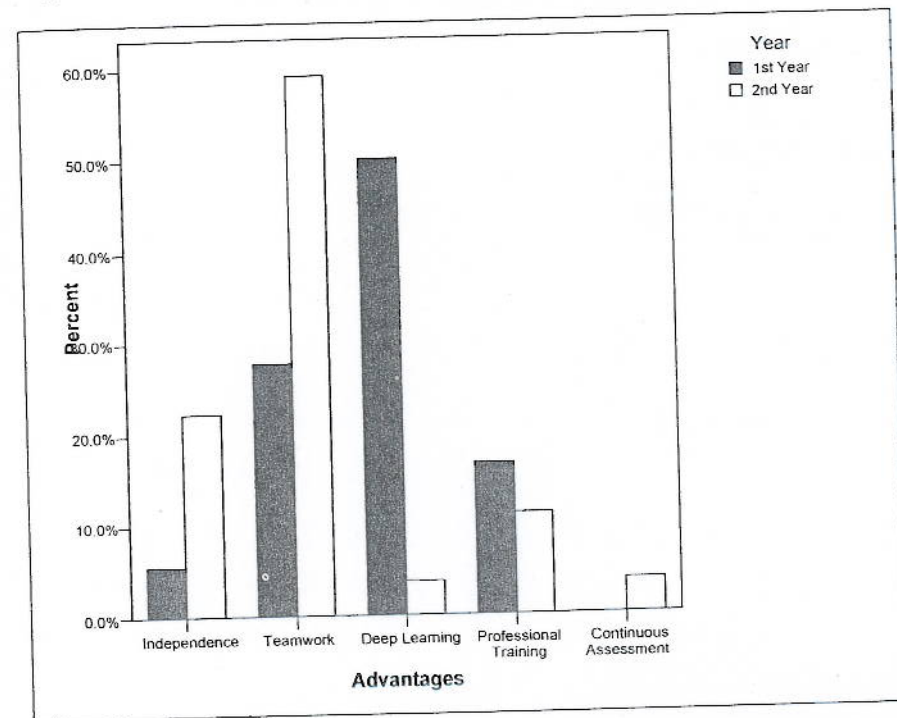
Methodology

This study is a quantitative and qualitative evaluation of student perceptions of the advantages and disadvantages of the problem based learning. A questionnaire was devised which consisted of five open ended questions (see Appendix). A total of 40 questionnaires were distributed to students in psychology courses. A representative sample of first year (n=18) and second year (n=15) speech and language therapy students completed the survey at the end of the academic year 2002-2003. First year students are required to take *Introduction to Psychology* and *Development Through the Lifespan*. Second year speech and language therapy students are required to take *Neuropsychology* and *Research Methods and Statistics*. The questionnaire was distributed at the end of the academic year so that the students had all participated in PBL for at least one year. The questionnaires were hand distributed to the students during their last class of the year, were completed during class time and were handed back anonymously. The data was entered into SPSS 12.0 for analysis and descriptive statistics were used to rank responses.

Results

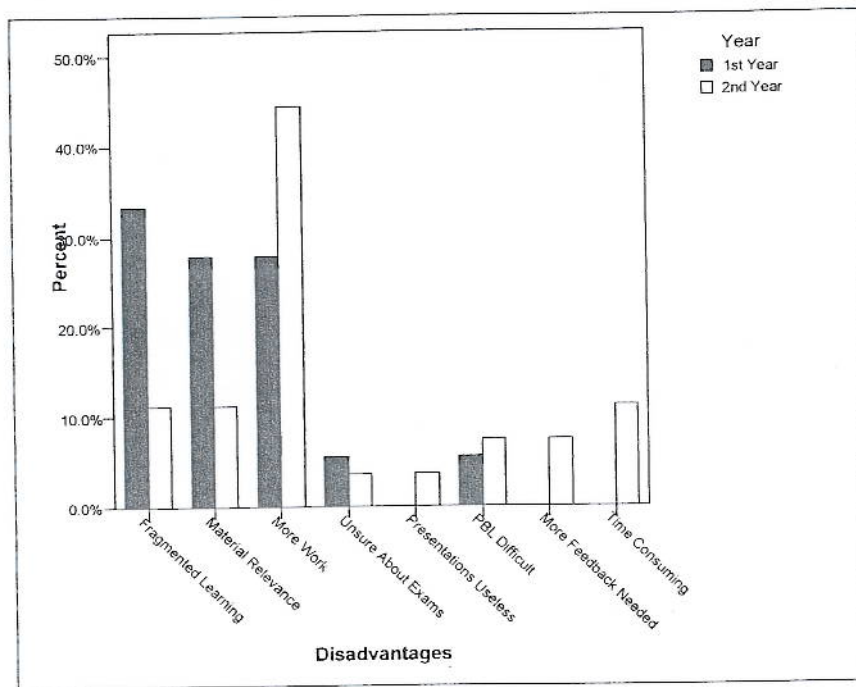
The results indicated that the experience of teamwork and deep learning were the overriding advantages of PBL, while workload and concerns about covering the content of the course were the overriding disadvantages of PBL. The second year students were more concerned with practical issues, like amount of work that they had to do in order to cover the material, while the first year students were more concerned with whether or not they were covering the 'correct' material. Some of the other advantages found were as follows: the learning is deeper and more meaningful, the learning is fostered by a problem which is relevant to the students' profession and solutions are generated as a result of teamwork, analysis and synthesis. Some of the disadvantages reported include: uncertainties about material relevance and a perception that learning is fragmented.

Figure 1 Reported advantages of PBL



Deep learning emerged as the most important advantage for a majority of first year students (51%). Other important advantages, according to first year students, were teamwork (28%), professional training (17%) and the freedom to learn independently (6%). Teamwork emerged as the most important advantage of PBL for a majority of second year students (59%) followed by freedom to learn independently (22%). Other important advantages, according to second year students, were professional training (11%), continuous assessment (4%) and deep learning (4%) (see figure 1).

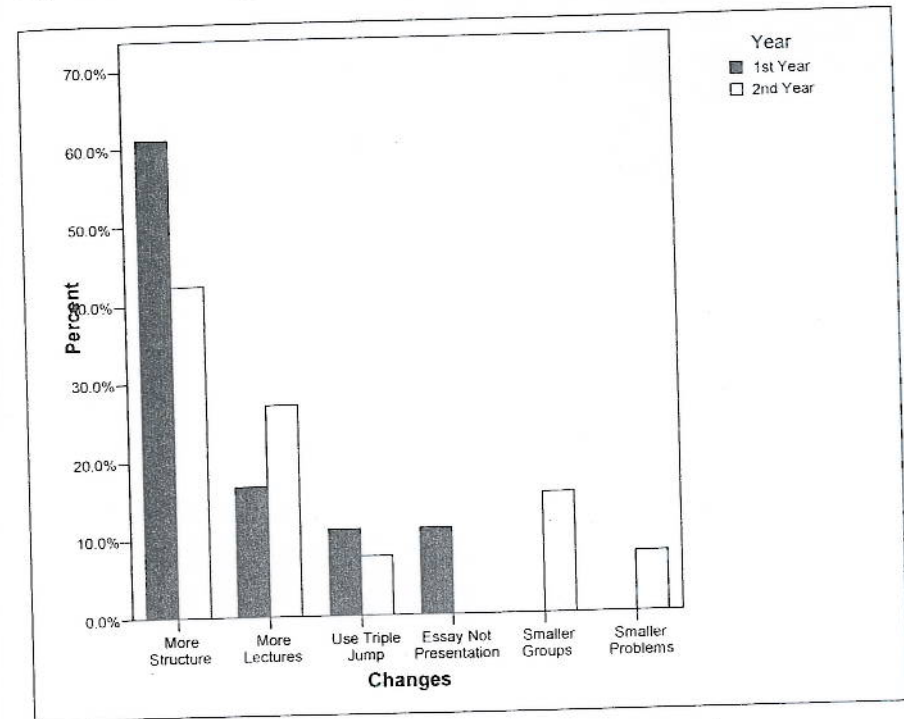
Figure 2 Reported disadvantages of PBL



The first year students responded that fragmented learning (33%), concerns about the relevance of material covered (28%) and workload (28%) were the three biggest disadvantages to PBL. Other disadvantages mentioned by first year students were, uncertainty about what might be relevant for exams (6%) and the feeling that PBL was more difficult than lecture format (6%).

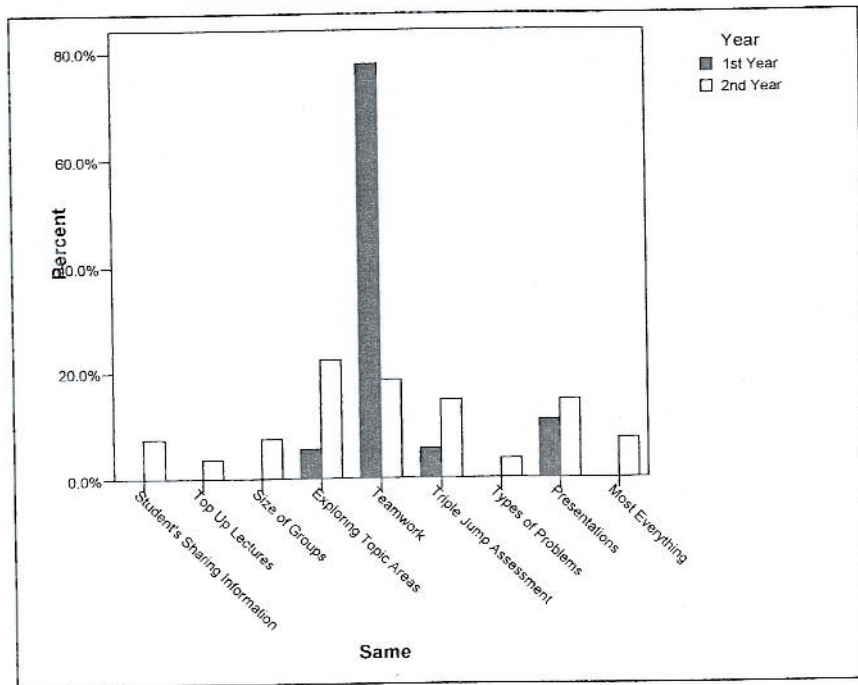
The second years responded overwhelmingly that workload (44%) was the most significant disadvantage to PBL. Other significant disadvantages mentioned by the second year students were that learning was fragmented (11%) and time consuming (11%), that students are unsure about material relevance (11%), that PBL is difficult (7%) and that not enough feedback was given to students after problem resolution (7%) (see figure 2).

Figure 3 Aspects of PBL students would change



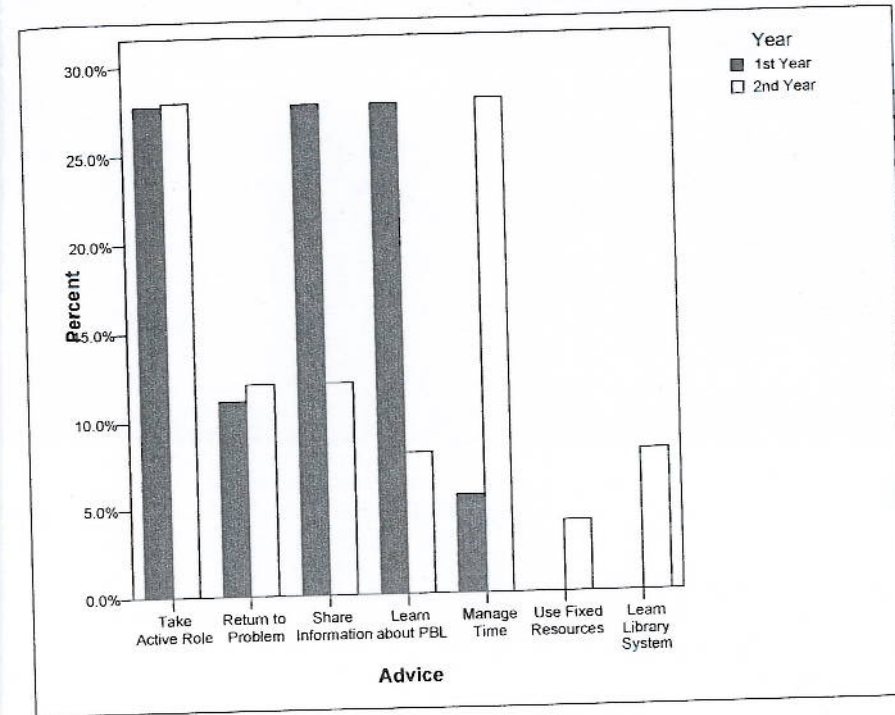
First year students reported that they would prefer if the PBL model had more structure (61%), more lectures (17%), essay assessments rather than presentations (11%) and “triple jump” assessment rather than presentations (11%). Second year students reported that they would prefer if the PBL model had more structure (41%), more lectures (26%) and smaller groups (15%) (see figure 3).

Figure 4 Aspects of PBL that the students would keep the same



The majority of first year students (78%) reported that teamwork was an aspect of PBL that they would keep the same. Other aspects of PBL that the first year students would keep the same were the oral presentation as a method of delivering and assessing problem resolution (11%), the triple jump method of assessment (6%) and the freedom to explore topic areas within the problem (6%). Second year student responses were more evenly spread. The most common responses were freedom to explore topic areas (22%), teamwork (7%), triple jump (15%) and oral presentation as a method of delivering and assessing problem resolution (15%). Other aspects of the PBL process that second year students would keep the same were the size of the groups (7%), students sharing information (7%) and top-up lectures (4%) (see figure 4).

Figure 5 Advice to fellow students entering the PBL process



The first year students responded that they would advise fellow students entering the PBL process for the first time to take an active role in learning (28%), share work and information (28%) and learn about the PBL process (28%). The need to refocus on the problem (11%) and the need for time management (6%) were also mentioned. The second year students responded that they would advise fellow students to take an active role in learning (26%), manage time (26%), share work and information (11%), refocus on the problem (11%), learn about PBL process (7%) and learn the library system (7%) (see figure 5).

Table 1 A representative selection of qualitative results

	Student Year	
Advantages of PBL	1 st	"Working in groups helps to create discussion which helps learning" "Facilitates unified approach to answering problem" "When you have to do your own research you tend to remember it better"
	2 nd	"You learn to think for yourself and to critically evaluate resources" "Encourages us to read for ourselves which can lead to a better understanding" "Builds on previous knowledge"
Disadvantages of PBL	1 st	"It is difficult to know what to learn. Sometimes you go off on a tangent" "Sometimes we don't know what we really need to learn" "Difficult to know if appropriate material is being assessed"
	2 nd	"Very time consuming" "Group issues can carry over into personal problems eg could have a row over time keeping and punctuality and it's hard to leave these issues behind for group meetings alone, usually transfer to other interactions in day" "Sometimes group members have issues with each other-affects overall product"
Aspects of PBL students would change if they had the opportunity to do so	1 st	"Be given more guidance for key resources" "More specific problems" "More lectures"
	2 nd	"More triple jumps assessments" "More lectures would be good" "I think smaller groups would work better"
Aspects of PBL students would keep the same if they had the opportunity to do so	1 st	"Working in small groups" "Teamwork" "The presentations at the end of the problem are a great way to really take in what each groups has researched"
	2 nd	"Part PBL part lectures. We still benefit from lectures" "Basic principles are good" "Researching relevant topic areas for yourself"
Advice students would give to fellow students entering the PBL process for the first time	1 st	"Ask for more direction-we rarely used our fixed resources" "Read recommended readings" "Take an active role in the process, you can get a lot out of it if you put a lot into it"
	2 nd	"Manage your time and don't put off your work" "Learn about PBL and learn the library system" "Work together as a team and try not to let group problems come in the way"

Discussion

It would appear that while the students are not pleased with some of the methods of PBL such as the perceived lack of structure and reduction in traditional lectures, they appreciate accepting responsibility for their own

learning, the space that PBL affords them and the opportunity to explore issues surrounding problems. According to Barrows (1986) it is this very space, which PBL affords, that leads to the advantages of the process. The advantages reported by the students in this study, such as deep learning and practice at clinical problem solving, concur with the advantages reported in other studies (Barrows, 1986; Jones, Margetson & Bligh, 1998; Hilliard, 1999; Edens, 2000). The reluctance of students to relinquish the comfort that lectures provide and to venture into the unknown with just moderate levels of guidance has been documented widely (Kingsland, 1996; Lieux, 1996; Deretchin, et al. 1999; Edens, 2000).

There were some interesting differences in the perceptions of first year and second year students. First year students reported, more often, that the deep learning facilitated by PBL is a major advantage while the second year students reported that the major advantage of PBL was teamwork. The major disadvantage reported by first year students related to material relevance and fragmentation of learning. The second year students reported that workload was the overriding disadvantage of PBL. These findings indicate that, with time and experience, the students are better able to determine the learning issues. Concerns related to workload and group dynamics emerge in the second year, once the fundamental issues related to learning have been reconciled. The second year students were more concerned with practical issues like workload-related issues while the first year students were more concerned with whether or not they were covering the 'correct' material. This may highlight the difference an extra year's experience with PBL has on students. Both first and second year students would advise fellow students to take an active role in their own learning, indicating that the students have an awareness of the need to actively participate in PBL in order to best gain from it (Barrows, 1996). Other issues that first year students would advise fellow students about were related to sharing information with each other and learning about the PBL process. This result underscores the fact that the main tenets of PBL have been internalised by the students and that they are aware, through their own experiences of PBL, that the basic principles are of great importance to successful learning through this method (Dahlgren, 2000; Dahlgren & Dahlgren, 2002). The second year students reported that they would advise their fellow students about time management, learning the library system

and utilisation of available resources within the department. This result underscores that practical issues are foremost in the minds of the second year students. As students become more familiar with the PBL method, content becomes less of an issue and process becomes more of an issue

To conclude, therefore, what has emerged from this study is that, while students are not comfortable with some of the practical issues of PBL like workload and the ambiguity of the learning issues, there is an appreciation of the in-depth exploration of the learning issues involved in reaching problem resolution, the application of this knowledge to clinical practice and the fact that learning has taken place at a deeper level.

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Appendix

The following questions were explored in this study:

1. What are the advantages of the problem based learning method of instruction?
2. What are the disadvantages of the problem based learning method of instruction?
3. How would you change the problem based learning process if you had the opportunity to do so?
4. What aspects of the PBL process would you keep the same?
5. What would your advice be to a student entering the PBL process in the first year?