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PROBLEM BASED LEARNING AS AN ALTERNATIVE TECHNIQUE TO TRADITIONAL TEACHING

«Learning through problem-based learning may challenge students' sense of self, and their way of both seeing the world and acting within».
Savin-Baden, M. [2000]

The article is justification of evidence that PBL as one of the teaching techniques has many advantages when implemented strategically in curricula.

PBL has recently gained a lot of attention and has been adopted in a variety of other professional schools. In the field of language education it is considerably young method of inquiry. The essence of problem solving in education is first of all to acquire methods of gaining new knowledge independently based on application of existing knowledge and skills. Thus, it is quite logical that this approach is particularly productive in teaching foreign languages.

Key words: *problem-based, scenario-based instruction, self-directed learning, critical thinking, effectiveness in teaching, memorization, knowledge and skills.*

Introduction

Problem-based learning as an educational phenomenon was pioneered in the medical school program at McMaster University in Hamilton, Ontario, Canada in the late 1960 with a unique educational philosophy, the «McMaster philosophy,» which has evolved into the educational strategy known as problem-based learning (PBL) – traditional medical education was becoming insufficient for students. Howard Barrows and his colleagues introduced a learning environment that was a combination of small group, cooperative, self-directed, interdependent, self-assessed PBL.

After the first experiences, the use of PBL has expanded and it was introduced to the areas of other sciences in order to maintain a higher level of motivation towards learning, to enhance learners' critical thinking skills, and to help learners develop responsible and professional characters [Barrows, 1996].

Although the traditional teaching has been applied in class for years, but this kind of teaching approach may not be functional for its lacks of teacher-student interactions and learning inspirations.

Most of traditional problem solving has involved presented problems, in which the method and the solution are already known, and the problem solver needs only to adopt the «correct» procedural steps to arrive at the expected solution.

PBL identifies students not as passive recipients of knowledge but as problem solvers, who could develop disciplinary knowledge and problem solving strategies to confront ill-structured problems that occur in the real world to which there are no fixed solutions.

Consequently, after the researchers proposed and experimented an alternative learning approach the parents, politicians, business leaders, and educators are in agreement that change is needed in both, the American public and high school systems, but what and how to change is not easily resolved [Albion & Gibson, 2000].

Unfortunately, the same problem is also faced by educators in Georgian public and high schools.

The university language programs should aim to abovementioned in order to develop individuals communicative perspectives and enable them to adapt to the cultures they've learned about and recognize their own identity in those cultures.

Sweller [1988] proposed cognitive load theory to explain how novices react to problem solving during the early stages of learning. Cognitive load is the load related to the executive control of working memory (WM). Theories contend that during complex learning activities the amount of information and interactions that must be processed simultaneously can either under-load, or over-load the finite amount of working memory one possesses. Many would agree that people learn better when they can build on what they already understand, but the more a person has to learn in a shorter amount of time, the more difficult it is to process that information in working memory considering the difference between having to study a subject in one's native language versus trying to study a subject in a foreign language. The cognitive load is much higher in the second instance because the brain must work to translate the language, while simultaneously trying to understand the new information. Another aspect of cognitive load theory involves understanding how many discrete units of information can be retained in short-term memory before information loss occurs. Most people can only retain seven «chunks» of information in their short-term memory, e.g. 7-digit phone numbers.

Sweller, et al. suggest a worked (learning early in the learning process) example, and then a gradual introduction of problems to be solved solving problems on their own. The several conducted classroom-based studies showed that active problem solving early in the learning process is a less effective instructional strategy than studying worked examples [Sweller and Cooper, 1985; Cooper and Sweller, 1987].

Certainly, active problem solving is useful as learners become more competent and better able to deal with their working memory limitations. But early in the learning process, learners may find it difficult to process a large amount of information in a short amount of time. Thus, the rigors of active problem solving may become an issue for novices. Novice learners require more structure and cues, while more experienced students are self-directed learners. Software can be used in the PBL curriculum, but avoid telling students when the solution is reached. This stops the learning process.

PBL is both, teaching strategy and an instructional student-based approach that challenges students to seek possible solutions to real-world (open-ended) problems by themselves or in groups, rather than learn primarily through lectures or textbooks. Its core focus on learning through solving real, open-ended problems to which there are no fixed solutions makes PBL unique. It engages students in developing skills as self-directed learners. Problems are selected to exploit natural curiosity by connecting learning to students' daily lives and emphasizing the use of critical and analytical thinking skills. The effectiveness of PBL depends on the nature of student engagement and the culture of the classroom, as well as the appropriateness of the problem **tasks** assigned.

Specific tasks in a PBL environment include the key step-cycle for both, students and tutors:

1. Determining whether a problem exists. The process begins with case presentation without advance readings or preparation, but pre-teaching is acceptable in order to make sure students understand goals and benefits of a PB approach for language learning. Identifying information needed to understand the problem. This is key information based on prior knowledge to discuss and identify «What do we know?». Tutor introduces vocabulary related to the problem and asks students about previous person experiences with the problem.
3. Creating an exact statement of the problem. Instructor has to determine if the hypothesis is related to the learning objectives for the problem, and help the learners draw out and identify significant facts.
4. Identifying resources such as television, newspapers, internet, books, and magazines to be used by students to gather information.
5. Generating possible solutions. A tutor has to observe students and explain the mechanism how to work (as needed), but do not direct their efforts or control their activity in solving the problem.
6. Analyzing and considering consequences, which means that students choose the most viable solution. Tutor has to observe, take notes and provide feedback on student participation and language used in the activity and assess the results with the help of questions like: Did you get any new ideas from the activity? Did you change your mind about smth because of the activity? Was your conclusion the best solution to the problem? Did activity suggest the steps you might take when you face a similar problem at some other time in your life? The last step is oral presentation of the solution.

Here is a good saying which runs that every medal has two sides or in other words, any activity has its pros and cons. So, along with the advantages of PBL come disadvantages and limitations such as: academic achievement, amount of instructional time required (the lack of prepared materials for classroom instruction, present curriculum guides and textbooks do not contain the variety of sample problems or assessment tools needed to support this methodology), role of students, role of teachers, appropriateness of problems, and appropriate assessment of student performance.

Proponents of PBL believe that when students develop their own problem-solving procedures, they are integrating their conceptual knowledge with their procedural skills.

PBL is a learning environment in which the problem drives the learning. Students are given a problem before they learn some knowledge. The problem is posed so that students discover that they need to learn some new knowledge before they can solve the problem. They know why they are learning the new knowledge. Learning in the context of the need-to-solve-a-problem also tends to store the knowledge in memory patterns that facilitate later recall for solving problems.

Savery & Duffy [1995] explained problem-based learning as a curriculum design that identified students not as passive recipients of knowledge, but as problem solvers who could develop disciplinary knowledge and problem solving strategies to confront ill-structured problems that occur in the real world. It successfully addressed the needs of those learners, who were unsatisfied with the traditional teaching approach.

The best format for problems is unorganized, unsynthesized, and open-ended, because this allows for student processing. Students are motivated to use their reasoning skills and relate the content to their own context and previous knowledge. In contrast with the lecture-based disciplinary system, PBL should be interdisciplinary and task oriented. It is based on several theories in cognitive theory. Two prominent ones are that students work on problems perceived as meaningful or relevant and that people try to fill in the gaps when presented with a situation they do not readily understand.

Students work alone or in small groups first to understand a particular problem and then to find possible solutions to it. Preliminary discussion of the key information based on the prior knowledge and asking a question. What do we know? Helps learners to identify facts and problems. The problem is posed so that stu-

dents discover that activating prior knowledge they need to learn some new knowledge before they can solve the problem, which motivates students a lot [Stepien, W. J., Gallagher, S.A., & Workman, D. 1993].

Teachers present students with a problem set, then student work-groups, analyze the problem, research, discuss, analyze, and produce tentative explanations, solutions, or recommendations. It is essential to PBL that students do not possess sufficient prior knowledge to address the problem. In the initial discussion, students develop a set of questions such as: «What do I already know? What have I learned so far? What do I still want to find out?». These questions then take students to the objectives [Albanese & Mitchell, 1993].

Presented article is not a large-scale scientific research. It is a study based on results of my observations and experiences gained through teaching EFL/ESL over years. Subjects of my study and observation are the students majoring in English at university. We generally do a lot of speaking through story telling, which is an intrinsic and basic form of human communication. Stories vary and accordingly problems are different in them. Speaking English academically through discussion, lecturing, and oral presentations gives birth to new information. Implementing PBL students are expected to learn from shared knowledge and accumulate expertise by their own study and research, just as real practitioners do.

Our students are split on 3-4 groups, 6 or 7 participants in each. One of them is assigned as leader and another as a recorder that takes group notes or individual notes of each meeting. Tutor describes the process to be followed, uses layouts, pictures, video, or texts useful to introduce the problem to students. Students also need to be prepared for vocabulary related to the problem. For example, when some problems of vocabulary understanding arose the teacher does not give a ready-made answer but hints how to analyze the context and the situation so that the students arrive at understanding of the word semantics themselves. Recording of the learners' may be conducted once in 2-3 weeks for the students to assess their own performance later in both individual presentation and group discussion. Students are evaluated in multiple ways by a tutor, peers, and themselves, interviews, observation, using questionnaires and other assessment methods. Groups follow all problem solving strategies and instructions discussed above to come to the solution. Students gain new knowledge.

And finally, I'd say that well-designed PBL is one of the effective strategies to encourage students to speak freely as much as possible, and the instructors need to be well-trained to know when and how to break into the discussion appropriately and to be very patient and supportive in the way they interact with students.

The essence of problem solving in education is first of all to acquire methods of gaining new knowledge independently, based on application of existing knowledge and skills. Thus, it is quite logical that this approach is particularly productive in teaching foreign languages.

Conclusion

PBL is a pedagogical technique that situates learning in complex problem-solving contexts. It provides students with opportunities to consider how the facts they acquire relate to a specific problem at hand. It obliges them to ask what they know and what they need to know. It includes problems that can be solved in many different ways and have more than one solution. It is an approach that can link not only between the world of classroom but also between the classroom and beyond. It allows students to explore their own cultural roots and enhance their intercultural understanding and communication, to research regions from linguistic and cultural angles and recognize their own identity in that culture.

The ultimate goals of PBL aim to help learners elevate intrinsic motivation, build up critical thinking skills, develop higher level knowledge, presentation skills, and become self-guided learners who must discuss their findings with colleagues and work as a team to arrive at conclusions cooperatively and collaboratively.

As an instructional design model, PBL represents a class of a pedagogical design that provides teachers with alternative approaches to teaching and learning to achieve the goal and serves students well in becoming leaders in the environment of the globalised 21st century.

References:

1. Albanese, M., & Mitchell, S. (1993). Problem-based learning: A review of the literature on its outcomes and implementation issues. *Academic Medicine*, 68, 52–81.
2. Albion, P. R., & Gibson, I. W. (1998). Designing multimedia materials using a PBL. Retrieved February 16, 2007, from www.usq.edu.au/users/albion/papers/ascilite98.html
3. Barrows, H. S. (1996). Problem-based learning in medicine and beyond: A brief overview. *New Directions in Teaching and Learning*, 68(Winter), 3-12.
4. Burke, A. (1996). Professionalism: its Relevance for Teachers and Teacher Educators in Developing Countries. *Prospects*, 26 (3), 531-542, UNESCO.
5. Dabbagh, N., Jonassen, D., & Yueh, H. (2000). Assessing a problem-based learning approach to an introductory instructional design course: A case study. *Performance Improvement Quarterly*, 13(3), 60-83.
6. Danelia, I. (2012). Storytelling in EFL (25 communicative activities).
7. Dods, R. (1997). An action research study of the effectiveness of problem-based learning in promoting the acquisition and retention of knowledge. *Journal for the Education of the Gifted*, 20, 423-37.

8. Gallagher, S. A. (1997). Problem-based learning: Where did it come from, what does it do, and where is it going? *Journal for the Education of the Gifted*, 20, 332-362.
9. Hmelo-Silver, C. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235-266.
10. Savery, J. R., & Duffy, T. M. (1995). PBL: An instructional model and its constructivist framework. 35(5), 31-38.
11. Simon, H.A. (1980). Problem Solving and Education. In D.T. Tuma & F. Reif (eds.) *Problem Solving and Education: Issues in Teaching and Research*. Hillsdale, N.J., USA. Erlbaum, 81-96.
12. Stepien, W.J., Gallagher, S.A., & Workman, D. (1993). PBL for traditional and interdisciplinary classrooms. *Journal for the Education of the Gifted*, 4, 338-357
13. Sweller, J., & Cooper, G. A. (1985). The use of worked examples as a substitute for problem solving in learning algebra. *Cognition and Instruction*, 2, 59-89.