

THE CHALLENGE OF PROBLEM-BASED LEARNING

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Abstract: *Problem Based Learning (PBL) is an educational system that gained popularity on worldwide scale. PBL is still at an early stage and it is developing to this day. It comes with its pros and cons, still it has a big succes over the traditional educational system. Studies show promising changes of students of PBL, and the experience of implementing this system proves that it is a challenging, yet worth change of curriculum from the traditional one. With the time and its popularity it also became relevant here in Moldova as it became part of several Universities here. The succes of it depends on the students' adaptability and determination to make this program a succesful one.*

Keywords: *Learning, Problem-Solving, education, skills, students.*

Introduction

We – people are amazing at learning new things. We never stop to learn, we do it constantly consciously and unconsciously. Curiosity and thirst of knowledge helps us develop day by day, becoming the better us, and get closer and closer to our dreams. You would expect that the process of learning would be engaging right?

Well, unfortunately young generations are not motivated enough to study, the problem, mainly being the factory-like educational systems. The way that mankind approached the teaching of kids and teenagers these last decades resulted in a demotivation of teenagers, when they are developing the most, to study and work on their future selves. The approach took the freedom of learning what they are curious about, it took the creative unique ways of solving a problem, putting them in a standard grey box. This method of teaching stagnated the efficient progressive development of mankind.

As a result of a demanding with the time of a change in the teaching system, quickly becoming famous term appeared – “Problem-based Learning”. PBL (for short) it's a different educational method that spread throughout the world (and it reached here in Republic of Moldova as well). In this article we will go through specifics of this PBL, its origins, why it became so popular, its strong points and weak points.

1. The Origin of Problem-Based Learning

The origins - We all know medical universities' program is very voluminous and it is a serious subject. It requires a lot of reading, writing, learning, basically studying inside and outside of the class time for hours and hours. Students are constantly put to study new material that is most of the time in the first years, as they say – irrelevant to their future job of choice. This is not the case and truth to be told the information is relevant and important to them.

Unfortunately, the majority get easily demotivated and they lose their drive to learn and become great doctors, surgeons with high payed jobs, it just becomes not worth it and they lose their initial strive for being the best in all the material and theory that they were asked to carefully read out and memorize.

So the problem appeared - how to stimulate them to study and to perceive the information as a valuable one? How to make them to see that the material is relevant? That it will help them one day and it is worth it? How to make students the program more efficient, easier to digest and also most importantly keep student's motivation and ascending self-development?

Well the PBL curriculum was designed to do just that! It was developed under the pioneering of H. Barrows and Tamblyn R. at McMaster University in Hamilton, Canada. It was in 1960s when this term firstly appeared and also at just an experiment level. “The principal idea behind problem-based learning is... that the starting point of learning should be a problem, a query or a puzzle that the learner wishes to solve” [1]. It was built around this goals: maintaining student's motivation for learning, showing the importance of teamwork, professionalism and responsibility in a team and teaching them how their solutions to the problems they are put to solve initially, can be applied to the real world. So the students found themselves challenged and invested in their new task, practicing and putting their knowledge to test on real-life situations (simulations) as mentioned in the beginning from a starting problem. The “experiment” had an obvious success and quickly it gained worldwide popularity. Thus the “Problem Based Learning” spread all around the globe.

2. Pros and Cons of PBL

Before discussing PBL's strong points we want to mention where this method of learning lacks. It's indeed one of the best replacement to the well-known traditional, old educational system, but of course it comes with its weaknesses. It is definitely not perfect and it is still developing. It is important to notice that Problem-based Learning at its core it's pretty similar everywhere, but also it is very different. As an aftermath the problems with PBL mentioned below might not persist everywhere, it is focused more on our experience in PBL as software engineers at the Technical University of Moldova.

Unordinary way of studying - One of the common problems encountered – students used to traditional method of teaching struggle to adapt to PBL's curriculum, they are having a hard time to come up with fresh ideas original ideas. When it comes to brainstorm and original ideas they usually find it hard to think outside the box in the first months or year, it depends also on individuals' adaptability to new environment. The explanation to this being that in the previous years they were given what exactly they should do and they were thought a strict way of how to solve a problem. They rely more on teacher's guidance and they assume that they will follow his words exactly, like how it was expected from them in the previous years. Most of the time its unconscious and it is hard for a student not to think that this is a cause of his lack of creativity. It comes with time, we are all born creative, it's a matter of time when we gain back our brain's elasticity.

I can say for a majority of students when I affirm that – indeed it was hard to find topics to work on and it seemed like the most time consuming part of the projects. It takes time to adapt, fortunately humans – they can adapt to more extreme conditions than this, so it shouldn't bother freshly introduced students to this curriculum.

Similarly, the instructors need to adapt as well to a non-standard way of thinking and to adapt to a different approach of guiding his or her students. This is not an easy task at all, the reason to it being their previous habit of teaching and also its important to notice how challenging is to guide as minimal as possible and to do it such that it is beneficial and it ensures teams' success. Necessary also being adapting to different teams which have of course their own group-personalities and individuals as their primary task is working with small teams instead of a whole group of students.

Evaluating the student needs a different approach as well. It is a problem for both the instructors and the students. Since it is a teamwork based project it is hard to evaluate individuals and do it right. Some students can have a grade that they don't deserve and it can't be proved, which is also stressful for the teachers to think more critically. So it is very important to present yourselves as a great team and also as individuals.

Wrong approach of some Students - A student that chooses PBL should be conscious of his choice. Problem-based Learning is a serious, demanding curriculum. It shouldn't be taken lightly or as a joke. No one here will follow you to give you pushes to do something, you should be a responsible teammate and be responsible for your part in the group. Students that aren't engaging here are not prevailing, while other work and get the experience needed for their bright future. To get the best experience possible and the most of this study method you need to learn to push yourself and be conscious of your time management and what things you focus on. As a motivation don't forget, if it takes so much to prevail in PBL it means that you are one of the best and also "...students in certain roles became highly influential at certain points in the activity by virtue of their assigned position in the simulated society"[2], so don't miss out on your tasks, as you will find yourself finding more than the theory or practice, you'll find maybe something you love and will follow in doing in the future.

Implementation of PBL - Change and introduction of a new curriculum takes time and a lot of preparation from the University. And don't forget that PBL its very different and therefore it's hard to start with a strong base. Most of the time Universities should adapt to what they've got to work with and constantly change the program with years and more experience with students and teachers which take part in the project. It is always an experiment at the start, but with the time it will get better results. It was harder at the beginning - "...up to the mid-1980s those interested in adopting a problem-based course had to rely more on the stated philosophy and unique experiences of a handful institutions"[3]. With the time of course there was more studies and conclusions made over this educational system. "Since then (mid '80s) there has been far greater emphasis [...] research"[1] therefore, fortunately, Universities have more material to base on. However, it is a change that takes responsibility as well from university's authorities. It should be heavily monitored its first years of activity and organized, managed, adjusted for better results. Feedback from the students and the teachers are very important and should be taken in account for a successful implementation of Problem-based Learning program.

Hopefully PBL will be a success in Moldova, from our experiences this method is in good hands. It also depends a lot on the students, if they love this form of education they should work hard and take it as serious as necessary in order to show that this method is working and should be continued to be worked on.

So why PBL is so important and a better option to the traditional way of learning. Rober Sylwester explains it the best:

“Just as young children [...] don’t want to be carried while they are learning to walk, early adolescents don’t want adults to make frontal lobe decisions for them while their frontal lobes are maturing.”

“... home and school should . . . provide a non-threatening exploratory venue for a teen brain that is reasonably competent at recognizing the dynamics of a problem but is only beginning to develop reflective response capabilities. infants insist on exploring independent movement, and early adolescents insist on exploring independent problem solving strategies – a significant shift from their childhood acceptance and use of adult-imposed rules, procedures, and algorithms.”

- Rober Sylwester

Engaged learning - Students are free to work and develop themselves, they are put up against solving the problems with their approach of choice, resulting in a bigger interest towards learning and thirst of knowledge that will help him find the solutions to the problems he is put up against. We are searching for relevant information to us instead of receiving it directly ready from a teacher, we also get to apply it on our own which is a great experience to have and it boosts the passion towards our profession as we see the results of our work which is totally our own. Self-learning can be learned and it is an important skill to have in modern society. It teaches us to be proficient, sharp-minded and resourceful to the team we are working with [3].

Better Job Experience - Students are given constantly challenging problems to solve. Most of the time it’s a group project to find the solution and implement it, which teaches us the art of teamwork. Teamwork is valued by the companies and it’s very important to them that their employees can work together. A key to a successful company is a great team of people that can work together for the best result towards the same goal.

Also an important skill that we develop its adeptness to new people. Teams in PBL are not static, we are working with different people on different project, which teaches us to better understand people and be ready for changes in a group and also be effective in any environment possible.

Social Skills - It is a no brainer that working with people is giving you the experience necessary on how to interact with them and how to understand them better. It is enriching your relationship with the world while also you are developing your Critical Thinking and Emotional Intelligence.

It is proven that interacting with people boosts your happiness and reduces your vulnerability to stress factors. So instead of working on your own in a room, you are motivated and surrounded by the people that are becoming your friends with the passing of time. They have the same goal and are willing to help and are interested in your current emotional state, because when you are happy, you are performing the best and take in consideration, when they are happy they will also perform at their best. Your success depends on how you interact with the world. Your social skill is a great investment to your future and with PBL you are given the opportunity to spend most of the time interacting with people and also learn your what is necessary for your future job.

Higher level of Learning - Finally, the strongest point of PBL is that their students are at a higher score than the students studying the traditional way. They have better learning competencies, they solve problems more efficiently, they have better social skills, they make great team workers, leaders are strong as individuals and as a team, they gather information that is relevant, useful and they are more likely to adapt to most of the problems which can randomly occur [3].

3. To Future PBL Students

Problem-based learning is very challenging. Being a part of this process I can say that for me and for my colleagues it was challenging indeed and our tutors didn’t make it very easy on us. It is not a bad thing at all, they challenged us to become better and get past the problems – to be able solve them. We’ve learned like never before the importance of teamwork, emotional intelligence, time management, critical thinking and keeping our minds open to new information and also remaining creative. We’ve been through all sorts of experiences which finally feels to us like they are and will be important in our lives and there is no question

in their relevance to our future lives. We got stuck many times as fresh students introduced to this unordinary curriculum. Luckily the people that are making PBL possible in Technical University of Moldova are invested in this project and they are open to help its students whenever they can, this means a majority of their time as they dedicate a lot of their time to this project. At the end PBL's success in Republic of Moldova depends on the success of its present and graduating students.

So if you want to become part of PBL – don't expect that it will be easy and also don't expect that it will not be worth it!

References

1. David Boud, Grahame Feletti - The Challenge of Problem-based Learning: Second Edition (1997)
2. De Brent Gayle Wilson - Constructivist Learning Environments: Case Studies in Instructional Design (1996)
3. Vernon, D.T.; Blake, R. L. - Does problem-based learning work? A meta-analysis of evaluative research (1993).
4. Bridges, E. M.; Hallinger, P. – “Problem-based learning in medical and managerial education”. Paper Presented for the Cognition and School Leadership Conference of the National Center for Educational Leadership and the Ontario Institute for Studies in Education, Nashville, TN. (1991).