

## Use of PBL as a teaching innovation methodology in University Nursing Studies in Spain

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### Abstract

Health Sciences have undergone a great transformation. University degrees such as Nursing, in its adaptation to the Bologna Plan, have seen how their studies went from a purely mechanistic conception (Haidar Torres, 2015), as surgeon assistants, to the establishment of a university superior Degree where the students must develop and acquire a series of competencies and knowledge that are considered necessary for their future development as professionals.

**Keywords:** PBL, nursing, Higher Education, Skills

### Introduction

We can't talk about Problem Based Learning (hereinafter PBL) as an innovative educational tool without first referring to the process which transformed the Education methodology throughout Europe, the Bologna Plan (Education, 19 June 1999).

Bologna Plan' passing date was the exact moment when important changes were introduced in all University/College studies. The studies were given a new focus encompassing a better quality, mobility and versatility, therefore, it also meant the reviewing of all prior University Plans that were previously in force.

Due to the Bologna Plan, the prior applicable Credit System was replaced for the European Credit Transfer and Accumulation System, hereinafter ECTS, being the latter, a *system focused in the students (...) as it is adapted to their goals and needs* (MEC, 2003), moreover, standardising all European Credit Systems.

This new focus, generated a series of relevant methodological changes over faculties, as the professors' role needed to be adjusted to this new educational concepts, becoming a supportive roleplay throughout the teaching process, operating as a tutor and guide in order to orientate the students through their learning.

What is more, this learning and knowledge to be acquired *is part of the educational activities where in-person lessons are one of the necessary elements to achieve a series of skills* (Credit Transfer and Accumulation, 2002).

The approach to the labour market is established as one of the Bologna Plan's principles, being this principle crucial within the Health Science Field.

The ageing of the population, the development of new technologies within the field and the new demands of consumers with a broader access to information, have made the approach to the labour market in Faculties, crucial.

Even a document made by the UNESCO Chair (Education, 2006) establishes the need of new innovative educational methodologies to narrow the breach between the professional reality and the existent training itinerary, especially in the Health Science Field.

By means of this goal, self-learning and the acquisition of new skills and aptitudes is essential, which means that the amassing of theoretical knowledge becomes the background of this new methodological tools.

Moreover, those abovementioned skills encompass knowledge, attitudes, and moral values which will allow the students to overcome all academic and professional hindrances (Ariño, 2010).

PBL has been revealed as a methodological tool capable of perfectly adjusting itself to all new learning and teaching schemes, (Alcolea-Cosin et al. 2012).

The most relevant elements of PBL (Branda, 2004) are the student learning goals, the cases (directly taken from clinical practice) and an evaluation system in tune with the learning tools.

PBL looks forward to achieving a certain goal predefined and set in a practical case. Students work in small teams, orientated by a tutor that guides them. The group reads, interprets, analyses and thinks up the necessary information to solve the problem and reach the goal. Therefore, the students must be able to use rational strategies to identify concrete concepts, not just in the case in question but in similar situations.

With the PBL usage, universities want students to obtain the necessary skills to integrate all historical field limited knowledge in the form of courses, resulting in an integral and interrelated learning.

Spanish literature already includes some works regarding the experience of using PBL with College students, especially in the Health Science Field (Armenta Hernández, Salinas Urbina, and Mortera Gutiérrez 2013) and nursing (Alcolea-Cosin et al. 2012).

The main difference between our research proposal and the Spanish literature lies within the use of PBL in nursing Degrees as a pedagogical tool able to act as a link among the different courses. That means the development of transversal and specific skills.

What is more, in this case in particular, introducing the PBL method in all first-year courses of the Nursing Degree will allow students to visualise their future patients as a whole, thus promoting a breach of the traditional subjects/courses academic seal (which, to be said have a narrower approach to the Healthcare world).

This reality has triggered the start of this study, and the goal of which being the integration of the PBL methods with the support of the students, determining the satisfaction level of the whole university community with this pedagogical tool.

### **Methodology:**

The courses, which were selected to impart in an integrated manner and within the PBL methodology, were: Human Anatomy and Histology, Biochemistry and Nutrition, Physiology and Pathophysiology and Research and Evidence-Based Nursing. All of them were compulsory courses in relation to the Nursing degree 1<sup>st</sup> year and semester with 6 ECTS each.

In all of them, a continuous evaluation was carried out, and the PBL results represented a 20% of the total mark of each student in each course.

The methodological scheme used for the introduction of the PBL was divided into five stages:

*PHASE I: Discussion Groups (ABP methodology), where it is decided: Selection of subjects. Introduction to PBL, (Exhibition). Training workshop, (tutors)*

*PHASE II: Discussion Groups (tutors, experts), where it is decided: Experts and case generation. Evaluation, types: self-evaluation, peer evaluation, tutor evaluation, satisfaction*

*PHASE III: Start-up and development of the PBL, where it is carried out: Assessment tutor, peer, self-evaluation. Student satisfaction Interaction of students, forum and virtual classroom*

*PHASE IV: Evaluation of knowledge generated by the January call.*

*PHASE V: Evaluation of long-term knowledge, generated by the July call.*

Prior to the start of this stages, all faculties were offered to participate in the PBL initiative, therefore, the project began with those who wanted to support it.

Once the practical case was elaborated considering the content of the subject (Schedule I), we proceeded to implant the figure of the expert as an integrating element and joint point between the daily professional practice and the learning context. Together, the expert and the professor become the main pillar for the development and implementation of the PBL.

Therefore, the professional knowledge of the expert and the theoretical knowledge of the lecturer, jointly, are the key to success regarding the PBL implementation (Wosinski et al. 2018)

Straightaway, students received an introductory class and were offered information about the characteristics and main aspects of the PBL methodology.

The PBL was developed and carried out during three two hours sessions that took place weekly. The students were divided into groups which performed the reading, analysis and treatment of the case presented to them since this method comprehends a social, participative, and dynamic process that favours and impulses the achievement of the goals (Castro-Peraza et al., 2016).

At last, the students' satisfaction with the applied PBL methodology, was evaluated by means of an anonymous survey concerning 20 questions to be punctuated from 0 to 10 according to the grade of the agreement, being 10 de maximum scale (fully agreement).

What is more, the survey included an option for the students to express their own opinion regarding their PBL experience. The reliability, accuracy and trustworthiness of the survey were tested with Cronbach's alfa (0,815), and it was created by the professors with the participation and support of an experts group.

## **Results**

The response rate was 89.8% (n = 60). 86.4% were women and 13.6% were men. The average age was 21.6 (sd 3.39). No student had had previous experience in PBL. There were students from other degrees (29. 5%). The 20.5% were combining work and studies.

A 72.7% of the students believed the experience of PBL to be very positive. The 90.9% would recommend repeating the experience in the following years.

When the students were asked to evaluate the different learning methods that had been used throughout the different degree courses, they considered the PBL methodology to be the best, and therefore it was well rated, however, on the other hand, the master class was the lowest rated methodology.

Regarding the last question, which asked the students to evaluate their experience in their own words, they mostly stated the following:

*"I have learned a lot, I liked the used work dynamics"*

*"I liked the experience"*

"It allows us to put our knowledge in common"

"It motivates us to move forward"

"It allows us to realize the great amount of knowledge we have"

"This type of motivation throughout the sessions is fundamental for our progress"

The PBL' methodology global rate reached an 8.84 score (sd 0.8). The self-assessment of the students reached a 7.86 score (sd 0.93). The evaluation between the tutor and the students scored an 8.93 (sd 0.96) and the method was considered as a crucial way to improve the student-teacher relationship by an 8.7 (sd 1.3).

## Conclusions

The obtained results prove that the PBL experience turned out to be highly positive, as it meant, according to the students, the improving of their skills and knowledge, moreover being these results equal to similar experiences that had been already carried out by other authors (Zúñiga Arbalti et al. 2017; González et al. 2014; González-Hernando et al. 2013).

In our Faculty, the use of a hybrid methodology encompassing PBL and master sessions has had good results. Even in previous researchers (De Castro et al. 2013; Kang et al. 2015) the PBL method reached good results and meant the student's improvement in problems resolution and self-oriented learning.

Notwithstanding, there are a few drawbacks in relation to the PBL methodology that needs to be pointed out, as it is our duty as professors. Given that PBL consists basically in a collaborative methodology, its possibilities of success is linked to several factors, such as the following: It needs a fully available tutor (Wosinski et al., 2018). It must comprehend small groups of students. An important economic and workload is needed since it is necessary to increase the number of teachers due to the above-mentioned bullet.

In consequence, these factors must be considered when adopting this methodology, albeit no literature has been found in this regard. Moreover, we believe that more research is necessary to find solutions to the increase of costs.

The current University System is based on watertight courses, which greatly affects in a negative way the core of the PBL purpose, and constitutes an obstacle for students to obtain transversal skills.

To sum up, it is necessary that the whole community tries to question the effectivity of traditional methodology and cognizes that there is a global need for collaborative learning.

In conclusion, despite the remarked hindrances, it is crucial to consider PBL methodology as a way to improve our educational system quality within the European Higher Education Area. An idea that has been already supported by other international and national authors (Blanco-Sanchez 2005, Guerra-Martín 2009).

## References

- [1] Alcolea-Cosín, M. Teresa et al. 2012. "Aprendizaje Basado En Problemas En La Formación de Estudiantes de Enfermería: Impacto En La Práctica Clínica." *Educación Médica* 15(1): 23–30. [http://scielo.isciii.es/scielo.php?script=sci\\_arttext&pid=S1575-18132012000100007&lng=en&nrm=iso&tng=en](http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1575-18132012000100007&lng=en&nrm=iso&tng=en).
- [2] Armenta Hernández, Moisés David, Verónica Salinas Urbina, and Fernando Mortera Gutiérrez. 2013. "APLICACIÓN DE LA TÉCNICA EDUCATIVA APRENDIZAJE BASADO EN PROBLEMAS PARA CAPACITACIÓN A DISTANCIA (E-LEARNING)." *RIED. Revista Iberoamericana de Educación a Distancia* 16(1): 145–57. <http://revistas.uned.es/index.php/ried/article/view/2060>.
- [3] De Castro, M. E et al. 2013. "El Aprendizaje Basado En Problemas En El Grado de Enfermería, ¿es Realmente Útil?" *Metas de Enferm* 15(10): 25–31. <http://www.enfermeria21.com/revistas/metad/articulo/80389/> (January 28, 2018).
- [4] González-Hernando, C., P. Martín-Villamor, M.Á. Carbonero-Martin, and F. Lara-Ortega. 2013. "Evaluación Por Competencias de Los Estudiantes de Enfermería a Través de Aprendizaje Basado En Problemas." *Enfermería Universitaria* 10(4): 120–24. <http://linkinghub.elsevier.com/retrieve/pii/S166570631372640X> (December 12, 2017).
- [5] González, C, MA Carbonero, F Lara, and P Martín. 2014. "Nursing Students' Satisfaction in Problem-Based Learning/Aprendizaje Basado En Problemas Y Satisfacción de Los Estudiantes de Enfermería." *Enfermería Global* 13(3): 105–12. [http://search.proquest.com/docview/1664837249?accountid=14477%5Cnhttps://nevada.ual.es/biblioteca/gtb/sod/poa\\_login](http://search.proquest.com/docview/1664837249?accountid=14477%5Cnhttps://nevada.ual.es/biblioteca/gtb/sod/poa_login).

- php?centro=\$UALMG&sid=\$UALMG&title=Enfermería+Global&atitle=Nursing+students'+satisfaction+in+Problem-Based+Learning/Aprendizaje+Bas.
- [6] Kang, Kyung-Ah Ah et al. 2015. "Comparison of Knowledge, Confidence in Skill Performance (CSP) and Satisfaction in Problem-Based Learning (PBL) and Simulation with PBL Educational Modalities in Caring for Children with Bronchiolitis." *Nurse Education Today* 35(2): 315–21. <http://linkinghub.elsevier.com/retrieve/pii/S0260691714003293> (December 11, 2017).
- [7] Wosinski, Jacqueline et al. 2018. "Facilitating Problem-Based Learning among Undergraduate Nursing Students: A Qualitative Systematic Review." *Nurse education today* 60: 67–74. <https://www.sciencedirect.com/science/article/pii/S0260691717302022> (November 30, 2017).
- [8] Zúñiga Arbalti, Felipe Andrés et al. 2017. "Utilización de Aprendizaje Basado En Equipos, Como Metodología Activa de Enseñanza de Farmacología Para Estudiantes de Enfermería." *Revista Cubana de Educacion Medica Superior* 31(1): 78–88.