"Learning to learn" in Nursing Higher Education

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▬ Abstract ▬

Objective. This study sought to evaluate improvement in self-directed learning by nursing students at Universidad de Valladolid (Spain) after using problem-based learning methodology. **Methodology.** Ours was a quasi-experimental research with pre-test and post-test of a single group. The sample consisted of 127 of a 135 total of students from the 2nd degree course in Nursing enrolled in the Sexual and Reproductive Health assignment and who had the opportunity to attend all problem-based learning tutorials in the classroom and student group meetings outside the classroom. The Self-Directed Profile Inquiry Questionnaire instrument (CIPA, for the term in Spanish) by Cazares and Aceves was used for the self-regulated profile assessment, which consists of 41 reactives with options 1-5; the lower the score the better the profile for self-direction. It has five components: planning and selection of strategies, self-regulation and motivation, independence and autonomy, use of experience and critical conscience and interdependence, and social value. **Results.** The mean age was 23 years, 84.4% were women. The students had a very good scores in their self-regulated learning profile before using problem-based learning (82.5), and after its application, they showed a statistically significant improvement (74.2) both in the overall score and in each of its components. **Conclusion.** The students' self-regulated profile improved after using problem-based learning, a finding that is of utmost importance to achieve autonomy and self-regulation in learning. The development of the "learning to learn" skill allows learning for life, which is necessary in 21st century nursing professionals.

Key words: problem-based learning; higher education institutions; students, nursing.

"Aprender a aprender" en la Educación superior en Enfermería

▬ Resumen ▬

Objetivo. Evaluar el mejoramiento de la autodirección en el aprendizaje de los estudiantes de Enfermería de la Universidad de

Valladolid (España) después de utilizar metodología Aprendizaje Basado en Problemas -ABP-. **Metodología.** Estudio cuasiexperimental con pretest y postest de un solo grupo. La muestra estuvo compuesta por 127 alumnos de los 135 del total del 2º curso de Grado en Enfermería matriculados en la asignatura Salud Sexual y Reproductiva y que tuvieran la posibilidad de asistencia a todas las tutorías de ABP en el aula y a las reuniones del grupo de estudiantes por fuera de la misma. Para la evaluación del perfil de autodirección se utilizó el instrumento CIPA (Cuestionario de Indagación del Perfil Autodirigido) de Cázares y Aceves, el cual se compone de 41 reactivos con opciones de 1 a 5; a menor puntaje es mejor el perfil de autodirección. Tiene cinco componentes: planificación y selección de estrategias, autorregulación y motivación, independencia y autonomía, uso de la experiencia y la conciencia crítica, e interdependencia y valor social. **Resultados.** La edad media fue de 23 años; el 84.4%, mujeres. Los estudiantes mostraron un nivel muy bueno en el puntaje de su perfil de autodirección de aprendizaje antes de utilizar ABP (82.5), y tras la aplicación, lo mejoraron (74.2) de forma estadísticamente significativa tanto en la puntuación global como en la de cada uno de sus componentes. **Conclusión.** El perfil auto dirigido de los estudiantes mejoró después de utilizar ABP, hallazgo que es de suma importancia para el logro de la autonomía y autorregulación en su aprendizaje. El desarrollo de la competencia "aprender a aprender" permite un aprendizaje para toda la vida, necesario en los profesionales de enfermería del siglo XXI.

Palabras claves: aprendizaje basado en problemas; instituciones de enseñanza superior; estudiantes de enfermería.

"Aprender a aprender" na educação superior em enfermagem

═ Resumo ═

Objetivo. Avaliar o melhoramento da autodireção na aprendizagem dos estudantes de Enfermagem da Universidade de Valladolid (Espanha) depois de utilizar metodologia Aprendizagem Baseada em Problemas -ABP-. **Metodologia.** Estudo quase-experimental com pré-teste e pôs-teste de um só grupo. A mostra esteve composta por 127 alunos dos 135 do total do 2º curso de Graduação em Enfermagem matriculados na matéria Saúde Sexual e Reprodutiva e que tivessem a possibilidade de assistência a todas as tutorias de ABP na sala de aula e às reuniões do grupo de estudantes por fora da mesma. Para a avaliação do perfil de autodireção se utilizou o instrumento CIPA (Questionário de Indagação do Perfil Autodirigido) de Cázares e Aceves, o qual se compõe de 41 reativos com opções de 1 a 5, a menor pontuação é melhor o perfil de autodireção. Tem cinco componentes: planejamento e seleção de estratégias, auto-regulação e motivação, independência e autonomia, uso da experiência e a consciência crítica e interdependência, e, valor social. **Resultados.** A idade média foi de 23 anos, o 84.4% foram mulheres. Os estudantes mostraram um nível muito bom na pontuação do seu perfil de autodireção de aprendizagem antes de utilizar ABP (82.5), e depois da aplicação, melhoraram-no (74.2) de forma estatisticamente significativa tanto na pontuação global como na de cada um de seus componentes. **Conclusão**. O perfil auto dirigido dos estudantes melhorou depois de utilizar ABP, achado que é de suma importância para o lucro da autonomia e auto-regulação em sua aprendizagem. O desenvolvimento da concorrência "aprender a aprender" permite uma aprendizagem para toda a vida, necessário nos profissionais de enfermagem do século XXI.

Palavras chave: aprendizagem baseada em problemas; instituições de ensino superior; estudantes de enfermagem.

Introduction

New times require new apprentices and in the information society, which we want it to be of knowledge, it is necessary to acquire the "learning to learn" skill. Students must learn to develop autonomy and accountability in view of the overabundance of information.[1] For this, a strategic learner is needed, in whom self-regulated learning is a key process. Self-regulated learning is a breakthrough in student personal self-direction and allows them to transform their mental skills into academic proficiencies.[2] It requires college students to reflect on their own learning activity. Acquisition of this skill is important in itself, for those who argue that the ultimate goal of university education is to prepare students to learn by themselves.[3,4]

Autonomy implies an active student attitude towards the acquisition of knowledge, as well as a number of skills that will allow this acquisition. The notion of autonomy can be understood within the context of learning as a self-regulated process. Self-regulated learning, also called problem-based learning (PBL) is an active, constructive process whereby students set their own learning goals, monitor and control their motivation, behavior and knowledge while performing a task or activity within a learning context.[3] Learners who self-regulate their process are aware of their strengths and weaknesses and are guided by learning objectives and strategies related to the task. These students monitor (supervise and regulate) their learning in terms of achievement and self-direction in order to increase their effectiveness and, thus, increase their satisfaction and motivation to improve the learning method.

The aim of the study was to assess whether self-regulated learning improves in Nursing students from the second degree course at Universidad de Valladolid (Spain), after classroom practices using the PBL methodology.

Methodology

During the second semester of the 2011-2012 academic year, a quasi-experimental pre-test and post-test design was run in a nonrandom sample taken for convenience of 129 Nursing students from the second degree course at Universidad de Valladolid (Spain) enrolled in the Sexual and Reproductive Health assignment. Students unable to attend all PBL tutoring in the classroom, and student group meetings outside the classroom were excluded.

For this research, we selected the Self-Directed Profile Inquiry Questionnaire (CIPA, for the term in Spanish) by Cazares and Aceves[5], which is a valid and reliable instrument that provides internal validity to the study. This instrument was chosen because it has been adapted to the Spanish language. It is an adaptation of the American SDLRS scale by Guglielmino, which is the most widely used of its kind in the world. This questionnaire performs the self-regulated profile assessment on students belonging to the society of knowledge. It has 41 reactives incorporating the five components that make up learning self-regulation: planning and selection of strategies, self-regulation and motivation (internal potential), independence and autonomy (external potential), use of experience and critical conscience, and interdependence and social value. The scale is scored from 1 to 5 and the results are obtained from the sum of the scores providing the following categories of self-regulated learning scores: 41-73 = optimal, 74-106 = very good, 107-139 = fair, 140 - 172 = insufficient and 173-205 = low. In addition, the scale is divided into five components and because it includes different items in each, the components are not comparable. The validity and reliability of the instrument were tested, both in the pilot test carried out by the authors of the instrument, and the application of the final study during the period from 2005 to 2007.[6,7]

Given the ethical issues covered in this study, voluntary participation was requested from the students to answer the questionnaire and when clinical cases were worked through PBL, the recommendations of the 2009 Helsinki Declaration were followed, protecting confidential patient data.

Results

The sample consisted of 129 students, 84.5% were women. Mean age was 23 ± 5.4 years, ranging from 19 to 51 years. It was considered that the CIPA questionnaire was reliable enough for this study, resulting in a Cronbach's alpha of 0.89 in the first assessment and 0.92 in the second.

When measuring the effect of the PBL teaching strategy in learning self-regulation, in the results of the questionnaire's global scores, a linear correlation between pre and post-intervention assessments (Pearson's coefficient = 0.588; p< 0.05) was found. With a 95% confidence index we can say that after applying PBL to nursing students, the overall score of the self-directed profile improves by an average of 8.41 points. In the five CIPA components, significant statistical improvement was noted in the score, as shown in Table 1.

To test the relevance of the result, Cohen's d was calculated at 0.551 in this study, considering the size of the effect as medium.

Table 1. Related differences between global and component scores of the CIPA pre and post intervention questionnaire

Component	Related differences						
	Mean	Typical Deviation	95%CI for the difference		t	GL	Bilateral sig.
			Lower	Upper			
1° Planning and selection of strategies	2.496	3.937	1.804	3.187	7.143	126	<0.0001
2° Self-regulation and motivation	1.881	3.961	1.186	2.577	5.354	126	<0.0001
3° Independence and autonomy	2.055	4.754	1.220	2.890	4.871	126	<0.0001
4° Use of experience and critical conscience	1.685	3.325	1.101	2.269	5.710	126	<0.0001
5° Interdependence and social value	0.291	1.333	0.057	0.525	2.461	126	0.015
Total	8.409	13.627	6.016	10.802	6.954	126	<0.0001

Discussion

In this study, we obtained a statistically significant difference in students' self-regulated improvement between the pre and post-intervention overall scores of self-regulated learning; results similar to those reported by other similar research with the CIPA[8-10] instrument. In contrast, [11] Olivares who conducted research at a university in Mexico in three different health programs only obtained minimal improvement in self-direction in the Nutrition program, a negative difference in Medicine and no difference in Biomedical Engineering after using PBL.

We found statistically significant differences in the five CIPA components between the pre-and post-

intervention scores. In the results by components for self-regulated learning, in the first component – planning and selection of teaching strategies – it was proven that significant differences were present between the pre-and post-intervention scores after using PBL. Nursing students attended classroom practices with the necessary equipment, having read and summarized the information, and had to schedule their individual study time and organize their group meetings. Many of the students created diagrams and conceptual maps to enhance understanding of content; additionally, they planned the development of their own material – videos, brochures; planned activities, field work, role-playing, and rehearsed their presentations. The Mavis and Sleight[12] research confirmed that students with top grades in the test had higher motivation, discipline, concentration and attention, and frequently used diagrams, tables and their own conceptual maps.

PBL promotes self-regulated learning because it requires students to prepare for tutorials. In our study, we noticed that in PBL 60% of the time is required for autonomous learning and 40% for tutoring or group work.

It has been established that greater dedication to PBL will always be reflected in academic results;[11,13] two studies[14,15] claim that PBL improved development, team learning, critical thinking and meta cognitive self-regulation; those findings coincide with the results we obtained in this research in the *planning and selection of didactic strategies* component.

The results of the CIPA second and third components (self-regulation and motivation and independence and autonomy) correspond to students' internal potential and are related to student personalities). According to Cazares, [5] individuals with internal potential show interest in gaining knowledge and in understanding that which surrounds them, as well as how to excel. Several authors[15-17] have evaluated changes in internal potential by using PBL and have confirmed that students study for reasons such as the challenge, curiosity and the need to master a subject; it is essential that learning be interesting,

important, or useful, which increases intrinsic motivation and improves self-perception to deal with problems, with these being similar to those obtained in the present study in which some of our students stated that learning was a challenge, and that the contents were interesting and useful for their professional future. The fourth component, using experience and critical awareness, refers to learning by accumulated experience in problem solving and correcting actions. In our study, some students expressed a comprehensive understanding of a case related to adolescence, through which they recalled their own experiences during that phase of life; along with another about menopause because their mothers were going through this stage and in some cases, the older students themselves had experienced similar symptoms, also showing empathy for the patients involved in the clinical case.

The study by Ozturk *et al.*,[18] showed that, by comparing the traditional teaching methodology versus PBL, nursing students exposed to the latter improved critical thinking, especially in the search for truth, with no significant differences in analysis, self-confidence, inquiry, and maturity of judgment.

Regarding the fifth component, interdependence and social value, it is known that social and interpersonal skills such as teamwork, communication, understanding, and problem solving skills are important and are developed with PBL.[19] In our results, statistically significant differences were obtained between the pre- and post-intervention scores. Broussard *et al.*,[20] reported that this component improved when students had a positive attitude towards teamwork.

Because learning is generated through guided participation in social activity with colleagues who support and encourage understanding, and involvement is needed in the activity,[21] PBL allows development of skills such as teamwork and communication.[22] Similarly, students in this study stated that they had learned to think as a team, and because a diversity of opinions and ideas had

emerged, it was necessary to respect the views of others. However, we also observed some group conflicts that were finally resolved in a friendly manner, this has also been highlighted by Faidley et al.,[23] who found that teamwork and social skills are developed depending on the dynamics of the group, and that competition, conflict, and passivity hinder cooperation.

This study found that PBL promotes self-regulation in each of the CIPA scale components, agreeing with the findings by Litzinger et al.,[24] Self-regulated learning is a complex construct in which we must act on the students, the teachers, and the interactions among them. Its promotion helps students increase their motivation for academic learning,[25] which improves the skill of "learning to learn" and we can teach through instruction and repeated practice of diverse experiences in different contexts.[1,26]

We can conclude that PBL promotes self-regulation in the global scores and in each of the components of Self-Regulated Learning. The development of "learning to learn" skills is of utmost importance to develop autonomy and self-regulation in the learning process of nursing students; it also prepares them for tomorrow's professional environment in which there is a constant need to update and solve increasingly complex clinical problems.

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