Nurse Education Today 46 (2016) 29–35

Contents lists available at ScienceDirect

Nurse Education Today

journal homepage: www.elsevier.com/nedt

Learning outcomes of "The Oncology Patient" study among nursing students: A comparison of teaching strategies

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ARTICLE INFO

Article history:
Received 30 November 2015
Received in revised form 31 July 2016
Accepted 16 August 2016
Available online xxxx

Keywords:
Nursing
Higher education
Problem-based learning
Case-based teaching
Educational methods

ABSTRACT

Introduction: Teaching strategies are essential in order to facilitate meaningful learning and the development of high-level thinking skills in students.
Objective: To compare three teaching methodologies (problem-based learning, case-based teaching and traditional methods) in terms of the learning outcomes achieved by nursing students.
Method: This quasi-experimental research was carried out in the Nursing Degree programme in a group of 74 students who explored the subject of The Oncology Patient through the aforementioned strategies. A performance test was applied based on Bloom's Revised Taxonomy.
Results: A significant correlation was found between the intragroup theoretical and theoretical-practical dimensions. Likewise, intergroup differences were related to each teaching methodology. Hence, significant differences were estimated between the traditional methodology ($\bar{x} = 9.13$), case-based teaching ($\bar{x} = 12.96$) and problem-based learning ($\bar{x} = 14.84$).
Conclusions: Problem-based learning was shown to be the most successful learning method, followed by case-based teaching and the traditional methodology.

1. Introduction

The changing paradigm in nursing education is part of a continuous process of transformation in the university that is responding to current social and political requirements as well as to the realities of nursing itself. In the European context, according to the premises of the European Higher Education Area (EHEA), teachers face the challenge of coming up with new teaching strategies that have a favourable impact on the education of good professionals and citizens. We are searching for approaches that enable flexible and dynamic teaching that focus on the profession itself. At the same time we are open to a deeper development of knowledge by using different perspectives and methodology strategies while moving away from reductionist and simplistic education models and replacing them with postmodern models that aim to teach individuals to convert knowledge into personal experience rather than just accumulating knowledge (Mateo et al., 2009).

The true challenge lies in implementing a different method for developing new ways of teaching, including moving from an activity-centred teaching process to another process committed to the quality of learning. In other words, it is argued that we need to move from the instruction paradigm to the learning paradigm (Zabalza, 2011).

2. Previous Literature

Teaching methodologies play a key role in responding to the needs of a changing academic setting because they are the element of the teaching-learning process that has the greatest impact on education (Zabalza, 2011). Teaching methodologies are defined as the methods and procedures that are used in the development of the teaching-learning process (De Miguel, 2006). Therefore, the teaching methodology is the strategy to be used in the teaching-learning process that the teacher chooses based on evidence and/or experience in order for the students to develop certain pre-set skills. It is obvious that it not only determines what to do with the students but also the approach to be taken. Some academic changes have meant more of a "new academic architecture" than a "new academic culture" (Zabalza, 2011), meaning that some of the changes that have occurred are formal ones concerning administrative and organisational requirements, rather than innovations in teaching methods (De Miguel, 2013). As an example, some of the changes are based on the distribution of credit load and relocation of some subjects within the curriculum, in other words, not very significant changes that do not affect the educational paradigm.

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http://dx.doi.org/10.1016/j.nedt.2016.08.018
0260-6917/

The scarce tested information available on teaching principles and educational requirements that justify the changes in methodology proposed by Bologna has increased attitudes of distrust and rejection in many universities who suggest it is promoting teaching methods that do not belong in university teaching (De Miguel, 2013). Current studies on the Bologna Process in different universities warn that teaching methodologies used in the EHEA are not focused solely on learning and practice, but that it is still shaped by the traditional paradigm based on rote learning and the accumulation of knowledge (Cano et al., 2014). Therefore, we must continue aiming to adopt new teaching methodologies that allow for the application of active learning in which students develop and reconstruct deep knowledge (De Miguel, 2006); while at the same time boosting their motivation (Baeten et al., 2010). It is encouraged by the principle of learning by doing, in which students really learn what they practise accompanied by feedback and reflection processes (Dewey, 2004). In this case the learning is not directly imposed, but rather the student builds it through activities that are developed at an academic level (Biggs, 2005).

According to Zabalza (2011), the different methodology types focus on four elements: the way in which information is delivered, the organisation of space and time, the focus and management of the learning activities and interpersonal relations. In spite of the different classifications, there are seven methods structured from these four elements: lecture method or master class, case-based teaching, exercises and problem solving, problem based learning (PBL), project-based learning, cooperative learning and learning contracts (De Miguel, 2006). An analysis of the different methods allows us to describe the lecture method or master class as the closest to the traditional or standard paradigm: the teacher chooses the information to be transmitted to the student, the student remains passive, the professor performs the role of the expert and the students only acquire data and information. The remaining methods are closer to the reflective paradigm: the students are the protagonists, the methods are more investigatory and the goals are understanding and good judgment as opposed to a degree of knowledge that appears ambiguous and equivocal (Lipman, 1998).

The master class is shown to be a passive method, although it turns out to be excellent for delivering information to students and providing a summary of subjects with extensive bibliographies or gaps while acknowledging the lack of control over the assimilation of knowledge, lack of feedback and deep consolidation of knowledge (Sánchez, 2010; Zabalza, 2011). The traditional method emphasises memory, classroom learning and the position of power of the teacher (Chan, 2013). Despite the problems mentioned, there are studies that show students performing better (Schwerdt and Wuppermann, 2011). The participative master class is currently recognised in the search for developing reasoning in students through questioning (Sánchez, 2010).

Both PBL and case-based teaching are considered active teaching methodologies. Under PBL, the teacher presents a situation with multiple challenges to a group of students who have to then solve it autonomously. During the solving process they will have to search for, understand, analyse and integrate information related to the presented problem. Therefore, PBL is a dynamic, creative and effective teaching-learning strategy that is centred on the student, who actively learns in a context of collaborative work to solve a problem (Waterkemper and do Prado, 2011). Several studies (Carvalho and Oliveira, 2011; De Castro et al., 2013; Kantar and Massouh, 2015; Mendes et al., 2012; Olivares and Heredia, 2012; Waterkemper and do Prado, 2011) have shown the theoretical and practical abilities and competencies such as critical thinking, diagnostic judgment, and attitudes and values related to the nursing practice that this methodology develops. However, regarding the development and integration of knowledge, the results are not as conclusive. Some argue that less knowledge is acquired, although, given the strategy used for the management of information, it is more likely to be remembered (Dochy et al., 2003).

Case-based teaching is based on the discussion of a case in which students, both individually and in groups, carry out a deep and comprehensive analysis. Moreover, this approach includes presenting a question and checking available information. This methodology, when implemented, enriches the learning atmosphere of the classroom by favouring the integration of theory and practice, the development of critical thinking, group interaction and individual reasoning (Mendoza, 2006; Waterkemper and do Prado, 2011). In line with the PBL methodology, the objective of case-based teaching is not focused just on solving the case, but on student learning and the development of generic competencies such as synthetic and analytic reasoning, information management, problem solving and decision making (Benito and Cruz, 2007; Maldonado et al., 2010).

While both are active methodologies that, on the surface, seem very similar, they present significant differences in relation to how situations are characterised and approached and the sequence of procedures in the classroom (Benito and Cruz, 2007).

Nursing is a practical science and consequently students demand constant connections between theory and practice from instructors, thus allowing them to apply the learned knowledge to real situations. Both PBL and case-based teaching are equipped for this knowledge transfer because they encourage contextualised learning based on complex clinical situations and the use of evidence-based practices to optimise patient care (Applin et al., 2011; Waterkemper and do Prado, 2011). In addition, students admit to being more motivated when teachers use these methodologies (De Castro et al., 2013; Mendes et al., 2012; Penjvini and Shahsawari, 2013). However, it must be emphasised that simply instituting a specific teaching methodology is no guarantee for success. It must be optimally implemented for it to be truly effective (Schwerdt and Wuppermann, 2011).

To achieve meaningful learning, two chief factors have to be taken into consideration: student motivation and an existing cognitive structure that allows for the assimilation of knowledge. For the second element, the use of learning taxonomies acts as guides for classifying and planning teaching. The taxonomy is based on the fact that learning generally takes place in stages of increasing complexity. A high quality teaching methodology or strategy is what stimulates student work across different cognitive levels (Vásquez, 2010). The use of Bloom's Revised Taxonomy (Anderson et al., 2001) allows the teacher to establish the degree of accommodation to new learning. Its structure is organised upon a matrix of progressive complexity in which thinking skills are categorised and ordered from Lower Order Thinking Skills (LOTS) to Higher Order Thinking Skills (HOTS). According to this approach, it is significantly easier to apply something when it is understood. Moreover, creating something requires an existing capacity for evaluation, which in turn is possible because it can be broken down into parts and analysed.

Lastly, evaluation is an element that is inextricably linked to the teaching-learning process, therefore, changes in teaching approaches and methodologies are associated with changes in evaluation (De Miguel, 2013). The use of rubrics is put forward as one of the alternatives for evaluating learning and it is increasingly widespread in the education system in Spain. The rubric is an evaluation guideline using a preferably closed matrix where performance is graded using scaled text boxes (Cano, 2015). The rubric allows for addressing the different elements of a teaching guide: learning skills and results, methodology and evaluation. It provides greater understanding of the evaluation for the teaching staff and the students (Cano, 2015) by enabling an evaluation practice directed at learning through feedback between their current situation and their stated goal (Sáiz and Bol, 2014).

Following this framework, teachers propose innovation projects, but to truly make decisions about changing teaching methods, rigorous research is needed to provide verified data about the extent of the improvement in students' learning.

2.1. Objective

To compare three teaching methodologies (PBL, case-based teaching and traditional methodologies) using a performance test to evaluate the