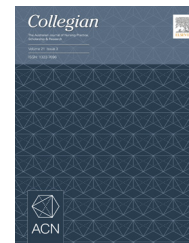




Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/coll



Shifting the load: Improving bioscience performance in undergraduate nurses through student focused learning

Angela Owens*, Tracey Moroney

School of Nursing, University of Notre Dame Australia, 160 Oxford Street, Darlinghurst, NSW 2010, Australia

Received 9 January 2015; received in revised form 17 September 2015; accepted 25 September 2015

KEYWORDS

Adaptive online learning;
Anatomy and physiology;
Collaborative learning;
High school leaver;
Self-efficacy

Summary

Background: Bioscience has a long history of being challenging to teach and learn within nursing courses and little has been published on new ways to assist students in their learning. The aim of this study was to determine which of three different interventions would assist student performance in a nursing bioscience unit.

Method: To begin, the contribution of recent prior learning in science was investigated by comparing the final exam marks of 182 students in the bioscience unit with the science marks they achieved at high (secondary) school. The effect of recent prior learning was then tested by investigating whether the first intervention, a pre-nursing bioscience workshop of 63 students, would substitute for recent high school science. Two further interventions were tested that used a stronger student-focused contribution to the teaching and learning within the bioscience unit. These were the Human Body Club which was composed of 44 under-performing students and an online learning platform known as LearnSmart that was used by a cohort of 263 students.

Results and discussion: Good and recent high school attainment in the sciences did improve student performance, whilst recent prior learning in the form of a bioscience workshop did not. Both student-focused interventions improved student performance. The longer a student spent using LearnSmart the more their mark increased. However, the Human Body Club which provided additional support and shifted the bulk of the teaching and learning to the students was the most effective of the three interventions in assisting students to pass the bioscience unit.

© 2015 Australian College of Nursing Ltd. Published by Elsevier Ltd.

1. Introduction

The expanding role and responsibilities of the registered nurse, together with the diverse range of health environments in which they now practice, requires that the nursing

* Corresponding author. Tel.: +61 2 8204 4281;
fax: +61 2 9331 6730.
E-mail address: angela.owens@nd.edu.au (A. Owens).

curriculum must evolve to keep up. This process is further challenged by the changing nature of academic practice and the need for academics to critically reflect on their teaching to ensure the development of a competent workforce. An area that continues to be one of discussion is the teaching and learning of bioscience (McVicar, Andrew, & Kemble, 2015). Human bioscience is a mix of chemistry, human cell biology, microbiology, physics, anatomy and physiology, pathophysiology and pharmacology. There is little doubt of the importance of bioscience in nursing (McVicar et al., 2015). The nursing work force requires an increasingly complex knowledge-base to ensure good patient outcomes and accountability for practice (Henly, 2011; Van Wissen & McBride-Henry, 2010). However, some nursing students experience difficulties and anxieties when learning a bioscience subject at university (Craft, Hudson, Plenderleith, Wirihana, & Gordon, 2012; Efstathiou & Bailey, 2012).

2. Literature review

2.1. The current nursing student

There have been many suggestions why some nursing students find bioscience difficult. Reasons include limited prior learning in the sciences, a limited level of education and not possessing the independent study skills required for university learning (Crabtree, Leeth, & Valentine, 2006; Pryce-Miller, 2010). Some students are also overwhelmed by the academic intensity of the university programme and the scientific content embedded within it (Karaoz, 2004; Porter, Edwards, & Granger, 2009). Quickly they discover that their preconceived ideas of how they will be taught, their university workload and how they will study are unrealistic (Cook & Leckey, 1999; O'Donnell, 2011). As a consequence their confidence, self-efficacy and tenacity for what they have to learn in this fundamental transitional period from school are challenged (Vinson et al., 2010). These factors are increasingly important given the growing diversity of students now entering nursing and raises concern that the current educational design of bioscience courses may not be accommodating all these components.

2.2. The course

Course design, delivery and assessment are important influences on bioscience learning, but a reliable comparison between institutions is difficult due to variations in the teaching and learning strategies used, depth and volume of bioscience taught and the individual abilities of the lecturer (Birks, Ralph, Cant, Hillman, & Tie, 2015; Davis, 2010; Larcombe & Dick, 2003; McVicar et al., 2015). However, there is general consensus that some students find bioscience a challenge when they study it early in the nursing course, at a level appropriate for university and in a much shorter period than that allocated to an equivalent subject at high school (Friedel & Treagust, 2005; McVicar, Clancy, & Mayes, 2010). Also, the lecturer-focused component of most courses does not suit all students and tends to encourage a surface approach to learning that can become assessment driven (Biggs, 2012; Trigwell, Prosser, & Waterhouse, 1999). Thus, designing a suitable curriculum that incorporates

bioscience at the most appropriate level and delivers it in the most effective way, yet still manages to accommodate and support a large diverse cohort of neophyte students is a challenge.

2.3. Recruitment and university performance

University education has a consumer focus where student satisfaction and positive educational outcomes are of equal importance (O'Donnell, 2011). It is not surprising therefore, that recruitment programmes are interested in selecting students that are more likely to succeed in the present university environment and to cope with nursing. Prior learning, mature entry, Australian Tertiary Admissions Ranking (ATAR) and aptitude tests have all been explored in selecting appropriate nursing students (Whyte, Madigan, & Drinkwater, 2011; Wolkowitz & Kelley, 2010). The most consistent predictor of bioscience performance being prior learning in the sciences (McVicar et al., 2015). However, the choice of subjects students select in their final years of high school is variable. In New South Wales (NSW), Australia all high school final year students must complete one English subject, whilst maths and science based subjects such as biology, personal development, health and physical education (PDHPE), chemistry and physics are optional (Board of Studies Teaching and Educational Standards NSW, 2015). The result being that a large proportion of the high school leavers who enter a Bachelor of Nursing do not have prior learning in the sciences that may assist in the selection process (Logan & Angel, 2011) and increase the likelihood of them completing a bioscience unit (McVicar et al., 2015).

3. Methods

This study adopted a systematic and quantitative approach to determine what would improve student performance in a first semester nursing bioscience unit, focusing on prior learning in the sciences or modifying current teaching practices. The sequence of the investigation and the three different interventions tested was as follows:

- Recent prior learning was used to determine whether any advantage was bestowed on students that learnt science in the previous year at high school.
- The effect of recent prior learning was tested by a pre-nursing bioscience workshop that was a lecturer-focused intervention.
- The effect of a small supportive learning environment was tested by a student-focused intervention called the Human Body Club.
- The effect of an online adaptive learning tool was tested by a student-focused intervention called LearnSmart.

3.1. Recent prior learning at high school

To test whether recent prior learning at high school had any effect on final bioscience marks at this university, the ATAR and High School Certificate (HSC) science marks for 182 students sitting a bioscience (anatomy and physiology) unit in 2010, 2011 and 2012 were collected. Only recent high school leavers were selected to minimise the confounding

Download English Version:

<https://daneshyari.com/en/article/5567648>

Download Persian Version:

<https://daneshyari.com/article/5567648>

[Daneshyari.com](https://daneshyari.com)