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Original Article

Investigating the learning approaches of students in nursing education

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الملخص

أهداف البحث: حققت هذه الدراسة في الاختلافات بين نهج التعليم السطحي والعميق لطلاب التمريض من خلال صفاتهم الديموغرافية. علاوة على ذلك، استكشفت هذه الدراسة العلاقة بين عمر المشاركين، والعام الدراسي، وطريقة التعلم.

طرق البحث: من ديسمبر ٢٠١٩ إلى فبراير ٢٠٢٠، استخدمت هذه الدراسة التصميم الكمي المقارن في جامعة حائل بالمملكة العربية السعودية. واستخدمت استبانة قائمة على المسح لجمع البيانات من عينة مختارة عشوائيا من ٣٤٩ طالبا من كلية التمريض. واستخدم تحليل التباين أحادي الاتجاه واختبارات ت لفحص الفرق بين التعلم السطحي والتعلم العميق للمشاركين من خلال صفاتهم الشخصية. كما تم استخدام معامل ارتباط بيرسون لتحديد العلاقة بين طريقة التعلم للمشاركين، والعمر، والعام الدراسي.

النتائج: لوحظ اختلاف كبير في نهج التعلم العميق للعمر ونوع البرنامج (التجسير /عادي). وتم إيجاد ارتباط إيجابي متوسط الأهمية بين العمر والتعلم العميق والتعلم السطحي.

الاستنتاجات: أظهرت هذه الدراسة أن طلاب التمريض يستخدمون كلا من طرق التعلم السطحي والعميق على حد سواء وأنهم قادرين على الاستفادة من أي من أسلوبي التعلم. وتعتبر كلا طرق التعلم مهمة وقيمة في تعليم التمريض. وارتبط عمر الطالب بنهج التعلم. ويحصل الطلاب الأكبر سنا على درجات أعلى في كلا طرق التعلم العميق والسطحي. ويتعين على الأكاديمية أن تطور بيئات التعليم الإبداعية التي تشجع الطلاب على استخدام كلا النهجين والمضي قدما للانتقال إلى التعلم العميق.

الكلمات المفتاحية: الارتباط المقارن؛ التعلم العميق؛ الصفات الديموغرافية؛ طرق التعلم؛ طلاب التمريض؛ التعلم السطحي

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Abstract

Objectives: This study investigates the differences between nursing students' surface and deep approaches to learning across their demographic profiles. Further, this study explores the association between the participants' ages, year levels, and learning approaches.

Methods: From December 2019 to February 2020, we used a quantitative-comparative- correlational study design at the University of Hail KSA. A survey-based questionnaire was used to collect data from 349 randomly selected nursing students. One-way analysis of variance (ANOVA) and t-tests were used to examine the difference between the surface learning and the deep learning approaches of the participants across their profiles. Pearson's correlation coefficient was used to determine the relationship between participants' learning approaches, ages, and year levels.

Results: A significant difference in the deep learning approach was noted for age ($F (3, 345) = 35.71$; $p = 0.01$] and program type (bridging/regular) [$t (347) = -8.81$, $p = 0.01$]. A moderately positive significant correlation was found between age and both deep ($r = 0.47$, $n = 349$, $p = 0.01$) and surface ($r = 0.45$, $n = 349$, $p = 0.01$) learning approaches.

Conclusion: This study shows that nursing students use both surface and deep learning approaches alike and are able to capitalise on either learning style. Both learning approaches are important and valuable in nursing education. The age of the student is correlated with the learning approach. Older students have higher scores for both deep and surface learning approaches. Academia must develop creative learning environments that can

encourage students to use both approaches and to advance the transition to deep learning.

Keywords: Comparative—correlational; Deep approach; Demographic profiles; Learning approaches; Nursing students; Surface approach

Introduction

The performance of student nurses in an academic context is measured through the standard evaluation of competence defined as the student's ability to translate knowledge to skills.[1] Teaching and learning approaches are important in developing and achieving the desired performance and level of competence. While teaching approaches are given high value, students' learning approaches have been deemed equally essential. Several learning approaches have been utilised and recognised as necessary considerations in the preparation and development of teaching—learning activities. Deep learning approaches are necessary for high-quality learning in higher education. Using the surface approach alone will not lead towards an understanding of content, but instead it will lead to poor-quality learning.[2] Hence, it is imperative to evaluate the deep and surface learning approaches to tailor teaching methods to match these approaches and develop them further.

The terms 'deep' and 'surface' learning approaches were originally coined by Marton and Säljö,[3] and later popularised by Biggs and Tang as two ways by which students approach their learning at university.[4] These approaches can both be employed by learners as they adopt different strategies in response to diverse learning contexts. Indeed, in higher education, there is no evidence that learners may advance to a deep learning approach.[5] In fact, surface learning approaches are seen to be the precursor of deep learning[6] that reflects the use of memorisation.[7] While Wingate (2007)[8] elucidated on how learners should learn, Biggs and Tang (2007)[4] and other scholars explained how learners are transitioning to embrace conceptual changes.[3,9] Haggis (2003),[10] on the other hand, established landscapes of surface and deep learning approaches. Such approaches are described by way of study organisation and time management, noting learners' efficacy to realise their accomplishments.[11] A characteristic of learning approaches in the deep learning approach, for example, is that it is a well-organised method for learners that can be employed to gain knowledge that results in an increase in understanding within the change processes.[12–15] To Holmes,[16] the use of a deep approach to learning can be through encouraging the learners to study a subject matter they are interested in and enjoy at the same time. In contrast to the deep approach, surface learning is described as memorisation and the remembering of details.[17]

A strong appreciation of educational approaches should be factored into the planning of a facilitator's teaching strategies. This premise argues that students' attitudes and approaches towards their studies are crucial considerations in the formulation and improvement of learning strategies and motivation. Primarily, the function of a teacher is to facilitate and ensure that the learner has the best chance to learn[18] through the use of appropriate methods in teaching and evaluation.[19] This suggests that facilitators have an important role in understanding the student learning approaches and developing student performance and competence. Teachers endeavour to explore the learning approaches, and this correlates to understanding the teaching—learning activities. This is vital, as it advances the quality of learning for students while they actively engage themselves in teaching and learning activities.[20] The correspondence of teaching strategies to the students' learning approaches will be more meaningful. It is assumed that the fit will not only facilitate achievement of learning objectives but will also add enthusiasm and delight during teaching and learning sessions.

Educating future nurses involves more than just the acquisition of knowledge; it requires the development of professional competence and life-long skills that can be achieved in many ways including, but not limited to, surface and deep learning approaches. This study aimed to explore the different learning approaches of nursing students using the Biggs R-SPQ-2F scale. Specifically, the researchers explored the differences between the nursing students' demographic profiles and their approaches to learning, whether deep or surface. The researchers further aimed to determine if there is a relationship between a participant's learning approach, age, and year level. Exploring the learning approaches of the nursing students and the correlated demographics provides a clear reference for teachers to complement these learning approaches with the appropriate teaching strategies. Harmonising the learning approaches and teaching strategies that also factor in trends in technology and artificial intelligence ensures the substantial engagement of both teachers and learners in the academic milieu.

Materials and Methods

This study used a quantitative—comparative—correlational design. It was conducted at the University of Hail, located in the Northern region of the KSA. The participants were regular and bridging students of the Bachelor of Science in Nursing (BSN) at the University of Hail. The regular students were those who started their first year as BSN students, and bridging students were those who had already finished their diploma in nursing and were enrolled with the goal of obtaining a bachelor's degree. The inclusion was set to those students who were enrolled in both clinical and theory programs. Students who were enrolled in the BSN program but were taking only non-nursing courses (e.g. Islam, physical education) and those who were not willing to participate were excluded.

This study employed the RAOSOFT (https://www.calculator.net/) sampling calculator with a 95% confidence level resulting in a requirement for 349 participants. The

researchers used a simple random sampling technique and employed a number generator to select the 349 participants. A unique sequential number was assigned to each student from the second-year level students through students completing interns. The numbers assigned to each eligible participant were derived from the list of random numbers generated from an automatic random number generator program.

The researchers utilised a self-administered survey to gather data. Before data gathering, the researchers conducted a general orientation in the participants' classrooms during their break time to explain the purpose of the study, expected role of participants, any risks or benefits, the confidentiality of the information to be gathered, and the anonymity of the respondents. Participants were free to ask questions and gain clarification during the orientation. Prior to joining the study, informed consent forms were signed by each participant. Data collection commenced in December 2019 and ended in February 2020. The survey tool was distributed in person to each participant after the class session. The retrieval rate was 100%.

This study used Bigg's revised two-factor Study Process Questionnaire (R-SPQ-2F) developed by Biggs in 1996 and revised by Biggs et al., in 2001.[21] This questionnaire assesses deep and surface approaches using only 20 items; each subscale consists of ten items. The questionnaire consists of several items on attitudes towards studies and several on the customary method of learning.

The scoring of the questionnaire is in cyclical order: item question 1 is identified as a deep motive, question 2 is a deep strategy, question 3 is a surface motive, question 4 is a surface strategy, question 5 goes back to deep motive, and so on. To obtain the deep approach score, all of the deep motive scores are added to the deep strategy scores. Higher scores denote a deep approach. For the surface approach score, all surface motive scores are added to all surface strategy scores. Higher scores denote more use of a surface approach.

The questionnaire was previously validated and tested at the University of Hail for content and cultural sensitivities. Four experts in the nursing education field served as validators. Three are known to be developers of the curriculum major in nursing, and one is the dean of the College of Nursing. The four experts have unanimously agreed that all items appear to measure and are appropriate for the intended topic. After content validation, a pretest was conducted with 20 nursing students to assess the instrument's reliability. The reliability test yielded an alpha coefficient of 0.80.

Frequency and percentage values were calculated to describe the demographic data. An independent t-test was used to explore if there are differences between participants' learning approach scores. A one-way analysis of variance (ANOVA) was used to test the difference between the surface learning approach and the deep learning approach of the participants across their profile. Pearson's correlation coefficient was used to explore the relationship between the participants' learning approaches, ages, and year levels. All statistical analyses were performed using Statistical Package for the Social Sciences version 21 (SPSS V.21). All values were set to 0.05 level of significance.

Results

Demographic information of the participants

Two-thirds (66%) of the participants were aged between 20 and 24 years and there were more third-year students than students of any other year. Two-thirds (66%) of the sample were enrolled in the regular program, while 34% were students from the bridging program. Altogether, 49% of the participants were men and 51% were women.

Table 1 presents the overall scores of the participants according to deep and surface learning. The participants

Table 1: Participants' Utilization of Deep and Surface Learning Approaches.

Learning Approach	Mean	SD	t-value	df	p	Interpretation
Deep	28.37	9.91	1.27	348	0.21	Not Significant
Surface	28.15	9.52				

Table 2: Differences between Participants' Deep Learning Approach across their Profile Characteristics N = 349.

Variable	Frequency	Mean	SD	Test Value	Df	p	Interpretation
Age							
20−24 years old	229	25.31	8.41	(F) 35.71	3,345	0.01	Significant
25−29 years old	64	32.48	8.25				
30−34 years old	36	32.42	10.26				
35- and above	20	43.00	9.91				
Year Level							
2nd Year	65	28.18	9.92	(F) 0.69	3, 345	0.56	Not Significant
3rd Year	104	29.03	10.28				
4th Year	94	28.90	9.88				
Internship	86	27.14	9.54				
Sex							
Male	172	27.88	10.77	(t) 0.91	347	0.36	Not Significant
Female	177	28.85	9.00				
Program							
Regular	229	25.31	8.41	(t) −8.81	347	0.01	Significant
Bridging	120	34.22	9.96				

Table 3: Differences between Participants' Surface Learning Approach scores across their Profile Characteristics N = 349.

Variable	Frequency	Mean	SD	Test Value	Df	p	Interpretation
Age							
20−24 years old	229	25.33	8.37	(F) 32.25	3, 345	0.01	Significant
25−29 years old	64	31.73	7.70				
30−34 years old	36	32.14	9.48				
35- and above	20	41.75	9.69				
Year Level							
2nd Year	65	27.80	9.24	F (0.69)	3, 345	0.44	Not Significant
3rd Year	104	29.10	10.11				
4th Year	94	28.48	9.25				
Internship	86	26.91	9.32				
Sex							
Male	172	27.83	8.47	t (0.61)	347	0.54	Not Significant
Female	177	28.46	10.52				
Program							
Regular	229	25.33	8.37	(t) −8.36	347	0.01	Significant
Bridging	120	33.53	9.30				

Table 4: Relationship between the Participants' Learning Approach, Age, and Year Level N = 349.

Variable		R	p	Interpretation
Deep Learning	Age	0.47	0.01	Moderate Positive Significant Relationship
	Year Level	−0.04	0.46	No Significant Relationship
Surface Learning	Age	0.45	0.01	Moderate Positive Significant Relationship
	Year Level	−0.05	0.38	No Significant Relationship

had almost the same approach in learning (deep approach x = 28.37, SD = 9.91; surface x = 28.15 SD = 9.52).

Table 2 presents the findings of the one-way ANOVA and t-tests examining differences in participants' deep and surface learning approach scores and their profile characteristics. The one-way ANOVA revealed that there was a significant difference between the deep learning of participants across age groups. A Bonferonni test revealed that students aged 35 and above (x = 43, SD = 9.91) had a higher score. Additionally, a one-way ANOVA revealed no significant difference between participants' deep and surface learning approaches across year levels. There was no significant difference in the deep and surface learning approach scores between male and female participants as revealed in the t-test. However, while a significant difference was noted in the scores for deep learning, no significant difference was found for the surface approach between participants enrolled in the regular BSN program and the bridging BSN program.

Table 3 presents the results of the Pearson's correlation analysis between participants' learning approach, age, and year level. There is a moderate positive significant relationship between age and both deep and surface learning approaches. However, there was no significant relationship between year level and either deep or surface learning approaches (see Table 4).

Discussion

Our study findings have shown that nursing students used both deep and surface learning equally. No dominant learning attitude surfaced, which implies that students potentially struggle to learn and recall basic knowledge; this is a prerequisite to advance from surface learning to deep learning. Such struggles can be expected due to the nature of the nursing curriculum, where the students learn information in the classroom and at the same time are exposed to actual clinical training where they apply and practice their knowledge; hence, surface and deep learning happen almost simultaneously. The learners utilise surface learning and are extrinsically motivated to engage in rote memorisation in their learning process. The significant use of the surface learning approach among nursing students can be expected since the body of knowledge required to achieve nursing competence is dense with values and concepts that should be memorised. Conversely, these students engage in deep learning with the motivation and intrinsic purpose towards comprehending and adopting different ways to maximise theoretical considerations and translating them into practice. Assimilating nursing concepts and competence profoundly demands critical thinking, decision making, and other life-long skills that are processed and developed through deep approach learning; hence, it forcibly necessitates a deep learning approach from the students in order for them to endure the academic rigours of nursing education.[22−24] The same result has been reported previously, where few differences in results of learning attitudes were noted between undergraduates and graduate students or between students majoring in different nursing specialties concerning the utilisation of deep or surface learning approaches.[7] It is expected that the dynamic nature of the nursing profession, however, requires and anticipates that deep learning should be more dominant than surface learning. Hence, deep learning should be more developed among nursing students. To facilitate reflective appreciation and transmission of

knowledge and skill, teachers as facilitators should consider a combination of clear instructions with guided inquiry, creative and innovative teaching—learning connections, technology advantages, and appropriate artificial intelligence that will allow the learners to engage in critical thinking, problem solving, mindfulness, and social relevance in an authentic scenario.

The study result found significant differences in the level of the deep learning approach of students according to their age. Older nursing students have higher internal motives and intent regarding learning. Indeed, a research showed that brain development could be why older students are more superior in enacting their previous knowledge, which is important to meet their intellectual advancement.[25] Other scholars have also highlighted that the older learners who are employing a profound learning approach attempt to examine the association and coordination of module exercises and tasks.[26] To some extent, some traditional determinants (e.g. cultural and educational) may also be contemplated.[27] Teachers should consider attending to younger students and encourage a deep learning approach utilising active and self-directed learning approaches that require a higher level of thinking beyond rote memory. For example, mixing and pairing younger students with older students may enhance the use of deep learning abilities for both age clusters. The composition of learners in a group could be an effective factor for deep learning because students using surface learning are motivated to think in the same way as students who use deep learning. Researchers like Beccaria and colleagues[28] have confirmed that in such situations, there are advantages for learners with a high intellect, which includes significant level reasoning. Conversely, learners who employ a surface-approach in learning may experience issues in working in a group.[28]

In this study, the participants enrolled in the bridging BSN program had higher scores for the deep learning approaches than did learners in the regular BSN program. This result can be attributed to the fact that students in the bridging program were much older than those from the regular program. This result is expected, as bridging students have typically already attended college for their diploma and the majority have been exposed to actual clinical work experience. Thus, their previous experience and exposure could have contributed to their maturity level and more developed deep learning approach. Older students learn best when they perceive the topic as valuable. Regular learners are provided with more opportunities for social learning[29] that invigorates accomplishment inspiration and higher self-viability.[30] Teachers need to look into mixing bridging and regular students in order to help learners integrate the deep learning approach within this group of learners. For instance, the teacher should strategise to balance the right members of the group to encourage peer support. It is argued that the benefits of learners in a group may be conceived differently based on their own motivation as they bring diverse experiences and mastery to the group.

The moderate positive significant relationship concerning age and both deep and surface learning approaches suggests that age has some influence on the increase and decrease of deep and surface learning approach scores. The finding is supported by earlier studies[31,32] using the R-SPQ-2F instrument, which similarly found a positive correlation between these variables. In contrast, the surface approach to learning is negatively correlated with age as measured using the R-SPQ-2F instrument.[26] It is essential to encourage groups to not only have a mix of different learners' ages and diverse ways of effective learning but also to mix learners with interesting and positive attitudes towards learning.[32] While results suggest purposively mixing students to enhance deep approach learning, teachers should consciously and carefully select and develop group activities and dynamics that will empower students.

The findings of this study serve as groundwork for nursing schools to provide strategies to overcome issues commonly encountered by students. For example, teachers as facilitators need to encourage learners to address their weaknesses and improve on their strengths by training them to have a good mindset towards achieving their goals. Moreover, educational institutions need to create innovative strategies to boost the desired approach in teaching and learning. It is imperative that teachers demonstrate an understanding of the students' abilities and approaches to learning across all ages, year levels, and group mixes. Teachers should not only endeavour to deliver content of their courses to students but to aim and work on building or enhancing the students' soft skills and abilities. Bearing in mind that age is a significant correlate to learning approaches, teaching—learning pedagogy can be tailored in a way that will advance students' maturity level and avoid spoon-feeding information through self-directed learning and community immersion beyond the classroom setting. School settings with students who are in the regular program without bridging students can still develop and enhance a deep learning approach with a well-structured teaching—learning climate that is fortified with appropriate teaching strategies congruent to the learning approaches and tempered by advanced technology, updated faculty development platforms, and a caring, responsive, safe, and student-friendly environment.

Study limitations

The authors acknowledge the limitations of this present study. The setting was concentrated only in one university, which can affect the generalisation of the results. This can be addressed by including universities within other regions and in collaboration with other researchers from different universities. Additionally, this research relies on self-reports, which are predisposed to biases. An instrument that can objectively measure the learning approaches of the students should be used; in addition, a mixed-methods approach is highly recommended for researchers who wish to replicate the study.

Conclusion

Nursing students use surface and deep learning approaches alike and are able to capitalise on both approaches. Both learning approaches are important and valuable in nursing education. The age of the student is a correlate to the learning approach. Older students have higher scores for both deep and surface learning approaches. Academia must undertake the creation of learning environments that

encourage students to use both approaches and advance the transition to deep learning.

Recommendation

Nurse educators must shift their role from being merely a teacher to being a facilitator of knowledge and the process of knowledge acquisition amongst learners. It is in this context that knowledge assessment of the students should be periodic so that facilitators are informed on the knowledge needs and learning approaches of the students. Moreover, while the educational success of the students can be attributed to the facilitator's effectiveness, the need to integrate a deep approach in diverse characteristics of students should be supported. The success in achieving the program goals also highly relies on teacher-student mixes and matches in tandem.

Teachers' trainings regarding learning approaches and attitudes in faculty development programs can enhance sensitivity to and consideration of the wisdom of the students to ensure congruence of learning with teaching strategies.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval

This study has obtained ethical approval from the Institutional Review Board of the University of Hail dated October 29, 2019 with An approval number of H-2019-012. The researchers observed the ethical principles as suggested in the World Medical Association Declaration of Helsinki's in conducting research concerning humans. Written informed consent was obtained from all participants.

Authors' contributions

SA and FA conceived and designed the study, conducted research, provided research materials, and collected and organised the data. EP analysed and interpreted the data. WLD wrote the initial and final draft of article and provided logistic support. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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