AIMS Medical Science

AIMS Medical Science, 3(3): 237-247.
DOI: 10.3934/medsci.2016.3.237
Received 23 July 2016,
Accepted 2 September 2016,
Published 6 September 2016

http://www.aimspress.com/journal/medicalScience

Research article

Effect of Self-Directed Learning on Knowledge Acquisition of Undergraduate Nursing Students in Albaha University, Saudi Arabia

Waled Amen Mohammed Ahmed *, Ziad Mohammad Yousef Alostaz, and Ghassan Abd AL- Lateef Sammouri

Nursing Department, Faculty of Applied Medical Sciences, Albaha University, Al-Baha, Kingdom of Saudi Arabia

* Correspondence: Email: weliameen1980@yahoo.com; Tel: 00-966-40-824-5369

Abstract: Objective: The study aimed to assess the effect of self-directed learning on knowledge acquisition (first and second exam) among undergraduate nursing students at Albaha University. **Methods:** A quasi-experimental design was used to compare two unequal groups of nursing students in Albaha University. A convenience sampling technique was used to select the undergraduate nursing students at Al-Baha, Saudi Arabia during the 2014/2015 academic year. Students (n = 65) were recruited through an on-campus advertisement campaign either to register in traditional subjects or self-directed learning subjects. The selected students were assigned to an experimental group (23 students) and a comparison group (42 students) according to their interests. Both groups received same topics by either traditional or self-directed learning. Students' knowledge acquisition was assessed through exams. Data was analysed by Statistical Package for the Social Sciences, version 20. **Results:** The results of students in pediatric nursing were (60.2% and 67.3%) in the first exam in traditional learning and self-learning respectively. The students' scores in the second exam were (57.4% and 70%) in traditional learning and self-learning respectively (p = 0.03). In the first exam of medical-surgical nursing II, the students scored 29.6% in comparison group and 40% in the experimental group (p = 0.025). In the second exam of medical-surgical nursing II, the students scored (35.2% and 51.4%) in the comparison and experimental groups respectively. In the first exam of medical-surgical nursing I, the students scored (50% and 61.6%) in comparison and experimental groups respectively (p = 0.04). In the second exam of medical-surgical nursing I, the students scored

(61% and 65.6%) in the comparison and experimental groups respectively. **Conclusion:** Self-learning was found to be better than traditional learning for nursing students in Albaha University. Therefore, the study findings are useful to improve nursing curricula.

Keywords: self-learning; nursing subjects; traditional learning; performance

1. Introduction

The latest report on Saudi nursing showed that the number of Saudi nurses increased to 22% of the total nursing workforce in 2008 compared to 9% in 1996. However, in spite of the expanding enthusiasm for enrolment in distinctive nursing instruction programs, it has been evaluated that it could take 25 years to educate enough Saudi nurses with the goal of meeting 30% of the Kingdom's nursing workforce requirements [1]. The first Health Institute Program was established in Riyadh, Kingdom of Saudi Arabia, in 1958 by the Ministry of Health in a joint effort with WHO. Out of the 15 Saudi male understudies enlisted, all had primary school readiness involving 6 years of education and were admitted to a 1-year program. In addition, another two Health Institute Programs, one in Riyadh and one in Jeddah, the biggest seaport and business hub, opened to enlist Saudi women [2]. Men and women who later graduated from these Health Institutes were named as medical attendants' assistants [3].

In the 21st century, nurses have faced several challenges stemming from complicated health care settings and the rapid evolution of the social, technological, and medical aspects related to patient care. All of these challenges increase the pressure on nursing educators to choose the best educational method that can prepare qualified nurses to work in a variety of health care settings and provide competent care [4].

Self-directed learning has been defined as learning with self-direction, self-instruction, autonomy, self-planning, self-regulation, self-management, self-education, and independency [5]. Self-directed learning [SDL] is one of the teaching strategies in health specialities that allows students to shift from being passive to being active learners. Knowles (1970) defined the most common definition of self-directed learning, who defined it as a process of learners taking the responsibility to identify the requirements, set objectives, select the most suitable methods, and assess the outcomes of learning [6]. The most recent definition was given by Guglielmino (2008), who defined self-directed learning in terms of motivation and direction [7].

The literature on SDL has focused on describing the events and implementations of self-reliant learning modules, and most of these analyses date from between the 1980s up to the present day [4,8–10]. Traditionally, didactic methods of teaching have predominated in nursing education; this way of nursing education has been one of ‘spoon feeding’ and providing ‘factual knowledge’, and it also uses rote learning techniques. The traditional pattern of nursing education is no longer

satisfactory to teach students [11], and current nursing programmes increasingly place an emphasis on adult education, including SDL. It is important to give students the skills to seek, analyse, and use information effectively. Furthermore, nursing educators need to familiarize themselves with the self-learning concept to facilitate knowledge acquisition [12].

The lack of a common understanding means that the implementation of SDL is inconsistent and leads to anxiety for students. Teachers involved in student-centred approaches of learning become facilitators and should have the adequate skills and knowledge to effectively implement the SDL approach. This suggests the need for ongoing staff development in this area. Several benefits of SDL have been identified, and include increased autonomy, confidence, motivation, and improvement of lifelong learning skills. However, researches are recommended to identify the state in which these are most likely to be achieved, and to also assess the effect of SDL on the performance of nursing students [13].

Nurse educators use several teaching approaches to prepare competent and safe staff. The traditional approaches of teaching, which consisted of didactic learning experience, have predominated in nursing education, which provides knowledge to passive learners. However, the traditional way of nursing education is no longer adequate to meet the changing scientific and technological needs of the health care environment. Nurses working in health care settings consistently face many challenges stemming from the ongoing social, technological, and medical changes of health care environments [4]. The ability of nurses to overcome these challenges depends upon adequate levels of appropriately educated and prepared nurses at the undergraduate level. In one study conducted among nursing students in on self-learning methodology in simulated environments showed that the students successfully lead their study, design simulation scenarios, and discuss the findings and related scientific evidence under the supervision of a teachers [14]. There is now a greater emphasis placed on the concept of SDL as a teaching approach for assisting nursing students in tackling the obstacles faced in the health care environment [12]. Furthermore, in recent studies conducted on the readiness for self-directed learning as one of the teaching methods, it was reported that bachelor medical and nursing education students demonstrated high interests for learning with a high level of readiness in Saudi Arabia [15,16], Pakistan [17], Canada [18], and Australia [19]. It was also recommended to adapt a self-directed approach to the nursing curriculum after further investigations [20]. The aim of this study was to assess the effect of SDL intervention on knowledge acquisition among undergraduate nursing students' at Albaha University in Saudi Arabia. The intervention was compared to the effect of traditional teaching in nursing classrooms on the knowledge acquisition (first and second exam) of nursing students. The researchers hypothesized that self-directed learning would be effective compared to traditional teaching in nursing classrooms on knowledge acquisition (scores of first and second exam).

2. Materials and Methods

2.1. Study design

A quasi experimental design was used to compare two unequal groups of nursing students in Albaha University. The two groups included the control group (students in first semester subjects "medical surgical nursing I, medical surgical nursing II, and pediatric nursing"), and the intervention group (students in second semester subjects "medical surgical nursing I, medical surgical nursing II and pediatric nursing"). The study was conducted to assess the effect of the SDL approach on bachelor nursing students' knowledge acquisition. The aim was to determine if the independent variable (Type of teaching method: traditional versus self- directed learning approach) would affect the dependent variable (students' knowledge measured through students' scores in the first and second exam).

2.2. Study setting

This study was conducted in Al-Baha, Saudi Arabia. The Faculty of Applied Medical Sciences at Albaha University comprises several departments, including the nursing department, which offers a baccalaureate degree in nursing. The classrooms were well equipped in a physically comfortable environment that allows student to learn without obstacles.

2.3. Sampling and sample size

A convenience sampling technique was used to select the undergraduate nursing students who attended nursing courses at Albaha University during the 2014/2015 academic year in the first and second semesters. The accessible population comprised the male students at Albaha University enrolled in selected courses (Medical Surgical Nursing I, Medical-Surgical Nursing II, and Paediatric Nursing). Nursing students in these courses were selected because they were novices of the SDL approach. Students (n = 65) were recruited through an on-campus advertisement campaign to register in either the traditional or SDL subjects. The selected students were assigned into an experimental group (23 students) and a comparison group (42 students) according to their interests. Medical Surgical Nursing I, Medical-Surgical Nursing II, and Paediatrics Nursing were selected. The topics provided for both groups were identical except for the method of conveying information to students. The first semester was specified for the comparison group, which received traditional learning consisting of PowerPoint presentations, lecturing, and a discussion of each topic related to the course, followed by the first and second exams at week five and week ten. The second semester was specified for the experimental group. At the beginning of the second semester, the experimental group received the course syllabus, which included the same topics covered for the comparison

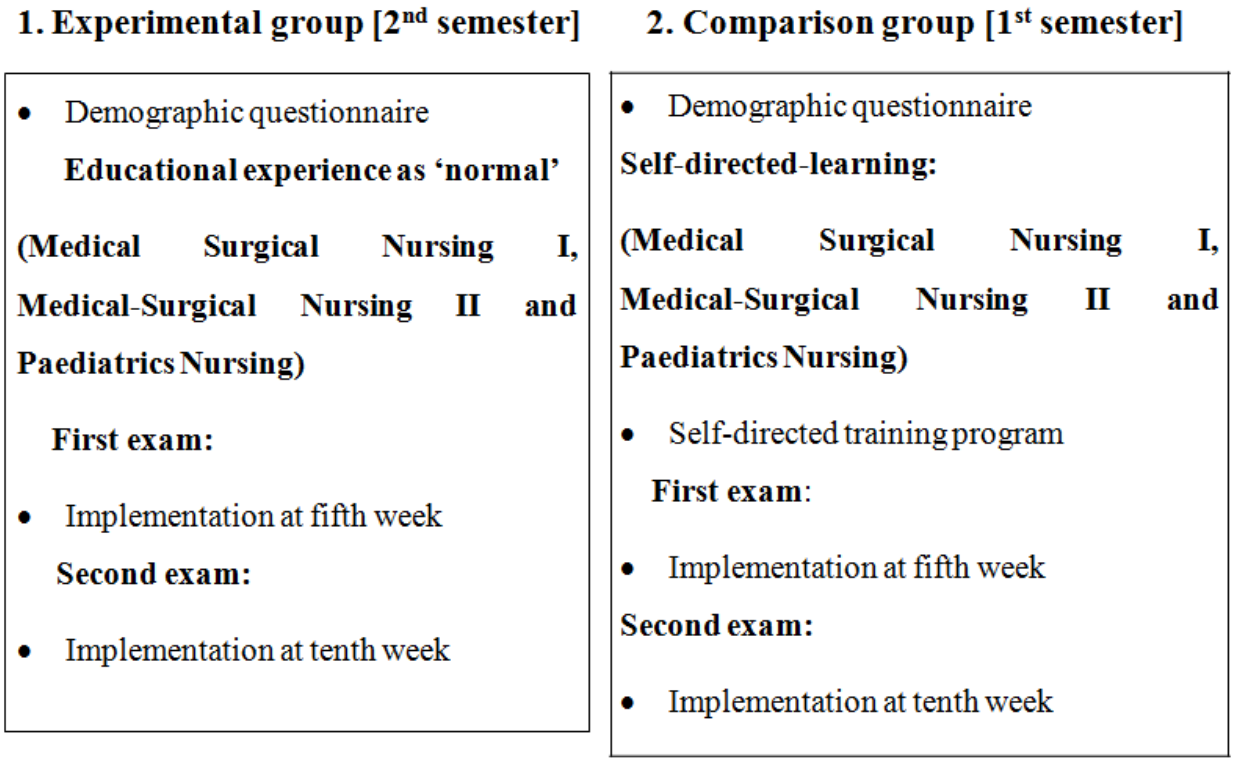
group. The students were divided into sub-groups and asked to prepare PowerPoint lectures for each topic covered in the first and second exams. The role of the teacher during the student's presentations is to guide the students and correct information if there are any mistakes. The first and second exam was conducted at week five and ten of the study.

2.4. Data collection technique and tools

The demographic information sheet includes age, sex, academic year, and the studied course, which was distributed at the beginning of the study. Knowledge acquisition was measured through thirty multiple choice questions covering the material discussed in classrooms. The multiple choice questions were structured by the subjects' teacher to ensure full coverage. The total scores were obtained through calculating the correct answer for each student, following this, the mean was calculated for each group.

Target students who were willing to participate received a cover letter explaining the purpose and outcome of the study and assuring them that their participation is voluntary with the right to withdraw at any time without any penalty. Furthermore, students were assured that all information would be kept confidential, by which only the researcher has the right to review, and only the average grades will be announced.

Figure 1. The flow chart of the study.



2.4.1. Data analysis

The collected data was checked and cleaned by performing preliminary frequency distribution to enhance accuracy and reliability. Data analysis was conducted by using the Statistical Package for the Social Sciences (SPSS version 20). Descriptive analysis was used for demographic data (age, gender, and year of study, first and second grades). The descriptive statistics included frequencies, means, and percentages. The main dependent variable was knowledge acquisition, which was measured through the first and second exams. Scores were calculated as percentages. The mean of the first and second exam grades of the intervention group and comparison group were compared using an independent t-test. The Multiple Regression Model was used to adjust for any potentially confounding variables or effects of modification, such as gender, age, and year of study. Statistical significance was reported at the conventional p-value equal and less than 0.05.

2.4.2. Ethical consideration

This study was supported and funded by the Deanship of Scientific Research of Albaha University. The right of the students to participate and register in the traditional or self-learning subjects was voluntary and fully explained for the students. During the study process, the right to withdraw from both the self-learning or traditional subjects was preserved. The students have no assumptions of confidentiality.

3. Results

Male nursing students in Albaha University participated in this study (the mean age was 21 years in the control group, and 22 years in the intervention group). A 65 nursing students participated in this study; 23 students in experimental group and 42 students in the comparison group. The selected subjects were pediatric nursing (17 students), medical-surgical nursing II (30 students), and medical-surgical nursing I (18 students).

Table 1. The comparison of demographic variables between nursing students participated traditional learning and self-directed learning groups, Albaha University, 2014–2015.

Demographic	characters	Traditional learning	Self-learning	*p*-value
Age	Mean ± SD	21 ± 2	22 ± 2	0.13
Subject	Pediatric Nursing	7 (41.2%)	10 (58.8%)	
	Medical-Surgical Nursing II	25 (83.3%)	5 (16.7%)	0.09
	Medical-Surgical Nursing I	10 (55.6%)	8 (44.4%)	
cGPA	Mean ± SD	3.2 ± 0.3	3.1 ± 0.4	0.21

cGPA = Cumulative Grade Point Average

In the first exam of pediatric nursing, the students in the comparison group scored 60.2% compared to 67.3% in the experimental group with a significant difference (p = 0.04). In the second exam of pediatric nursing, the students scored 57.4% in the comparison group compared to 70% in the experimental group with a significant difference (p = 0.03). In the first exam of medical-surgical nursing II, the students scored 29.6% in the comparison group compared to 40% in the experimental group with a significant difference (p = 0.025). In the second exam of medical-surgical nursing II, the students who taught using the traditional learning approach scored 35.2% compared to those taught with the self-learning approach, who scored 51.4% with a significant difference (p = 0.02). In the first exam of medical-surgical nursing I, the students scored 50% in the traditional learning method compared to 61.6% in the self-learning method with a significant difference (p = 0.04). In the second exam of medical-surgical nursing I, the students scored 61% in the traditional learning method compared to 65.6% in the self-learning method with an insignificant difference (p = 0.06).

Table 2. The comparison of students' scores (first and second exams) between traditional learning and self-directed learning groups in Albaha University, 2014–2015.

Subjects and exams		Traditional learning	Self-learning	*p*-value
Pediatric in Nursing	First Exam	60.2%	67.3%	0.04*
	Second Exam	57.4%	70%	0.03*
Medical-Surgical Nursing II	First Exam	29.6%	40.8%	0.025*
	Second Exam	35.2%	51.4%	0.02*
Medical-Surgical Nursing I	First Exam	50%	61.6%	0.03*
	Second Exam	61%	65.6%	0.06

* = significant

4. Discussion

The introduction of SDL concepts through an educational intervention program significantly improved the level of nursing students' performance compared to that of traditional learning among nursing students in Albaha University. The subjects, cGPA, and age contributed insignificantly to the knowledge of nursing students. Compared to nursing students taught using the traditional method, nursing students taught using SDL effectively achieved better performance. The results showed a positive impact of SDL on student performance compared to the traditional learning approach among nursing students in Albaha University. The SDL students demonstrated statistically significant scores in the first and second exams in three selected courses (Medical Surgical Nursing I, Medical-Surgical Nursing II, and Paediatrics Nursing).

The findings of this study are comparable to other studies conducted in different countries; the students in this study scored higher than or similar to those reported by Guglielmino [21]. The studies conducted in Saudi Arabia to determine the readiness of nursing and medical students in

Saudi universities for self-directed learning showed that an integration of SDL for undergraduate nursing and medical students had positive effects on performance and post-employment continuing nursing education [15,16]. Furthermore, one study was conducted in Canada to assess the effect of blended learning compared to face-to-face teaching, which showed that blended teaching is more effective in terms of knowledge and readiness [18]. Our findings are also similar to the findings from the study conducted in Saudi Arabia and Egypt on basic deduction and SDL as a result of problem based learning on Egyptian and Saudi nursing students, it mirrored that the aggregate score of SDL and sub heading was generally high in both nations, and was 81% in Saudi Arabia [22]. It was also reported from one study that nursing students and clinical nurses have the ability to increase their skills in clinical practice by self-directed learning approaches. The self-directed learning in nursing education is effective [9]. Another study was conducted among undergraduate students of Albaha University to investigate the use of wiki technology in learning. It showed that the learning style in Albaha University is mostly a traditional style that is influenced by factors that negatively affect on the educational environment, including the steady rise in students, the geographical features of Al-Baha, and its impact on student attendance and performance. However, it was necessary that there be solutions to these factors [23]. The findings of our study were also comparable to the finding from one study conducted in Thailand investigating self-directed readiness among college students. The study showed that the level of readiness was at a moderate level in creativity and openness [24]. It was also recommended that faculties should re-conceptualize teaching methods to focus more on student participation, such as the self-directed learning method [25]. It is also reported that SDL is associated with moderate enhancement in the knowledge domain compared with the traditional teaching approach, which could be effective in the improvement of students' skills and attitudes [26], in addition to the association between problem based learning and self-directed learning [27].

On the other hand, the findings of our limited small-scale study were inconsistent to other studies that compared the self-directed learning to new integrated methods such as E-learning or blended methods [10]. Furthermore, one study conducted in Thailand showed that self-directed readiness among nursing students was at a moderate level of love of learning [28]. Furthermore, it has been shown that SDL is less effective compared to instructor-modelled-learning in some aspects of learning during clinical practice [14,29].

However, when interpreting the results, it is essential to note that the study was limited to only 65 students, all of whom studied in Albaha University, and were distributed into unequal groups (self-learning versus traditional methods). However, this study is the first of its kind to examine an intervention to improve nursing students' SDL in Saudi Arabia, and it could not be blinded as both the intervention and comparison group were fully aware of their participation in the study, which may have introduced bias to the results, in addition to the different time of control and intervention over the two semesters. Other limitations of the study included the researchers-students relationship, who personally conducted the majority of the intervention, and this may have introduced investigator bias and a lack of generalizability of results, since the study was conducted on a convenience sample.

The length of the study was not sufficient to enable students to move to a higher level of SDL as proposed by the SSDL framework. Another limitation was that the study was conducted on a small sample size with a lack of randomization; therefore, it is recommended to conduct further studies with full randomization and with a larger sample size all over the country.

5. Conclusion

The researchers conclude that self-learning is better than traditional learning for nursing students. Therefore, the study findings are useful to improve nursing curricula that could develop the capacity of nursing students for lifelong learning, and also improve the ability of the students to perform effectively after graduation. The scope for generalizability of the study results is limited, and more extensive studies using more diversified patient samples are recommended. Further education for students and teachers/clinical instructors, as well as more learning resources, will be needed to systematically integrate SDL concepts across the whole curriculum. Therefore, a longitudinal study is needed as SDL was introduced into nursing subjects in some countries.

Conflict of Interest

We declare that this study was supported and funded by the Deanship of Scientific Research, Albaha University. We declare that this study is our own work and the manuscript has not been submitted to any other journal. I also declare that I have no conflicting interests related to this study.

Acknowledgements:

We would like to express our grateful thanks to the Deanship of Scientific Research, Albaha University, which financially supported this study.

References

1. Aldossary A, While A, Barriball L (2008) Health care and nursing in Saudi Arabia. *Int Nursing Rev* 55: 125-128.
2. Tumulty G (2001) Professional development of nursing in Saudi Arabia. *J Nursing Scholarship* 33: 285-290.
3. Miller-Rosser K, Chapman Y, Francis K (2006) Historical, cultural, and contemporary influences on the status of women in nursing in Saudi Arabia. *Online J Issues Nursing* 11.
4. Chambers D, Thiekötter A, Chambers L (2013) Preparing student nurses for contemporary practice: The case for discovery learning. *J Nursing Edu Prac* 3: p106.
5. Hiemstra R (2004) Self-directed learning lexicon. *Int J Self-Directed Learning* 1: 1-6.

6. Knowles MS (1970) The modern practice of adult education: New York Association Press New York.
7. Guglielmino LM (2008) Why self-directed learning. International *J Self-directed Learning* 5: 1-14.
8. O'Shea E (2003) Self-directed learning in nurse education: a review of the literature. *J Advanced Nursing* 43: 62-70.
9. Kuiper RA, Pesut DJ (2004) Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: self-regulated learning theory. *J Advanced Nursing* 45: 381-391.
10. Al-Qahtani AA, Higgins SE (2013) Effects of traditional, blended and e-learning on students' achievement in higher education. *J Computer Assist Learning* 29: 220-234.
11. Nolan J, Nolan M (1997) Self-directed and student-centred learning in nurse education. *British J Nursing* 6: 103-107.
12. Dauna Crooks DNS R, Ellis PJ, Cottie Ofosu EdD R, et al. (2001) Self-directed learning: Faculty and student perceptions. *J Nursing Edu* 40: 116.
13. Ramnarayan K, Hande S (2005) Thoughts on self-directed learning in medical schools: Making students more responsible. *New Horizons* 11.
14. D áz JL, Leal C, Garc á JA, et al. (2016) Self-Learning Methodology in Simulated Environments [MAES©]: Elements and Characteristics. *Clin Simulation Nursing* 12: 268-274.
15. El-Gilany A-H, Abusaad FES (2013) Self-directed learning readiness and learning styles among Saudi undergraduate nursing students. *Nurse Edu Today* 33: 1040-1044.
16. Soliman M, Al-Shaikh G (2015) Readiness for self-directed learning among First Year Saudi Medical students: A descriptive study. *Pakistan J Med Sci* 31: 799.
17. Said AB, Ghani N, Khan A, et al. (2015) Examination of Self-Directed Learning Readiness among Baccalaureate Nursing Students in Peshawar Pakistan. *Int J Innovative Res Develop* 4.
18. Gagnon M-P, Gagnon J, Desmartis M, et al. (2013) The impact of blended teaching on knowledge, satisfaction, and self-directed learning in nursing undergraduates: a randomized, controlled trial. *Nursing Edu Perspectives* 34: 377-382.
19. Phillips BN, Turnbull BJ, He FX (2015) Assessing readiness for self-directed learning within a non-traditional nursing cohort. *Nurse Edu Today* 35: e1-e7.
20. Kocaman G, Dicle A, Ugur A (2009) A longitudinal analysis of the self-directed learning readiness level of nursing students enrolled in a problem-based curriculum. *J Nursing Edu* 48: 286-290.
21. Guglielmino LM (1978) Development of the self-directed learning readiness scale: ProQuest Information & Learning.
22. Shahin ES, Tork HM (2013) Critical thinking and self-directed learning as an outcome of problem-based learning among nursing students in Egypt and Kingdom of Saudi Arabia. *J Nursing Edu Practice* 3: p103.

23. Alzahrani I (2013) The impact of using wiki technology in learning biology among Al-Baha University students: perceptions, knowledge, e-learning skills and attitudes: University of Southampton.
24. Prabjandee D, Inthachot M (2013) Self-Directed Learning Readiness of College Students in Thailand. *J Edu Res Innovation* 2.
25. Bulik RJ (2013) Faculty Reflection on Teaching: Walking The Walk. *Int J Self-directed Learning* 5.
26. Murad MH, Coto-Yglesias F, Varkey P, et al. (2010) The effectiveness of self-directed learning in health professions education: a systematic review. *Med Edu* 44: 1057-1068.
27. Ozuah PO, Curtis J, Stein RE (2001) Impact of problem-based learning on residents' self-directed learning. *Arch Pediatrics Adolescent Med* 155: 669-672.
28. Klunklin A, Viseskul N, Sripusanapan A, et al. (2010) Readiness for self-directed learning among nursing students in Thailand. *Nursing Health Sci* 12: 177-181.
29. LeFlore JL, Anderson M, Michael JL, et al. (2007) Comparison of self-directed learning versus instructor-modeled learning during a simulated clinical experience. *Simulation Healthcare* 2: 170-177.

AIMS Press