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Learning Styles and Learning Approaches of Bachelor Nursing Students and its Relation to Their Achievement

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Abstract: Background: The nursing discipline is growing, and higher education in nursing aims to prepare students to develop their capabilities to become independent professionals with a lifelong learning, enabling them to adapt their knowledge in relation to advances in both nursing theory and practice. Today learning is the essential issue in training and strong lever in dealing with the social challenges considered the product of learning and enhancing knowledge and skills. So one of the important and effective factors of the learning is the learning style. Learning styles are not individual's abilities but the preference of a person in receiving information. Understanding students' learning styles is important because if educational materials and teaching styles are in line with learning styles, this can enhance learning and promote academic achievement. **Aims:** The present study aims to determine bachelor nursing students' learning styles and its relation to their learning and academic achievement. **Design:** The study used descriptive correctional study. **Methods:** The study was conducted at Faculty of Nursing at King Khalid University, Saudi Arabia. All nursing students, enrolled in the Faculty of Nursing from three levels of academic year, fourth, sixth, and eighth at the time of the study of the academic year 2018-2019 were included in the study (n= 117). Three tools were used for data collection namely; Learning Style Questionnaire (LSQ), The Revised two-factor Study Process Questionnaire (R-SPQ-2F) and Retrospective Audit. **Results:** Based on the study findings of this study, it could be found that there was no significant relationship between overall learning style and approach of learning with nursing students' achievement. While a significant relationship was proved between nursing student active/reflective learning style and nursing student achievement. The majority of the undergraduate nursing students at Faculty of Nursing, King Khalid University regards of their academic year showed Visual/Verbalis the most prefer learning style. **Conclusions:** It was concluded that learning is enhanced when active learning style and most nursing students preferred visual/verbal learning style. It is recommended to the developed further studies in other faculties of nursing in Saudi Arabia.

Key words: Nursing education program, learning styles, approach of learning, nursing students' achievement, nursing educators, Grade Point Average.

INTRODUCTION

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 (Chambers et al. 2013). The nursing discipline and higher education are growing to prepare students to develop their capabilities to become independent professionals with a lifelong learning, and enabling them to adapt their knowledge in relation to advances in both nursing theory and practice (Falk et al. 2016).

The profession of nursing is moving towards fundamental changes for this reason, there is need for change in nursing education (Li et al. 2014). Nurse education should enhance students' capacities and prepare them for life-long learning so that they can update their knowledge with regard to nursing theories and practice. One of the important matters in nurse education is how to create a proper environment for learning (Falk et al. 2016).

Today learning is the essential issue in training and strong lever in dealing with the social challenges considered the product of learning and enhancing knowledge and skills (Tabrizi et al. 2013). Learning is not simply the product of mere intelligence and capabilities of individual, it also depends on other factors such as personality traits, personal interests, and type of duty and different methods and styles. So one of the important and effective factors of the learning is the learning style. Learning styles are beliefs, preferences, and behaviors that can be used by people to help their learning in unique position. In other words, learning styles are not individual's abilities but the preference of a person in receiving information (Rasoulynejad & Rasoulynejad 2006).

Learning style is a person's learning preferences in apprehending, organizing, and processing information and learning experiences (Buali et al. 2013). Learners use different learning styles due to their personal differences. Learning styles are one characteristic of students; behavior inputs or learning styles can be defined as a set of beliefs, preferences, and behaviors that people use to help them learn in a given situation. Learning style can help explain many individual differences in learning. Understanding students' learning styles is important because if educational

materials and teaching styles are in line with learning styles, this can enhance course content and promote academic achievement (Rasoulynejad & Rasoulynejad 2006).

Academic achievement is very important in higher education as a means of measuring the effectiveness of the transfer of knowledge. Academic status refers to academic achievement or decline, and various means, such as grade point average (GPA) and the amount of passed or failed credits, are used to measure it (Roudbari & AslMarz, 2011). A student's learning style is a key component of academic achievement. Recognition of learning styles and modifying education accordingly will cause lecturers to make use of appropriate methods of teaching and pay attention to personal differences. (Akhlaghi et al. 2018).

Quality of learning is influenced by how students approach studying. Interest in researching students' approaches to learning has continued over the last three decades unabated. Deep learning is generally deemed as preferable to the surface learning approach, whereby students may use rote learning to reproduce factual content with little understanding (Munshiet al. 2012).

Surface learning means the acquisition of knowledge only with the external motivation of passing exams. However, deep learning involves the acquisition of knowledge and understanding of the underlying principles, mechanisms, critical thinking, analysis, and possible applications (Mayet al. 2012). A deep learning approach is usually regarded as a commitment to understand and construct meaning of the learning content using a variety of strategies and resources, relating and integrating new ideas to previous knowledge (Salamonson et al 2013).

Incompatibility between teacher's teaching styles and learner's learning styles is a major barrier to learning, thus the need for educators' employment of a variety of methods to present their material. Therefore, at least part of the educational material must be presented in a way that matches the dominant learning style of each of the learners in a class or course (Vizeshfar & Torabizadeh, 2018). Nurse educators is becoming more interested in understanding and integrating students' learning styles into nursing curricula to promote satisfying learning experiences resulting in the formulation of criteria for academic excellence. The variety and distribution of learning styles is wide among nursing students' population (McKenna et al. 2018).

Students' learning styles are a major consideration in planning for effective and efficient learning. If more attention is paid to the individual's different learning styles, students will learn more effectively. Therefore, teacher should be aware of the students learning styles (Li et al. 2008). Indeed the ability to utilize several learning styles is advocated as it enables individuals to become effective, flexible, resourceful all round learners and professionals who can benefit from a wide range of learning opportunities. It is generally acknowledged that learning styles indicate an individual's preferred way of learning or how the individual acquires information (Fleming et al. 2010).

Significant of the study

To raise professional and efficient nurses, educators should pay attention to effective factors, such as learning styles, from the very entrance of the students to universities and consider this issue in the development of the content of instructional programs. Learning styles are factors that directly affect students' learning processes. Learners use different styles based on their personal differences. Variations in learning styles among students could explain many differences in students' acquisition of knowledge. The recognition of learning styles and teaching based on that recognition will help lecturers use suitable methods of teaching. Therefore, it is necessary that the effects of education based on learning style on students' academic achievement be studied. Students' learning style and academic achievement including students from health sciences disciplines is not sufficient. Hence the present study examined the association between learning styles, learning approach, and academic achievement among bachelor nursing students.

Research Questions:

The specific research questions are:

1. What are the learning styles of baccalaureate nursing students?
2. What is the relationship between the variables of learning styles and nursing students' learning and academic achievement?

Aim of the Study:

The aim of the study was to determine baccalaureate nursing students' learning styles and its relation to their learning and academic achievement.

Tools of data collection:

Tool 1: The Revised two-factor Study Process Questionnaire (R-SPQ-2F) . It was used to measure the students' approaches to learning. It is a 20-item instrument with deep and surface approach scales (10 items per each learning approach scale) , subjects were asked to indicate how true each item was of themselves by rating a 5-point Likert scale to evaluate the learning approaches (0 = 'the item is never or only rarely true of me' to 4 = 'the item is always or almost always true of me') , the total possible score on the deep learning approach scale ranges from 10 to 50 and the same for the surface learning scale. It has acceptable Cronbach alpha values for scale reliability (0.73 for the deep learning approach scale and 0.64 for the surface learning approach scale) . Confirmatory factor analysis indicates a good fit to the intended two-factor structure, with a comparative fit index value of 0.992 and a standardized root mean squared residual value of 0.015 (Biggs et al. 2001)

II. Index learning style questionnaire (ILSQ).It was developed by Felder & Soloman (2004). This questionnaire consists of 44 questions with forced-choice items with two options a and b. This questionnaire has four scales and focused to assess the learner's learning styles preferences, each with 11 items. The first scale was sensing (concrete, practical, oriented toward facts and procedures), or Intuitive (conceptual, innovative, oriented toward theories and underlying meanings). Second was visual (prefer visual representations of presented material, such as pictures, diagrams, and flow charts) or Verbal (prefer written and

spoken explanations). Third was active (learn by trying things out, enjoy working in groups) or Reflective (learn by thinking things through, prefer working alone or with one or two familiar partners); and finally was sequential (linear thinking process, learn in incremental steps) or global (holistic thinking process, learn in large leaps).

III- Retrospective Audit It was for identifying students' achievement for academic year 2017/2018. The student achievement is identified by using average grade point scale that is designed as accumulated form for assessing students' progress grades in the current years.

METHODS

- An official agreement was obtained from the Dean of the Faculty of Nursing, at King Khalid University, Saudi Arabia to collect the necessary data
- The questionnaire was translated into Arabic and English questionnaires were submitted to three experts from English section, at King Khalid University, Saudi Arabia.
- Pilot study was carried out on 15 students selected randomly from the different academic levels to check and ensure the clarity of the Arabic questionnaire, identify obstacles and problems that may be

encountered during data collection and to estimate the time needed to complete the questionnaire items.

- Data were collected from all undergraduate nursing students enrolled in level four, six, and eight at the Faculty of Nursing, King Khalid University to determine learning style and learning approach. Needed instructions were given before the distribution of the questionnaire. The data collection took a period of three months, starts April 2018.
- Review the accumulative score of the studied sample from the pass sheet used by Faculty of Nursing, at King Khalid University, start from first academic year (2017/2018) to the current academic year of data collection.

STATISTICAL ANALYSIS

Data was organized, computerized, tabulated, and analyzed using quantitative and qualitative analysis. The mean score and standard deviation for each seven characteristics and learning style dimension were measured. The ANOVA (F test) was used to compare the significant difference of the means for the characteristics. The overall and learning style score, with level of significance $p \leq 0.05$. The t-test was used to compare the sample means to judge whether an observed difference is as a result of chance or as a result of significant difference.

RESULTS

Table (1) Mean and standard deviation of learning style of nursing students in different academic levels (n=117)

Learning style	Level			
	Fourth level(n=51) Mean±Sd	Six level (n=28) Mean±Sd	Eighth level(n=38) Mean±Sd	F P value
Active/Reflective	2.686±3.563	3.571±3.919	1.947±3.312	1.668 .193
Sensitive/Intuitive	4.451±3.732	5.142±4.213	3.842±4.475	.806 .449
Sequential/Global	.451±3.442	.571±3.665	.210±3.960	.086 .918
Visual/Verbal	5.235±3.592	5.285±4.206	4.000±3.440	1.473 .234
Total LSQ scores	13.372±9.046	14.571±11.596	10.000±9.852	1.359 .261

*Significant at $p < 0.05$ level.

Table (1) shows mean and standard deviation of learning style of nursing students in different academic levels. This table showed that there is a no statistically significant difference regard total learning style among nursing student in different levels $p < 0.05$. This table also shows there was no significant difference between studied nursing student

regarding different components of learning style. As well as the highest mean score of the overall learning style was 14.571 reported for nursing student in level six and followed by nursing student in level four and eighth 13.372 and 10.000 respectively.

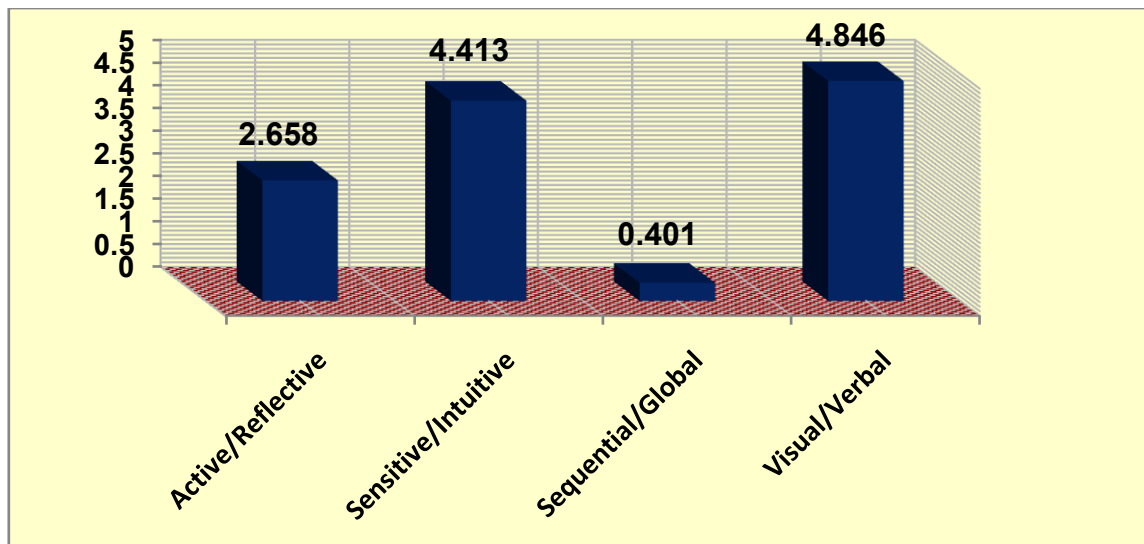


Figure 1. Mean scores of learning styles among bachelor nursing students

In this figure shows the highest mean score was 4.846 and followed by 4.413 and 2.658 for Sensitive/Intuitive and Active/Reflective respectively.

Table (2) Mean and standard deviation of deep learning of nursing students in different academic levels (n=117)

Variable	Level			
	Fourth level Mean±Sd	Six level Mean±Sd	Eighth level Mean±Sd	F p value
- I find that at times studying gives me a feeling of deep personal satisfaction.	3.549±1.045	3.607±.994	3.578±.976	.970 .031
- I feel that virtually any topic can be highly interesting once I get into it.	3.078±1.163	3.464±1.070	3.210±1.118	1.058 .350
- I find that studying academic topics can at times be as exciting as a good novel	3.686±1.009	3.214±1.315	3.368±1.239	1.700 .187
- I work hard at my studies because I find the material interesting.	3.451±1.237	2.928±1.274	3.263±1.245	1.581 .210
- I come to most PBL sessions with questions in mind that I want answering	3.509±1.102	3.285±1.272	3.421±1.153	.337 .714
- I find that I have to do enough work on a topic to get conclusion	3.274±1.150	3.107±1.272	3.026±1.196	.501 .607
- I find most new topics interesting & spend extra time to obtain more information	3.333±1.194	3.250±1.322	3.184±1.182	.165 .848
- I test myself on important topics until to understand them completely.	3.392±1.114	3.142±1.238	2.973±1.196	1.427 .244
- I spend a lot of my free time finding out more about interesting topics	3.725±1.001	3.321±1.218	3.526±1.156	1.237 .294
- I make a point of looking at most of the suggested readings	3.196±1.149	3.214±1.100	3.184±1.135	.006 .994
Total deep learning approach	34.196±3.682	32.535±3.338	32.736±3.277	2.869 .061

*Significant at p<0.05 level.

Table (2) shows mean and standard deviation of deep learning of nursing students in different academic levels. This table showed that there is a no statistically significant difference regard total deep learning approach among nursing student in different levels p<0.05. This table also shows the highest mean score of the overall deep learning approach was 34.196 reported by nursing student in level four and followed by nursing student in level eighth and six 32.736 and 32.535 respectively. As well as the highest mean score was 3.725 was reported by students enrolled in level

four for spending a lot of free time finding out more about interesting topics and followed by 3.686 was reported by students enrolled in level four for finding that studying academic topics can at times be as exciting as a good novel . While the lowest mean score was 2.928 was reported by students enrolled in level six for working hard at my studies to find the material interesting and followed by 2.973 mean score that was reported by student in eighth level for testing on important topics until to understand them completely.

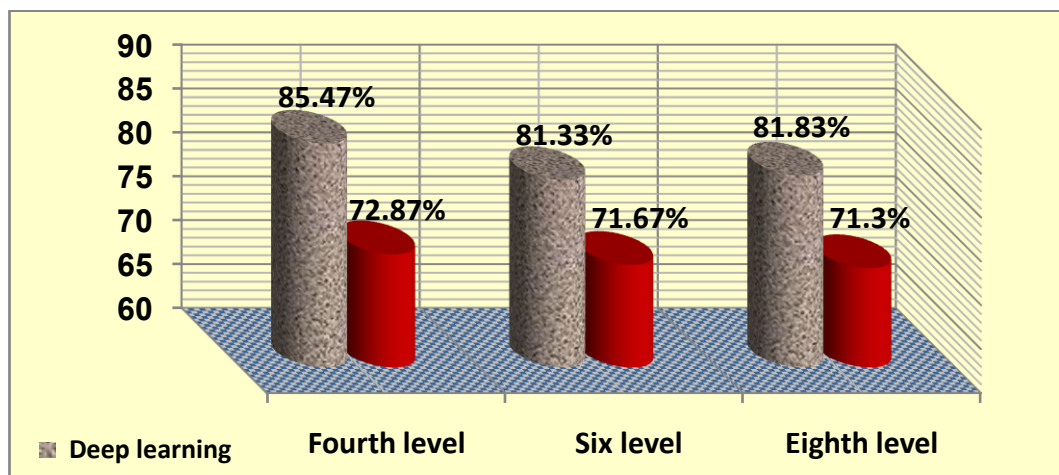
Table (3) Mean and standard deviation of Surface learning of nursing students in different academic levels (n=117)

Variable	Level			
	Fourth level Mean±Sd	Six level Mean±Sd	Eighth level Mean±Sd	F P value
- My aim is to pass the course while doing as little work as possible	2.627±1.182	2.750±1.236	2.710±1.250	.105 .900
- I do not find my course very interesting so I keep my work to the minimum	2.137±1.058	2.464±1.318	2.184±1.204	.748 .476
- I find I can get by most assessments by memorising key sections rather than trying to understand them	2.882±1.177	3.071±1.119	2.868±1.017	.328 .721
- I find it is not helpful to study topics in depth. It confuses and wastes time.	2.627±1.182	2.535±1.318	2.394±1.284	.347 .708
- I see no point in learning material which is not likely to be assessed	3.313±1.224	2.964±1.452	3.026±1.345	.829 .439
- I only study seriously what's given out in PBL sessions or in the course outlines	3.549±1.237	3.250±1.322	3.552±1.201	.619 .540
- I learn some things by memorising, going over and over them until I know them by heart even if I do not understand them	3.137±1.326	2.892±1.227	2.947±1.293	.405 .668
- I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra	3.137±1.149	3.107±1.196	3.131±1.143	.006 .994
- I believe that tutors shouldn't expect students to spend significant amounts of time studying material	2.529±1.208	2.500±1.232	2.368±1.195	.204 .815
- I find the best way to pass examinations is to try to remember answers to likely questions	3.215±1.346	3.142±1.353	3.342±1.320	.192 .825
Total Surface learning	29.156±2.962	28.678±2.277	28.526±2.390	.692 .503

*Significant at p<0.05 level.

Table (3) shows mean and standard deviation of Surface learning of nursing students in different academic levels. This table showed that there is a no statistically significant difference regard total deep learning approach among nursing student in different levels p<0.05. This table also shows the highest mean score of the overall Surface learning approach was 29.156 reported by nursing student in level four and followed by nursing student in level six and eighth 28.678 and 28.526 respectively. As well as the highest mean score was 3.552 was reported by students enrolled in level

eighth for studying seriously what's given out in PBL sessions or in the course outlines and followed by 3.342 was reported by students enrolled in level eighth for finding find the best way to pass examinations is to try to remember answers to likely questions. While the lowest mean score was 2.137 was reported by students enrolled in level four for do not finding course very interesting and followed by 2.368 mean score that was reported by student in eighth level for believing that tutors shouldn't expect students to spend significant amounts of time studying material.



*Percentages are calculated relative to maximum score

Figure 2. Percentage of deep & surface learning approach among nursing students in different academic levels.

This figure shows that the highest percent was 85.47% reported for deep learning approach by students who enrolled in level four and followed by students in level eighth and six 81.83% and 81.33% respectively. While the

least percentage was 71.3% reported by students in level eighth for surface learning approach and followed by students in level six and four 71.67% and 72.87% respectively.

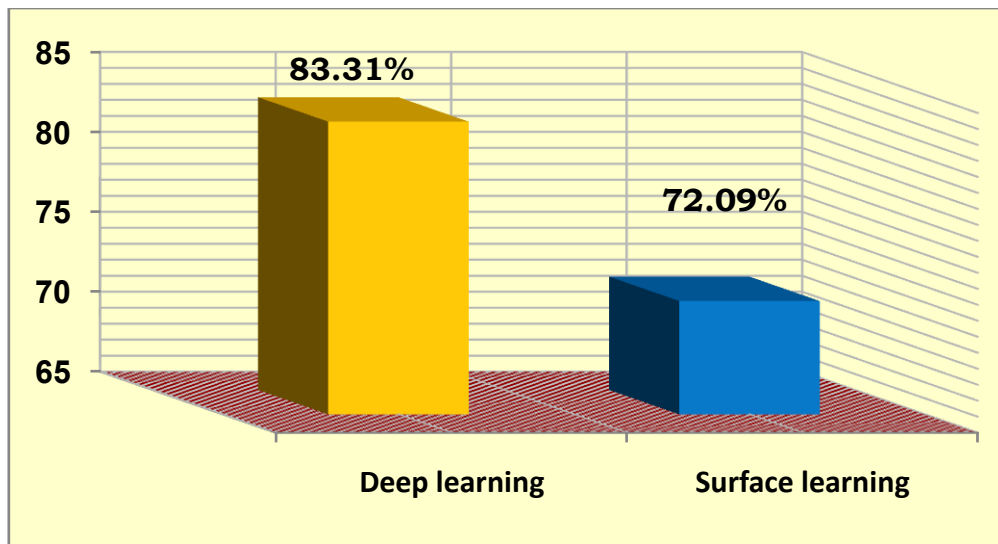


Figure 3. Percentage of deep & surface learning approach among all study subjects.

This figure shows that the highest percent was 83.31% reported for deep learning approach by all study subjects and 72.09 % was reported to surface deep learning approach

Table (4) Relationship between learning styles and learning approach with nursing students' achievement (n = 117)

Learning style	Level					
	Deep learning approach		Surface learning approach		Students' achievement	
	r	p	r	p	r	p
Active/Reflective	.022	.810	-.030	.751	-.182*	.049
Sensitive/Intuitive	-.029	.755	-.061	.513	-.154	.099
Sequential/Global	-.067	.476	-.075	.421	.054	.566
Visual/Verbal	.093	.317	.003	.977	-.008	.935
Total LSQ scores	.009	.921	-.031	.741	-.098	.295

*Correlation is significant at the 0.05 level (2-tailed).

Table (4) depicts relationship between learning styles and learning approach with nursing students' achievement. This table revealed there was not significantly relationship between overall learning styles and learning approach with nursing students' achievement. As well as most of the learning styles components were not significantly correlated with learning approach except active/reflective learning style was significantly correlated with students' achievement. This table also showed nursing students' achievement not significantly correlated statistically with all learning style ($p < 0.05$ level).

DISCUSSION

In a successful educational system, attention to learning styles is essential for designing and managing educational programs effectively (Mohammed et al. 2016). The understanding of each individual fits with his/her learning style, that is, people have different ways of processing information. Thus, the learning level of the people can be changed with a regard to learning styles. In other words, with particular attention to learning styles and adapting them with teaching and learning process, possibility of further success, higher learning and teaching efficiency, learning satisfaction and confidence of the learners will be higher (Rasoulynejad & Rasoulynejad, 2006)

A learning style is a particular set of behaviors related to how learners perceive, interact with, and respond to the

learning environment. Behaviors have four dimensions namely; active vs. reflective that means active learners prefer exploring or testing information and reflective learners are more introspective. while sensing vs. intuitive that means sensing learners prefer facts, data, and experimentation and intuitive learners prefer theories, principles, and innovation. As regards visual vs. verbal, visual learners perceive information most effectively through pictures and graphs while verbal learners prefer written or spoken words. Sequential vs. global. Sequential learners progress toward learning via linear, ordered steps. Global learners often learn holistically, in large steps (Felder & Soloman, 2004).

Overall findings of the present study revealed there was no significant relationship between overall learning styles and approach of learning with nursing students' achievement except active reflective learning style is correlate with student academic achievement. As well as the majority of the undergraduate nursing students at Faculty of Nursing, King Khalid University prefers visual verbal learning style. And Vizehfar & Torabizadeh (2018) who mentioned learning styles effect on different educational components, such as students' academic achievement & critical thinking. As well as Manolis et al. (2013) pointed that educators need to know the learning styles of students so that they can optimize their learning. They added an understanding of the preferred learning style of an individual provides an insight

into the teaching methods that are likely to be effective for that individual.

In recent years, nursing programs have revised curricula and teaching/ learning strategies to reflect the incorporation of personal learning styles (Tenhunen& Fitzgerald, 2014). An argument can be made for incorporating assessments of students' learning styles into graduate entry prelicensure nursing programs as well. In addition, evidence regarding personal learning styles is now appearing in acute care setting professional in-service training programs (McCrow et al. 2014). Incorporating teaching strategies that target differences in student learning styles can be a successful approach. However, it may be beneficial for graduate student nurses to have options for completing coursework that appeals to their personal learning styles.

In addition to Fleming et al. (2011) found that the preferred learning styles of first and fourth year nursing students were reflector and activist styles. This is the same line of Astin et al. (2006) findings also found that the dominant learning styles of American nursing students were reflector and theorist ones. Students adopted different styles to promote their learning. Adopting multiple learning styles helped the students to benefit from unfamiliar working and learning environments (Baraz et al.2014). Understanding students' learning styles helps nursing educators develop a flexible student-centered curriculum that enables students to use their learning styles effectively (Meehan-Andrews, 2009). It also enables nursing educators to create a supportive learning environment, which in turn facilitates students' learning and enhances their professional development, and improves the quality of care (Marek, 2013).

Again, findings of the present study revealed there is no significance difference between nursing students learning style in different academic levels. This is inconsistent with Fleming et al. (2011) results who concluded that the fourth-year students' learning styles are different from the learning styles adopted by the first- and second-year students. As well as D'Amore et al. (2012) found that Australian first-year nursing students were mainly diverge and assimilator learners. Nurse educators need to teach students how to adapt their own learning styles to different teaching strategies. Accordingly, students would be able to discover their own strengths and weaknesses, promote their learning in different learning environments (Vizeshfar & Torabizadeh2018)

The variety and distribution of learning styles is wide among nursing students' population. It seems sensible for educators to consider learners' characteristics and to monitor ways in which students say they learn best and to listen to their preferences. A recognition of the strengths and weaknesses of individuals' learning styles by the individual concerned and the educator is the key to providing the appropriate learning experiences to develop those individuals. Knowledge about students' learning preferences has potential usefulness for teachers for adjusting their teaching styles to maximize learning achievement (Abu-Moghli et al.2005).

Findings of the present study revealed that overall learning style no significant statistical association between overall learning style and academic achievement. This is agreed with Awang et al. (2017) & Farmanbar et al. (2013) who showed that there was no significant statistical association between learning style and academic achievement in university students. This is agreed with a study by Fleming et al. (2011) findings who concluded no relationship between the students' learning styles and their academic achievement. As well as Alghasham (2012) in a study on first year medical students, found no differences between formative assessment and learning styles. While a study by Koch et al. (2011) study's' who concluded predicting the students' academic achievement based on their learning styles.

In addition, Vizeshfar, & Torabizadeh(2018) found learning style is not a fixed issue and may change depending on the type of lesson and course and environmental factors even in a single person. All these factors can explain the differences. The results of the present study show that in a teaching-learning process, it is important to pay more attention to students' learning preferences than to their other characteristics. Therefore, the learning environment is influential in students' success. Students, by taking more responsibility in the learning process, and teachers, by adopting innovative approaches to teaching, are moving toward student-centered education. Therefore Asikainen et al. (2014) recommended educational institutes must identify learners' learning needs.

The understanding of students' learning styles preferences would enable if possible a match to be made between their learning styles and the teaching styles of teachers. This means that understanding the various styles of learning that are used by nursing students is important so that educators are able to adapt their mode of teaching to meet the needs of the students. It is necessary for both the student and educational institutions to understand learning styles (Koch et al. 2011). Learning styles also influence the way in which learners master the goals and objectives of an educational programme. However, no one style is considered better than another (Vizeshfar, & Torabizadeh2018).

According to McKennaet al.(2018) emphasize that nursing educators consider the learning styles of these students so that they can tailor their teaching style and pedagogy to optimize student learning. Furthermore, there is a need for further research around this student group to ensure their unique learning needs can be addressed. Each of the learning styles has weak points and positive points; the perfect learner is someone who uses different styles in different situations appropriately (Van den Berg, 2015; Manolis et al. 2013).

Findings of the present study revealed that there was no significant difference among nursing students for learning styles and approach of learning. The most dominant learning style of the nursing students was the visual/verbal learning style, while the minority preferred for sequential/global learning style. This may be due to the nursing students tending to look at PowerPoint presentations and textbook readings during classroom sessions. Perhaps the most

important challenge for nurse education is to identify how we can enable students to use learning styles to their full effect and to create a balanced teaching approach that caters for the learning styles of all students but also seeks to stretch students beyond their learning style comfort zones in order to help them to maximize their learning potential during their undergraduate education.

On the other hand **Fleming, et al.(2010)** found the preferred learning style of nursing students in their study both in their first and final year was reflector. Another study done by **Zhang & Lambert (2008)** found the most common dimensions of the four learning styles were found to be reflective, sensing, visual, and global. This implies that the students were likely to learn by thinking things through and working alone, use a concrete and practical orientation toward facts and procedures, prefer visual representations of presented materials, and use holistic thinking and learn in large leaps. This finding was somewhat similar to the study conducted by **Tao & Cui (2007)** who suggested that Chinese baccalaureate nursing students preferred to learn by reflective observation.

The results of the present study may support increasing faculty understanding of learning styles, as this understanding will be useful to both the students and the teachers who will encounter each other in learning settings. Developing knowledge of different learning styles among the student population is important in designing curricula, and adopting teaching methods that to promote student learning is a crucial part of ensuring that students engage positively with content and develop the deep learning skills needed for lifelong learning.

Approaches to learning describe what students do when they go through learning and why they do it. The basic distinction is between a deep approach to learning, where students are aiming towards understanding, and a surface approach to learning, where they are aiming to reproduce material in a test or exam rather than actually understand it. A deep approach to learning is considered as an appropriate approach as students learn for understanding, derive enjoyment from the learning task and apply the acquired knowledge to the real world (**Biggs,2010**) . On the other hand, **Warren (2004)** mentioned that surface approach to learning is an inappropriate one as students rely on rote learning and memorization, avoid personal understanding and are unreflective about their learning experience.

Attention to students' learning styles in the adoption of the new approaches can bring about students' satisfaction (**Fernández-Peña et al. 2016**). It is essential that educators consider learner's learning styles and modify their educational approaches accordingly. Qualified education should show the way to students about what and how to learn. While students evaluate what they learned and their learning methods, they manifest their critical thinking abilities. According to **Walsh & Seldomridge (2006)** mentioned that students are not passive but active while they are realizing critical thinking. If students use critical thinking skills, they gain clear and bright views in depth, they are more interested in events, they approach in a more reasonable manner and they become fairer.

CONCLUSION AND RECOMMENDATIONS

Based on the study findings of this study, it could be concluded that active reflective learning style is promote student academic achievement. Overall of the present study revealed that there was no significant relationship between overall learning style and learning approach with nursing students' achievement except active reflect learning style was corrected with students' achievement. Meanwhile, they got the highest mean scores was 4.8462 for Visual/Verbal learning style. There is no statistical significant difference was found in relation to overall learning style and learning approach among nursing students.

Based on the findings study, the following recommendations were detected:

1. The findings of this research imply that nurse educators should use teaching methodologies and techniques to promote students' achievement.
2. Nurse educators must understand and integrate students' learning styles into nursing curricula to promote satisfying learning experiences
3. Additional research to identify teaching strategies that promote deep learning approach and promote students' learning experiences is needed.
4. It is essential for nursing education program to define the educational objectives that encourage faculty to cultivate students' deep learning and to develop curricula and teaching methods to fulfill such objectives and dealing with different learning styles.
5. This study should be replicated in other faculties of nursing to in Saudi Arabia.

REFERENCES

- [1] Chambers D, Thiekötter A, Chambers L. Preparing student nurses for contemporary practice: The case for discovery learning. *J Nursing Edu Pract*,2013,3: p106.
- [2] Falk, K., Falk, H., Jakobsson, U.E. When practice precedes theory: a mixed methods evaluation of students' learning experiences in an undergraduate study in nursing program. *Nurse Educ. Pract.*2016, 16, 14–19. <http://dx.doi.org/10.1016/j.nepr.2015.05.010>.
- [3] Li, Y.S., Yu, W.P., Liu, C.F., Shieh, S.H., Yang, B.H.,.. An exploratory study of the relationship between learning styles and academic performance among students in different nursing programs. *Contemp. Nurse*,2014, 48 (2), 229–239. <http://dx.doi.org/10.51C72/conu.2014.48.2.229>.
- [4] Tabrizi,J ., Alizadeh,O . , &Koshavar,H..Identifying Students' learning Styles as a Way to Promote Learning Quality,*Res Dev Med Educ*, 2013, 2(1), 35-39..(5)
- [5] Rasoulynejad SA, Rasoulynejad V. Learning styles of paramedical students of Kashan University of Medical Sciences. *Strides in Development of Medical Education* 2006;3:26-32.
- [6] Buali, W.H., Balaha, M.H., Al Muhaidab, N.S. Assessment of learning style in a sample of Saudi medical students. *Acta Inf. Med.*,2013, 21 (2), 83–88. <http://dx.doi.org/10.5455/aim.2013.21.83-88>.
- [7] Roudbari M, AslMarz B. The academic progress of students in Zahedan University of Medical Sciences and its

- associated factors. *Strides in Development of Medical Education*. 2011;7(2):147-52.
- [8] Akhlaghi N, Mirkazemi H, Jafarzade M, Akhlaghi N. Does learning style preferences influence academic performance among dental students in Isfahan, Iran? *J EducEval Health Prof*. 2018;15:8. doi: 10.3352/jeehp.2018.15.8.
- [9] Munshi,F. Al-Rukban,M.,& Al-Hoqail,I. Reliability and validity of an Arabic version of the revised two-factor study process questionnaire R-SPQ-2F *Journal of Family and Community Medicine*, 2012; 19 (1) : 33-37.
- [10] May, W., Chung, E.-K., Elliott, D., Fisher, D. The relationship between medical students' learning approaches and performance on a summative high-stakes clinical performance examination. *Medical Teacher*,2012; 34 (4) , e236–e241.
- [11] Salamonson, Y. Weaver,R., Chang,S., Koch, J.,&Bhathal, R.. Learning approaches as predictors of academic performance in first year health and science students, *Nurse Education Today*,2013; 33: 729–733.
- [12] Vizehfar, F., Torabizadeh,C. The effect of teaching based on dominant learning style on nursing students' academic achievement, *Nurse Education in Practice*,2018, 28 :103–108.
- [13] McKenna,L, Copnella,B, Butlerb, Laub, R.. Learning style preferences of Australian accelerated postgraduate preregistration nursing students: A cross-sectional survey, *Nurse Education in Practice*,2018, 28 : 280–284
- [14] Li Y, Chen P, &Tsai S. A comparison of the learning styles among different nursing programs in Taiwan: implications for nursing education. *Nurs. Educ. Today*,2008; 28: 70–76.
- [15] Fleming, S., Mckee.G. and Moore.S. Undergraduate nursing students' learning styles: A longitudinal study, *Nurse Educ. Today*,2010,doi:10.1016/j.nedt.2010.08.005.
- [16] Biggs, J. Kember, D .and Leung. D. The revised two factor study process questionnaire: RSPQ-2F. *British Journal of Educational Psychology*. 2001.71, 133–149.
- [17] Felder, R.M., and Soloman,B.A. (2004). Index of Learning Styles. [Online] Available: <http://www.ncsu.edu/felder-public/ILSpage.html>, accessed November 12, 2009.
- [18] Mohammed.W. A, Yousef, Z.M., &Sammouri,G.A. Effect of Self-Directed Learning on Knowledge Acquisition of Undergraduate Nursing Students in Albaha University, Saudi Arabia, *AIMS Medical Science*,2016, 3(3): 237-247.DOI: 10.3934/medsci.2016.3.237.
- [19] Manolis, C., Burns, D., Assudani, R., Chinta, R. Assessing experiential learning styles: a methodological reconstruction and validation of the Kolb Learning Style Inventory. *Learn. Individ. Differ*,2013. 23, 44–52.
- [20] Tenhunen,M.L., Fitzgerald, A. Revision of an undergraduate older adult health care nursing education course. *J. Nurs. Educ.*,2014, 53 (9, Suppl.), S110–S113. <http://dx.doi.org/10.3928/01484834-20140805-01>.
- [21] McCrow, J., Yevchak, A., Lewis, P. A prospective cohort study examining the preferred learning styles of acute care nurses. *Nurse Educ. Pract.*,2014, 14, 170–174. <http://dx.doi.org/10.1016/j.nepr.2013.08.019>.
- [22] Fleming, S., Mckee, G., Huntley-Moorre, S. Undergraduate nursing students' learning styles: A longitudinal study. *Nurse Educ. Today*,2011, 31; 444–449. <http://dx.doi.org/10.1016/j.nedt.2010.08.005>.
- [23] Astin, F., Closs, J.S., and Hughes, N. The self-reported learning style preferences of female Macmillan clinical nurse specialist. *Nurse Education Today*,2006, 26 (6), 475–483.
- [24] Baraz, S.,Memarian, B &Vanaki,Z. The diversity of Iranian nursing students' clinical learning styles: A qualitative study, *Nurse Education in Practice*,2014, 14 (2014) 525e531
- [25] Meehan-Andrews, T.A. Teaching mode efficiency and learning preferences of first year nursing students. *Nurse Educ. Today*,2009, 29, 24–32. <http://dx.doi.org/10.1016/j.nedt.2008.06.007>.
- [26] Marek, G.I. Impact of learning style assessment on self-reported skills of students in an associate degree nursing program. *Teach. Learn. Nurs.*,2013, 8, 43e49.
- [27] D'Amore, A., James, S., Mitchell, E. Learning styles of first-year undergraduate nursing and midwifery students: A cross-sectional survey utilising the Kolb Learning Style Inventory. *Nurse Educ. Today*,2012, 32, 506–515. <http://dx.doi.org/10.1016/j.nedt.2011.08.001> .
- [28] Abu-Moghli, et al. Jordanian baccalaureate nursing students' perception of their learning styles. *International Nursing Review*, 2005;52; 39–45.
- [29] Awang H, Samad NA, Faiz NSM, Roddin R, Kankia JD. Relationship between the Learning Styles Preferences and Academic Achievement. *IOP ConfSer Mater Sci Eng*. 2017;226(1):012193. doi: 10.1088/1757-899X/226/1/012193.
- [30] Farmanbar R, Hosseinzadeh T, Asadpoor M, Yeganeh M. Association between Nursing and Midwifery Students' Learning Styles and their Academic Achievements, Based on Kolb's Model. *Journal of Guilan University of Medical Sciences*. 2013;22(86):60-8.
- [31] Alghasham, A.A. Effect of students learning styles on classroom performance in problem- based learning. *Med. Teach*,2012;. 34 (Suppl. 1), S14–S19. <http://dx.doi.org/10.3109/0142159X.2012.656744>.
- [32] Koch, J., Salamonson, Y., Rolley, J.X., Davidson, P. Learning preference as a predictor of academic performance in first year accelerated graduate entry nursing students: A prospective follow-up study. *Nurse Educ. Today*,2011; 31, 611–616. <http://dx.doi.org/10.1016/j.nedt.2010.10.019> (2011).
- [33] Asikainen, H., Parpala, A., Lindblom-Ylfanne, S., et al. The development of approaches to learning and perceptions of the teaching-learning environment during Bachelor level studies and their relation to study success. *High. Educ. Stud*.2014; 4 (4) , 24e-32.
- [34] Van den Berg, H. Changes in learning styles induced by practical training. *Learn Individ. Differ*.2015; 40, 84–89. <http://dx.doi.org/10.1016/j.lindif.2015.04.013>.
- [35] Zhang, H and Lambert,V.(2008). Critical thinking dispositions and learning styles of baccalaureate nursing

- students from China, *Nursing and Health Sciences*,2010; 10, 175–181.
- [36] Tao X, and Cui, Y. Study on the correlation between learning style and academic achievement of nursing students. *J. Nurs. Sci.*,2007; 22:7–9 (in Chinese).
- [37] Biggs, J. *Student Approaches to Learning and Studying*.2010, <http://web.cortland.edu/andersmd/learning/Biggs.htm>.
- [38] Warren, H. Houghton and Engineering Subject Centre Guide: Learning and Teaching Theory for Engineering Academics. Loughborough: HEA Engineering Subject Centre,2004.
- [39] Fernández-Peña, R., Fuentes-Pumarola, C., Malagón-Aguilera, M.C., et al. The evaluation of reflective learning from the nursing student's point of view: a mixed method approach. *Nurse Educ. Today*,2016; 44, 59–65. <http://dx.doi.org/10.1016/j.nedt.2016.05.005>.
- [40] Walsh, C.M. and Seldomridge, L.A. Measuring Critical Thinking One Step Forward, One Step Back, *Nurse Educator*, 2006;31(4), 159–162.