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EFFECT OF GENDER ON LEARNING STYLE PREFERENCES OF NURSING STUDENTS IN SOME INSTITUTIONS IN EDO STATE, NIGERIA

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ABSTRACT

Nursing previously a female-dominated profession is beginning to see a handful of male entrants. Students often ask questions in class concerning their learning styles. This study investigated learning style preferences based on gender. A descriptive cross-sectional survey research design with the aid of a self-administered questionnaire was applied to investigate 206 nursing students from 2 institutions in Edo State, Nigeria. The instrument used for the study, the questionnaire was validated by extensive literature search based on study objectives and consultation with 2 experts; 1 in measurement and evaluation in educational studies and another in nursing science with expertise in mental health nursing. Reliability was through the use of an adapted instrument by Kolb. Data were analyzed with Statistical Package for Social Sciences (SPSS) version 21 in tables and percentages. Chi-square statistical technique was used to analyse the non-parametric data at a significance level of 0.05. Findings revealed that 52(36.1%) of the respondents were female convergers while 12(27.1%) were male divergers. There are 8(16.7%) male assimilators and 28(19.4%) female accommodators respectively. The females scored more on concrete experience such as watching videos or fieldwork, with a mean and Standard Deviation of 40.15±5.80 while the males had 9.24±5.98, with a p-value of 0.026 indicating that this was statistically significant. The only concrete experience was significant while reflective observation, abstract conceptualization and active experimentation were not significant. The study concludes that students have their own preferred way to recognize, retain and retrieve information irrespective of gender. It, therefore, recommends the development of comprehensive, up-to-date resources for learning such as a departmental library with internet facilities and the use of blended learning by nurse lecturers.

Keywords: *Gender, Kolb Learning Style inventory, Nursing Students, Learning Preferences*

INTRODUCTION

Learning, as one of the important concepts in education, demands urgent attention (Shabani, 2012). Learning styles are the manner and conditions under which learners most efficiently and effectively perceive, process, store and recall what they are attempting to learn **(**Zhou, 2011). It is the characteristic method of gaining knowledge, skill, or attitudes through study or experiences as well as the approaches to learning and the manner that individuals learns best (James *et al.,* 2011 There are different types of learning styles which are categorized into listening, reading and writing styles; diverging, assimilating, converging, and conforming styles. Learning styles are a part of individuals' personality. In other words, preferring a learning style by a person refers to an individual's desire for a special learning method in a certain condition (Farruxovna, & Qodirjonovna, 2021). These can influence the students' learning and educational progress; thus, it is imperative that teachers appreciate these facts and help the students in identifying and maximizing its use (Ghaffari *et al., 2013*). Factors such as genetic, auditory, tactile, and kinesthetic disposition influence learning styles (Verster, 2010). These should be clarified early in the undergraduate nursing curriculum in order to foster students' use of their knowledge about learning style preferences to attain positive outcomes especially in large classes where students who actually need help may go unnoticed (Burruss, 2010).

Several classifications of learning style and related concepts have been developed through the years. These include Solomon's Inventory of Learning Styles, the Meyers-Briggs Type Indicator, Howard Gardner's multiple intelligences, McCarthy's 4-Mat system, and Honey and Mumford's (1986) social approach to learning (Gooden, *et al., 2011).* The most widely known approach to assessing learning style, is that of Kolb (1984), who categorized learners into four groups: (a) Converging / Convergent (doing and thinking). The learner believes that there is a "correct" answer to the problem. Prefers working alone; (b) Diverging / Divergent (feeling and watching; creative, open-minded, respectful of other people's perspective) Prefers team work; (c) Assimilating (watching and thinking); (d) Accommodating (doing and feeling) "hands-on" work (action-oriented).

Concrete experience learners are the "feelers"; they base their perceptions of information on intuition and feeling. Abstract conceptualization learners are the "thinkers"; they take an objective approach to new information they learn. Those who have this style of learning usually prefer doing things, planning, or experimenting and learning through trial and error. Reflective Observational (RO) and Abstract Conceptual (AC) combine to form the Assimilator learning style. Those who have this style of learning usually prefer using inductive reasoning, theory and concepts, logic, and research (Kolb, 1984). Active Experimental (AE) and Abstract Conceptual (AC) combine to form the Converge learning style. Those who have this style of learning usually prefer to use hypothetical-deductive reasoning, focus on specific problems, and deal with things rather than people. Convergers tend to go into fields like engineering. A characteristic of such individual includes "hands-on" and theory, analogies and specific problems. Concrete Experience (CE) and Reflective Observational (RO) (for example, divergers) prefer to use brainstorming and their imaginations and they are interested in people and organizing information to procure meaningful relationships. Usually, divergers go into the humanities or liberal arts. Characteristics of such individual includes are real life experience and discussion.

Utilizing knowledge and awareness of learning style within the educational programmes promote more effective teaching and learning. It also raises the consciousness of educators regarding the diverse learning approaches

which will facilitate the use of resource materials in their teaching schemes. Furthermore, the recognition of the students' learning style will help the teachers in becoming more sensitive to students' differences in the classroom, thereby promoting improved teaching practices that best suit the students learning styles. Barnes *et al.,* (2004) identified differences in the learning styles of the students and assert that students had preferences in certain course delivery methods over others. Dania (2014) investigated the effect of gender on students' academic achievement in a Secondary School social studies class in Nigeria. Findings showed that gender had no significant effect on students' achievement. However, there was significant interaction effect on the treatment group and gender of students in the study. Similarly, Musa *et al.,* (2016) in Borno State, Nigeria, reported that males performed significantly better than females in English Language and overall academic performance, but there was no gender difference in mathematics performance. There was a significant effect of gender on students' learning goal orientation in favour of males. Viriya and Sapsirin, (2014) carried out a study on gender differences in language learning style and language learning strategies in Thailand. They reported the visual learning style and tactile style as a minor style by both male and female students respectively. However, the auditory and kinesthetic styles, was a minor style by males and a major style by females. Gender and ethnicity had no significant relationship in preferred learning styles as espoused by (Gholami and Bagheri, 2013).

A study by Ezekoka (2010) on gender relationship in the learning styles preference of students in Imo State, in Nigeria, showed that majority of the female respondents were assimilators. Sugathapala *et al.,* (2015) studied learning styles of nursing and midwifery undergraduates of University of Peradeniya, Sri Lanka, by utilizing the Kolb Learning Style Inventory. Results showed that majority of nursing students investigated in the study were convergers (40.8%), followed by accommodators (38.3%), divergers (16.7%) and assimilators (4.1%). Learning styles of students showed difference between males and females. Most male students had convergent learning style, while the female dominant learning style was accommodating. Further analysis showed that the final year students had more preferences for active experimentation and concrete experience, while the first-year students had preferences for abstract conceptualization and active experimentation.

The National League for Nursing (NLN) (2013) core competencies for nurse educators' states that "educators must facilitate current student development and socialization by determining individual's unique learning style preferences and needs in the culturally diverse world". There is a strong need for educators and policy makers in nursing education to improve learning and retention during undergraduate education to ensure that students are prepared to handle the challenges that they will face in the world of work. One way to improve performance and motivate learners is to adapt teaching approaches that meet their preferences.

Although studies have reported a variety of learning style preferences among learners, nursing students continue to ask questions in class concerning their learning styles. As the profession begin to see a handful of male entrants; a profession previously dominated by female. It is unknown if gender differences in learning style preferences exists among undergraduate nursing students in some nursing institutions in Edo state, Nigeria. The nursing profession is beginning to witness male entrants from the initial female dominance. Knowledge of how individuals think and learn along with the elements that effect these processes will create an effective learning process by the development of effective teaching strategies (Hüseyin and Güneş, 2012).

The aim of the study therefore is to determine the relationship between gender and learning style preference among students' nurses in some institutions in Edo State.

STUDY QUESTIONS

The questions the study intends to answer are:

(a) Do gender differences in learning style preferences exist among students' nurses in some institutions in Edo State?

(b) What are the commonly used learning styles among students' nurses in some institutions in Edo State?

Expected findings will help students identify the most suitable learning style that enhances their academic performance, improve habits and adapt their work environments to suite their learning style preferences. It will help educators adjust their teaching strategies to meet the needs of the students.

MATERIALS AND METHOD

RESEARCH DESIGN

A descriptive survey research was applied in this study; it affords the researchers the ability to determine the opinions of respondents and describe the variables under study (Chinweuba *et al.,* 2014).

RESEARCH SETTING

The research setting was the nursing science departments of University of Benin (institution "A") and the School of Nursing, University of Benin Teaching Hospital (institution "B).

POPULATION

The target population was all nursing students of the department of university A. (306 students; statistics derived from the Departmental office in institution "A "and those of the School of Nursing (207 students; statistics derived from the School of Nursing, institution "B").

SAMPLING TECHINQUE

Using a simple random sampling technique, students in each of the 5 academic levels in university 'A' and "B" were sampled based on the number of students in the level of study. The Taro Yamani formulae, n=N/ (1+Ne^2), a sample size of 123 nursing students was randomly sampled for the study from 100 level to 500 level. From institution "A' 26 students were drawn from 100 level, 38 students from 200 level students, 30 students from 300 level, 22 students from 400 level, and 7 from 500 level. Similarly, in institution "B" a sample size of 83 nursing students was selected for the study from year one to year three. Thirty-three students were drawn from year one, 28 from year two and 22 from year three.

INSTRUMENT FOR DATA COLLECTION

A self- structured questionnaire developed by the researchers was used. The questionnaire had two sections:
Section A covered the demographic data such as gender, age, academic level and religion, while section B covered the types of learning styles commonly used by students as outlined by kolb's Learning Style Inventory (LSI). Spaces were provided in the questionnaire which respondents were asked to describe how they learn using the A, B, C and D. Corresponding numbers 4-1 were assigned to each letter. Letter D described how best respondents learn while A described the least way they prefer to learn. No two statement in a set can be given the same

VALIDITY AND RELIABILITY OF THE INSTRUMENT

To ensure the validity of the instrument, it was structured based on literature search and objectives of the study. Two experts, one in Faculty of Education with bias in measurement/evaluation and the other in Nursing Education with specialty in mental health assessed the content and construct validity of the instrument and due corrections were made before distribution. Reliability was not determined since the instrument was adapted from Klob and Klob (2005) learning style inventory. It had been previously used by Okur *et al.,* (2010), to classify four learning styles that are determined where an individual's score falls on two continuums: the active experimentation-reflective observation and concrete experience-abstract- conceptualization dimensions.

DATA ANALYSIS

All data was coded, entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26 spread sheet.

Respondents were divided among the four Kolb learning styles as follows: Active Experimentation (AE); Reflective Observation (RO); Concrete Experience (CE) Abstract Conceptualization (AC). Concrete Experience (Feeling). Accommodating (Feel and Do) CE/AE. Diverging (feel and watch) CE/RO. Active Experimentation (Doing). Reflective Observation (Watching). Converging (think and do) AC/AE. Assimilating (think and watch) AC/RO, Abstract Conceptualization (Thinking)

- Subjects whose (AE-KO) score was greater than zero and whose (AC-CE) score was greater than zero were categorized as "convergers."
- Subjects whose (AE-BO) score was greater than zero and whose (AC-CE) scores was less than zero were categorized as "accommodators."
- Subjects whose (AE-BD) score was less than zero and whose (AC-CE) score was less than zero were categorized as "divergers."
- Subjects whose (AE-BO) score was less than zero and whose (AE-CE) score was greater than zero were categorized as "assimilators."

Data was thereafter presented in frequency tables, charts and graphs. Descriptive data was analyzed using percentages, and hypothesis testing was done using Chi-square statistical technique measured at a significance level of 0.05. Thus, the Chi-square test was used to assess the significance of the data with P-values of less than 0.05 considered significant.

Chi-square ($\chi 2$) was calculated using the following formula: $-\chi^2 = \sum (O-E)^2/E$

Where: - O= Observed frequency; E= Expected frequency

ETHICAL CONSIDERATION

The principle of voluntary participation, maintenance of anonymity and confidentiality was maintained throughout the study. The respondents were not forced to participate in the study and their views and interests were handled with utmost confidentiality. Approval for the study was obtained from both institutions ethics committees while access to the respondents was granted by the heads of departments. Informed written consent was obtained.

RESULTS

Out of a total of two hundred and six (206) questionnaires distributed to the respondents, one hundred and ninety two (192) were duly filled and returned, giving a response rate of 93.2%. The remaining 6.8% not used was as a result of incorrectly filled and multiple response of certain items in the questionnaire.

Table 1 shows the demographic data of respondents. Majority 144(175%) were females while the remaining 48(25%) were males. The table also reveals that 84(43.8%) of the respondents are in the age range of 21-25 years, followed by 80(41.7%) of them who are in the age range of 15-20 years; twenty-eight (14.6%) of the respondents are 26 years and above. On academic level, 52 (27%) are in 100 Level, 60(31%) are in 200 level, 51(27%) are in 300 Level, while the remaining 22(11%) and 7(4%) are in 400 and 500 levels respectively.

Table 1: Demographic data of respondents N=192

Variable	Frequency	Percentage
Gender		
Male	48	25
Female	144	75
Age		
15 - 20 years	80	41.7
21 - 25 years	84	43.8
26 years and above	28	14.6
Academic Level		
100	52	27
200	60	31
300	51	27
400	22	11
500	7	4

Table 2 shows gender difference in learning style preference among nursing students. There are 21(43.8%) male and 52(36.1%) female convergers; 7(14.58%) are male while 28(19.44%) are female accommodators. There are 12(27.08%) male divergers and 43(29.86) female divergers, Eight (16.67%) male assimilators and 21(14.58%) female assimilators. From the various figures, it can be seen that there are more male convergers and divergers while there were more female accommodators and assimilators. The p-value of 0.303 which is greater than 0.05 level of significance indicates that there was no significant difference between gender and learning style. This is shown diagrammatically above in figure 1 below.

Table 2: Gender difference in learning style preference N-192

Variable	Male	Female
Converger	21(43.8.)	52(36.1)
Accommodator	7(14.6)	28(19.4)
Diverger	12(27.1)	43(29.9)
Assimilator	8(16.7)	21(14.6)
Total	48(100.0)	144(100.0)

$\chi^2 = 3.642$; df =3; p=0.303

Table 3 shows the influence of learning style on academic performance of the respondents. Concrete experience as a learning style had a p-value of 0.738 which indicates that it did not have an influence on academic performance. Reflective observation learning style had a p-value of 0.004 which indicates that it had an influence on the academic performance of the nursing students, while abstract conceptualization and active experimentation learning style had a p-value of 0.956 and 0.080 respectively indicating that they did not have any influence on academic performance of the respondents.

Table 3: Influence of learning style on academic performance

	r	P
Concrete Experience	0.024	0.738
Reflective observation	-0.210	0.004
Abstract conceptualization	-0.004	0.956
Active Experimentation	0.127	0.080

Table 4 above shows mean comparism of learning style score based on gender. Between the male and female gender, the females scored more on concrete experience learning style such as watching videos or field work, with a mean and standard deviation of 40.15±5.80 while the male had a mean and standard deviation of 9.24±5.98, their p-value of 0.026 indicates that this was statistically significant. Between the male and female gender on the reflective observation learning style; the males had a mean and standard deviation of 12.73±4.40 while the females had a mean and standard deviation of 40.35±4.60, their p-value of 0.562 shows that this was not statistically significant. Between the male and female gender on abstract conceptualization learning style, the males had a mean and standard deviation of 10.76±4.81

while the females had a mean and standard deviation of 32.56±5.14, their p-value of 0.759 shows that this was not statistically significant. Between the male and female gender on active experimentation style, the males had a mean and standard deviation of 17.27±7.60 while the females had a mean and standard deviation 32.96±5.19, their p-value of 0.161 showed that this was not statistically significant. On the overall, mean comparism of learning style score based on gender only the concrete experience was significant while reflective observation, abstract conceptualization and active experimentation were not significant

Table 4: Mean comparism of learning style score based on gender

Variable	Male	Female	t	P
Concrete Experience	9.24±5.98	40.15±5.80	2.245	0.026
Reflective Observation	12.73±4.40	40.35±4.60	0.581	0.562
Abstract Conceptualisation	10.76±4.81	32.54±5.14	0.307	0.759
Active Experimentation	17.27±7.60	32.96±5.19	1.406	0.161

DISCUSSION

The research work assessed the effect of gender on learning style preference of student nurses in some institution in Edo State. Two hundred and six (206) nursing students in some institution in Edo State were purposively drawn and data on demographic characteristics and learning style preferences was determined using the Kolb's learning style inventory questionnaire. The study shows that many students preferred to learn by more than one mode of information presentation.

Findings from this study revealed that there is significant gender difference in learning style preference among nursing students in some institution in Edo State. There were more male convergers and divergers than the female learners who are majorly convergers. The four learning styles of Kolb are gender friendly in the sense that it does not favour a particular gender. This result is supported by studies that reported positive interaction among the students and their teacher's good understanding of the different learning styles that exist among the students and the application of appropriate teaching methods in lesson delivery (Gholami, & Bagheri, 2013; Dania, 2014). It is remarkable that Viriya and Sapsirin, (2014) asserts that gender have a significant effect on language learning strategies because ability to explicitly express one's self are attributes of divergers.

This study reports that both male and female nursing students in some institution in Edo State are convergers. A fact attributable to the nursing courses involving application of theory to constant practice to build knowledge (Lee, *et al,* 2018*).* It also involves thinking outside the box to find solutions to problems. It is assumed that Biology been a pre-requisite for the nursing programme, requires students learn by doing and working on problems and cases that allow them to evaluate alternatives to arrive at conclusion. These findings agree with those who ascertained preferred learning styles of biology and biochemistry undergraduate students to be independent of both the age and gender of students (Ezekoka, 2010; Mlambo, 2011)

On the influence of learning style on academic performance of nursing students, concrete experience learning style and abstract conceptualization was found not to have influence on academic performance of the respondents. On

the other hand, reflective observation and active experimentation learning styles had influence on their academic performance. These findings agree with that of Obiefuna and Oruwari (2015), who asserted that academic performance is influenced by the learners' preferred learning style. However, the result is in contrast with that of Muhammad, et al., (2015); which stated that academic performance is not significantly influenced by the student learning style.

CONCLUSION

Learning styles has insightful impact on particular dimensions of teaching and learning strategies. Students have their own preferred way to recognize, retain and retrieve information. Studies have reported that all learners have individual attributes relating to their learning styles. This study showed no influence of learning style preferences nor gender differences in learning style preferences on the academic performances of nursing students. The study concludes that difference do not exist in the way male and female nursing students learn though individuals may have their peculiarities which accounts for some being divergers while others are convergers.

RECOMMENDATION

The study recommends the development of comprehensive, up-to-date resources for learning such as departmental library with internet facilities. Furthermore, Nurse lecturers are urged to use of blended learning to enable students discover early enough in their career their peculiar attributes and best way to synthesize information.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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