

ASSOCIATION BETWEEN PERCEPTION OF LEARNING ENVIRONMENT AND ACADEMIC PERFORMANCE AMONG GENERAL NURSING STUDENTS IN SELECTED INSTITUTES OF HEALTH SCIENCES, BOTSWANA

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ABSTRACT

Objective: The study sought to determine the relationship between the students' perception of the learning environment and their academic performance using the Dundee Ready Education Environment Measure (DREEM).

Methodology: Deploying a cross-sectional design, quantitative data were collected using a self-administered DREEM questionnaire. Descriptive statistics were used to analyse univariate data, while the Chi-square test was deployed to analyse bivariate data.

Findings: Almost two-thirds (64%) of respondents had a GPA ranging between 3.1 and 4.0, while two in every 10 (22%) had a GPA greater than 4.0, and 14% had a GPA of between 2.1-and 3.0. The relationship between the learning environment and performance at 95% CI had $p=0.903$, with student perception of the setting and course organisers scoring the lowest, $p=0.639$ and $P=0.626$, respectively.

Conclusion and Recommendation: Based on the key findings, the perception of the learning environment does not influence the academic performance of the general nursing students. Further research on the influence of the learning environment on student performance is recommended.

Keywords: Learning environment, Perceptions, Health Sciences, Academic performance

1.1 Introduction

Learning environment is defined by (Isba, 2013) as the conditions on which learning takes place which may be physical, social or psychological. It encompasses "student/teacher interactions, teaching and learning activity, good physical resources and students' psychosocial and emotional aspects that are experienced by students and other stakeholders in a learning institution" (Arzuman *et al.*, 2016). It has been found to be a very powerful tool in shaping the values and attitudes of the health professions (National Research Council (U.S.) & Institute of Medicine (U.S.), 2004). Genn (2001) believes that it is an important determinant of behaviour of a student.

Students' perception of the learning environment has been found to have an important influence on students' academic performance (Sarwar & Tarique, 2016). According to Ahmed *et al.* (2018) when conducting a study in Sudan to elicit students' perceptions on their learning environment, They discovered that high achievers perception of the learning environment was better compared to the lower achievers or performers. The association was also different at different subscales of the DREEM tool. The association of high academic performance was higher in high DREEM scores in perception of the academic self. This implies that although there is an association of perception of learning environment and academic performance, the association also varies at different DREEM subscales. This was confirmed in a study conducted in Pakistan by Nouh *et al* (2016) which identified that there was a low but yet positive significance relationship between the learning environment and the GPA. However, on further analysis of the subscales it was found that the correlation coefficient of DREEM with GPA was higher in high score of perception of atmosphere, social –self-perception. This shows that all the subscales of the DREEM are very important and that different components of the learning contribute differently to the learning outcome of the students.

Therefore, it was unfair to use only the overall score of the DREEM as a predictor of the quality of the environment.

According to Ikeda *et al.* (2019), learning environment changes according to how a person perceives it, therefore increase in DREEM score may improve the academic performance. Further evidence supporting this claim lies on the results of a study that was conducted by Al-Ansari & El-Tantawi (2015) who did an experimental study among dental students in Saudi Arabia. The researchers administered the DREEM questionnaire to the students and were asked to provide their scores in GPA before their next examination. After the exam the GPAs were compared and the results showed that the number of grade Ds increased with students perceiving problems in academic-self, social –self and atmosphere. It was then concluded that there is a strong association between perception and future academic performance. Furthermore, how students perceive their learning environment can predict how they perform in future. This conclusion is further expounded by Hamid *et al.* (2013) who argue that students who perceive learning environment more favourable have high academic performance compared to those who perceive it negatively.

On the contrary Shalaby & Aljezani, (2018) reported from their study that there was no significant correlation between the students' perception of the learning environment and academic performance. While in another study Roff (2011) found out that there was a very little relationship between the students' academic performance and their perception of the learning environment. Nevertheless, despite the little correlation it is still a difference that should be taken into consideration because it does not necessarily rule out the relationship between the two factors.

1.2 Problem statement

At the end of every semester there are nursing students who do not perform well in their studies by scoring low GPAs and are subsequently asked to do re-takes. The average percentage of the retaking students ranges from 10% to 30 % across the institutions. Their semester GPA is below 2 indicating low performance (Institute of Health Sciences Results) Such a low performance might be attributed to poor learning environment. It is not clear if there is a relationship between the nursing students' perceptions towards the learning environment and their academic performance. This study deliberately aims to determine the relationship between the students' perception learning their academic performance.

1.3 Significance of the study

The results of this study could contribute to the stock of knowledge to be considered in the development of the new curricular and review of policies help in improving the methods, approach and tools for documenting and creating a positive learning environment for academic performance. They can also inform the principals and other stakeholders on the areas that require review in terms of policies and guidelines.

1.4 Aim

To determine the students' perceptions of the learning environment and their association with the academic performance among General Nursing students in selected Institute of Health Sciences in Botswana.

1.5 Hypothesis

There is no association between perception of the learning environment and academic performance.

1.6 Materials and methods

The study was conducted in Botswana at the Institute of Health Sciences, in the following campuses Molepolole, Gaborone, Francistown and Kanye. Descriptive cross-sectional design using a mixed method research approach thus utilizing both – qualitative and quantitative methods was employed. The study respondents consisted of level one and level two General Nursing students and the heads of departments at the Institute of Health Sciences campuses located at the specifies sites. This study targeted all General nursing students in level one and two and the heads of departments from the Institute of Health Sciences located in Gaborone, Molepolole, Francistown and Kanye. The total number of students in level one and two from all the institutions was 384 and for the purpose of this study all the eligible targets were included in data collection. 231 students participated in the quantitative data collection. Data collection method: To measure the students' perception of the learning environment the Dundee Ready Education Environment Measure (DREEM) questionnaire was adopted and used. The questionnaires were self-administered after the researcher gave a briefing talk regarding the study and importance of the objectivity in responding to the questions. The tool solicited data on the socio demographic characteristics, students' registration numbers and the perception of the learning environment. The questionnaire that was used is the Dundee Ready Education Environment Measure (DREEM) tool for data collection. The tool contains 50 close ended questions which are related to the students' learning environment on five areas. Students' perception of learning, perceptions of teachers, academic self-perceptions, perceptions of atmosphere and social self-perception. Each statement is scored on a five-point scale which ranges from strongly agree (4) strongly disagree (0). The maximum score of the DREEM tool is 200 and it represents an ideal learning environment (Roff *et al.*, 1997). Academic records were obtained from the academic registrar's office after proper permission from the principal with maintenance of full confidentiality. The student's registration numbers provide in the self-administered questionnaire was used to link the academic performances of the students. These results were used as the measure for the dependent variable (GPA). Data was analysed using the Statistical Package for Social Sciences (SPSS) version 20.0. DREEM scores against academic performance were compared using chi-square test.

1.7 Results

1.7.1 Demographics of respondents

As illustrated in Table 1, the demographic characteristic of the respondents shows that 71.4% are females while 28.6% are males. The age category ranged from 19 years to 35 years with 7 in every 10 aged 20-24 years.

According to the admission status, first time students formed the majority (83.5%), with slightly over a half (53.7%) were in level 1. The majority (85.7%) were government sponsored students representing IHS-Francistown (30.3%), IHS-Molepolole (27.3%), Kanye SDACON (22.9%) and IHS-Gaborone (19.5%) – Table 1

Table 1: Demographic characteristics of the study population

Description	Category	Frequency	
		(n=231)	Percentage
Sex	Male	66	28.6
	Female	165	71.4
Age	<20 years	47	20.4
	20-24 years	156	67.5
	25+ years	28	12.1
Admission Status	1 st Timer	193	83.5
	2 nd Timer	26	11.3
	From Service	12	05.2
Level of study	Level 1	106	45.9
	Level 2	125	54.1
Sponsorship status	Government	198	85.7
	Self	33	14.3
Institution	Francistown	70	30.3
	Molepolole	63	27.3
	Kanye	53	22.9
	Gaborone	45	19.5

1.7.2 Perceptions of learning environment among General Nursing students Overall DREEM score

The overall mean score for perception of learning environment was 116.73 implying that it is more positive than negative. The learning environment was also measured under five subscales: Students' perceptions of learning, students' perceptions of teachers, students' 'academic self-perceptions, students' perceptions of atmosphere, students' social self-perception.

Students' perceptions of teaching and learning had a mean score of 29.91, indicating that Students' perceptions of teaching and learning is more positive than negative. The students' perception of teachers had a mean score of 26.16, indicating that is moving in the right direction. Students' academic self-perceptions had a mean score of 21.87, which indicates that students have feeling

which are more on the positive side.. Students' perception of atmosphere had a mean score of 25.11, which indicates that there are many issues which need changing. The students' social self-perceptions had a mean score of 14.01, which implies that the learning environments in selected Institutes of Health Sciences in Botswana are perceived as not welcoming places to stay - See Table 2

Table 2: Descriptive Statistics for Perceptions of learning environment among General Nursing students

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Students' perceptions of teaching and learning	211	12	43	6312	29.91	5.551
Students' perceptions of teachers	213	7	40	5572	26.16	5.639
Students' academic self-perceptions	218	8	56	4767	21.87	4.872
Students' perceptions of atmosphere	215	5	39	5399	25.11	7.191
Students' social self-perceptions	220	1	36	3082	14.01	4.167
Perception of the overall learning environment	181	57	160	21129	116.73	20.237

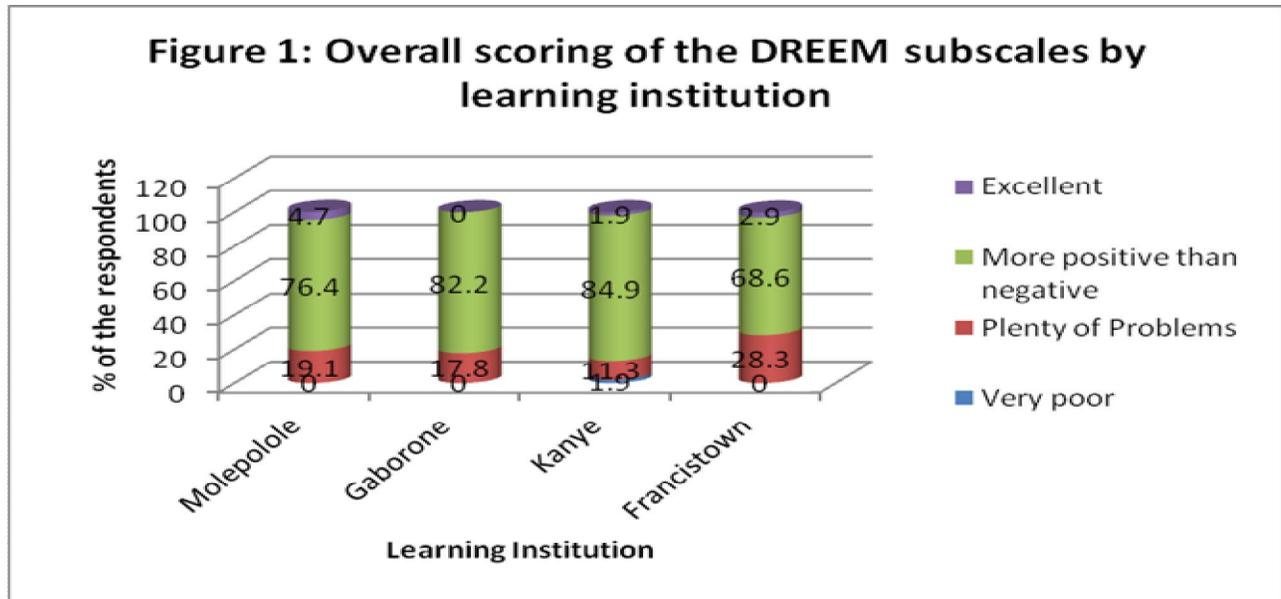
Overall DREEM score distribution by demographic characteristics

The DREEM questionnaire contained 50 statements relating to a range of topics directly relevant to education climate (Appendix B) with a score ranging from a possible zero (0) to a maximum of 200. Chi-square statistic was used to test for association between demographic factors and students overall DREEM Perception Score. The results show that Gender, Age, Admission Status, Level of Study, Sponsorship status and Institution have p-values which are greater than .05 hence we retain the null hypothesis and conclude that there is no association between Gender, Age, Admission Status, Level of Study, Sponsorship status, Institution and students overall DREEM Perception Score – see Table 3.

Variable	Category	Overall Scores out of a possible 200 marks					χ^2	CI	p-Value
		Very poor 0-50	Plenty of problems 51-100	More positive than negative 101-150	Excellent 151-200	Total			
Sex	Male (n=66)	1.5	12.1	81.9	4.5	100.0	6.939	95%	.074
	Female(n=165)	0.0	23.0	75.2	1.8	100.0			
Age	<20 years (n=47)	0.0	14.4	85.7	0.0	100.0	3.329	95%	.767
	20-24 years (n=169)	0.6	24.3	72.2	3.0	100.0			
	25+ years (n=28)	0.0	20.0	75.0	5.0	100.0			
Admission Status	1 st Timer (n=193)	0.5	22.4	74.5	3.0	100.0	1.532	95%	.957
	2 nd Timer (n=26)	0.0	17.4	82.6	0.0	100.0			
	From Service (n=12)	0.0	1.4	8.7	0.0	100.0			
Level of study	Level 1 (n=106)	0.9	17.0	80.2	1.9	100.0	2.725	95%	.436
	Level 2 (n=125)	0.0	23.2	73.6	3.2	100.0			
Sponsorship status	Government (n=198)	0.5	20.2	76.7	2.5	100.0	.235	95%	.972
	Self (n=33)	0.0	21.2	75.8	3.0	100.0			

Overall DREEM response by learning institution

The overall distribution shows that 26.1% of the respondents from Molepolole scored between 101 and 150 while Kanye had 84.9% of the respondents from in the same category. The category of 51-100 (plenty of problems) had the following % of respondents: Gaborone 17.8%, Molepolole 19.0% Kanye 11.3% and Francistown 28.5% - see Figure 1.



1.7.3 Academic performance

Chi-square statistic was used to test for association between demographic factors and academic performance of students. The results show that sex, age, admission status, level of study and sponsorship status have p-values which are greater than 0.05 with institution being the only one having a p-value of 0.001 – see Table 4.

Table 4: Percent Distribution of Students' Academic Performance by Demographics and learning institution

Variable	Category	% Performance by GPD Scores				CI	X ²	p-Value
		2.1-3.0 n=70	3.1-4.0 n=129	4.1-5.0 n=32	Total N=231			
Sex	Male (n=66)	33.3	51.5	15.2	100	95%	3.377	.337
	Female (n=165)	29.1	57.6	13.3	100			
Age	<20 years (n=47)	25.5	61.7	612.8	100	95%	11.297	.080
	20-24 years (n=156)	35.3	49.4	15.4	100			
	25+ years (n=28)	10.7	73.6	1.7	100			
Admission Status	1 st Timer (n=193)	32.6	53.9	27.0	100	95%	5.780	.448
	2 nd Timer (n=26)	23.0	53.8	23.0	100			
	From Service (n=12)	50.0	50.0	0.0	100			
Level of study	Level 1 (n=106)	30.2	57.5	12.3	100	95%	1.359	.715
	Level 2 (n=125)	29.6	54.4	16.0	100			
Sponsorship status	Government (n=198)	29.85	56.1	14.1	100	95%	.381	.944
	Self (n=33)	33.3	54.4	12.1	100			
Institution	Molepolole (n=63)	41.2	47.6	11.1	100	95%	30.27	.000
	Gaborone (n=45)	15.6	77.8	6.7	100			
	Kanye (n=53)	32	56.6	11	100			
	Francistown (n=70)	28.6	50.0	21.4	100			

The students who scored the learning environment as having lots of problems, 55% of them had a GPA of between 3.1 and 4.0 compared to the 18 % who score recorded the same score and got a GPA of 4.1 - 5.0. The results show that overall perception of the learning environment, perception of learning; teachers, academic self, atmosphere and social self had p- values which are greater than 0.05 - see Table 5.

Table 5: Percentage distribution of Academic Performance by perception of learning

Variable	Category	% Respondents				X ²	CI	p-Value
		2.0-3.0	3.1-4.0	4.1-5.0	Total			
Overall perception of the learning environment	Very poor	0.0	0.0	0.0	100.0	199.362	95%	0.903
	Plenty of problems	34.2	55.3	10.5	100.0			
	More positive than negative	26.3	55.6	18.0	100.0			
	Excellent	14.2	71.4	14.2	100.0			
Students' perception of learning	Very poor	0.0	50.0	50.0	100.0	58.508	95%	0.985
	Teaching is viewed more negatively	44.1	44.1	11.8	100.0			
	A more positive perception	27.3	56.8	15.9	100.0			
	Teaching is highly thought of	29.4	70.6	0.0	100.0			
Student's perception of course organisers	Abysmal	50.0	50.0	0.0	100.0	76.331	95%	0.626
	In need of some retraining	20.8	60.4	18.8	100.0			
	Moving in the right direction	31.0	54.2	14.8	100.0			
	Model course organisers	23.5	53.0	23.5	100.0			
Students' Academic self perception	Feelings of total failure	0.0	100.0	0.0	100.0	.54.647	95%	0.839
	Many negative aspects	45.8	50.0	4.2	100.0			
	Feeling more on the positive side	28.4	56.7	14.9	100.0			
	Confident	26.8	55.4	17.8	100.0			
Students' perception of atmosphere	A terrible environment	33.3	53.3	13.4	100.0	93.425	95%	0.639
	There are many issues which need changing	27.9	55.8	16.3	100.0			
	A more positive attitude	29.8	54.8	15.4	100.0			
	A good feeling overall	33.3	66.7	0	100.0			
Students' Social self perception	Miserable	40.0	53.3	6.7	100.0	43.997	95%	0.967
	Not a nice place	26.5	57.1	16.4	100.0			
	Not too bad	32.7	50.5	16.8	100.0			
	Very good socially	0	100	0	100.0			
	Not a nice place	26.5	57.1	16.4	100.0			
	Not too bad	32.7	50.5	16.8	100.0			
	Very good socially	0	100	0	100.0			

1.8 Discussion

The overall DREEM mean score from this study indicate that the perceptions of learning environment among General Nursing students in selected Institute of Health Sciences in Botswana are more positive than negative. Srestha et al. (2019) in India also corroborated these results, the overall DREEM mean score obtained in their study indicated that the student's perception of learning environment was positive. Idon et al (2015) similarly reported a total DREEM score which falls within a range that indicates a "more positive than negative" perception of the environment.

The findings of the study indicate that perception of the overall learning environment has no statistically significant influence on academic performance of General Nursing students in selected Institute of Health Sciences in Botswana. These results are congruent with Shalaby & Aljezani, (2018) who reported that there was no significant correlation between the students' perception of the learning environment and academic performance. Amani et al (2021) also concluded that there was no statistically significant association between perception of the learning environment and grade point average (GPA) which reflects academic achievement. However, the overall results indicated that most students who had a high perception of the learning environment had a GPA of 3.1-4.0. This is supported by a study done by Ahmed *et al.* (2018) in Sudan. The study aimed to elicit students' perceptions on their learning environment and revealed that high achievers perception of the learning environment was better as opposed to the lower achievers or performers. Nouh *et al* (2016) identified that there was a low but yet positive significance relationship between the learning environment and the GPA.

Al-Ansari & El-Tantawi (2015) did an experimental study among dental students in Saudi Arabia. The researchers administered the DREEM questionnaire to the students and were asked to provide their scores in GPA before their next examination. After the exam the GPAs were compared and the results revealed that the number of grade Ds increased with students perceiving problems in academic-self, social-, -self and atmosphere. It was then concluded that there is a strong association between perception and future academic performance.

There is no association between sex, age, and admission status, level of study, sponsorship status and academic performance. However, the results show that that there is an association between the institution one attends and academic performance.

The differences with the current study could be attributed to factors such as student expectations on the program, diversity of the student population, or variations in the style of teaching at the institution. Perceptions of General Nursing students at the selected Institutes of Health in Botswana on their teachers have influence on their academic results. There is need therefore to improve and retain a positive perception of students towards their teachers.

1.9 Conclusions

The findings of the study show that the students' perceptions of learning environment among General Nursing students in selected Institute of Health Sciences in Botswana are more positive than negative. The perception of learning environment was also measured under five subscales: Students' perceptions of learning, students' perceptions of teachers, students 'academic self-

perceptions, students' perceptions of atmosphere, students' social self-perception. The findings show that the students' perceptions of all aspects of learning environment were positive except the students' social self-perceptions which showed a very low mean score. The overall learning environments in selected Institutes of Health Sciences in Botswana are perceived as not conducive places to stay.

After analysing the association between perception of the learning environment and academic performance among General Nursing students in selected Institute of Health Sciences in Botswana, the researcher concludes that the perception of learning environment has no influence on academic performance of General Nursing students in selected Institute of Health Sciences in Botswana. There are certainly other issues that the students may not be happy with across the subscales of learning environment, teachers, atmosphere, resources and the support that need further investigation.

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