

Identifying Factor that Affecting Peerlearning Participation of Students in Mizan Tepi University, Tepi Campus: A Case of College of Natural and Computational Sciences Graduate Students of 2020

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Abstract

Background of the Study: Peer learning is an educational process where students interact with their peers who share an interest in the subject and learn both with and from each other. Peer learning participation approach is beneficial for students in their quest for knowledge, ideas and experiences shared within the classroom. This in turn enables them to develop their dependence, which leads them to become more interdependent and yet independent in their ability to share with and learn from each other. **Aim:** Identifying Factor that Affecting Peer learning Participation of Students in Mizan Tepi University, Tepi Campus: A Case of College of Natural and Computational Sciences Graduate Regular Students. **Methods:** The data use in this study was primary sources. In this study, stratified random sampling was applied to determine the sample size of the students from the whole population. Binary logistic Regression (dichotomous) in this study the binary logistic regression model was used to analysis whether the dependent variable is presence of peer learning participation or absence of peer learning participation. **Result:** Out of 121 students 60.33% were involved on peer learning participation and 39.67% not involved on peer learning participation and 58(47.9%) were males and 63(52.1%) were females. Attitudes of students had a significant association with the peer learning participation. The odds of prevalence of peer learning participation among Attitudes of students have Negative attitude were 39.6 (OR=0.198, 95% Confidence interval: (0.050-0.781)) times less likely having positive attitude students. **Conclusions:** The results of the proportional odds model showed that lack of motivation, effects of fields of study, lack of confidence, weather condition, attitude of students and Comfortable place were the most important determinant factors for affecting peer learning participation. So, the administrative of Mizan-Tepi University should give attention for students and should facilitate students.

Key Word: Peer learning Participation; Pearson chi-square; Binary Logistic Regression.

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1. Introduction

Peer learning is an educational process where students interact with their peers who share an interest in the subject and learn both with and from each other [1]. Thus this learning approach is beneficial for students in their quest for knowledge, ideas and experiences shared within the classroom. This in turn enables them to develop their dependence, which leads them to become more interdependent and yet independent in their ability to share with and learn from each other. According to Keenan (2014) HEIs, both nationally and internationally, greatly emphasize the use of instructional strategies that requires students to be more actively engaged in their own learning process. Strategies such as Problem-Based Learning, where peers actively learn from each other further enhancing the development of critical thinking skills amongst students [2]. Moreover, due to the unprecedented increase in the number of students from diverse backgrounds, especially international students with differing abilities, peer learning has been shown to be cost-effective in catering for students without affecting the standards and quality of learning experiences offered by educational institutions (Keenan, 2014). Additionally, the advancement in information technology within the educational setting necessitates a shift in the educational paradigm from a teacher-centered to a learner-centered instructional approach [3].

Peer learning can be both teacher and student led. This focuses on teaching and learning strategies involving groups of students actively involved in maximizing their learning in small groups [4]. Tutors need to structure the process and facilitate student learning activities so that students can fully benefit from the opportunity of interacting with their peers. This paper illustrates the impact of peer learning, the introduction and evaluation of a structured peer learning approach in the teaching of research methods to a group of level 7 international students and their overall evaluation of the learning experience. The method used was to compare the outcome of the peer learning with their academic performance.

Peer learning emphasizes learning with and from each other [1]. It is a collaborative learning strategy that involves students working in pairs or in small groups enabling them to discuss concepts and find solutions to issues/problems. The essence of peer learning is to help students to learn from each other, to actively participate, to be innovative and to take responsibility for their own learning. It also provides students with the opportunity to explore, collect, analyses, evaluate, integrate and apply relevant information for completing learning tasks or solving problems. This approach enables students to develop interpersonal communication, team work, project management, research, and study skills [5]

Planned peer learning involves a group of students selected by either students themselves or by the teacher to work together to identify their own learning needs and planning strategies to achieve them. This may help students develop the communication and collaborative skills necessary for effective and efficient team working. [2] maintain that students working in small groups are better able to focus on orchestrating their own learning activities than by traditional teaching methods, taking more responsibility for their own learning and helping them to learn how to learn. According to Landis (2000), students working in small collaborative groups become more active in their learning because they improve their academic performance obtaining a better learning experience and enhancing their self-esteem. Additionally, they learn the value of student-student interaction resulting in the development of interpersonal skills, teamwork skills, critical thinking and problem-solving skills

[6]. Thus, according to this research, effective peer learning enables students to develop valuable transferable social and communication skills i.e., listening, explaining, questioning, summarizing, speculating, and hypothesizing [7]. Shipman and Hootan (2008) support the benefit of varied and interactive teaching methods adopted in the peer learning approach, as it helps to address the diverse needs of the ever increasing student numbers in the educational institutions.

2. Methodology

2.1. Study Area

The study was conducted at Mizan-Tepi University, Tepi campus, which is found in the western part of the Ethiopia; around 611km far away from the Addis Ababa. This area is particularly found in SNNPR; Sheka zone, Yeki woreda with average temperature of 26.9 °C and annual rainfall are 1223mm. The town is located between 7212'N-7243'N latitude and 352 3' E _352 7' longitudes with a mean elevation of 1,097 meters above sea level. Mizan–Tepi University is a tertiary institution situated in Mizan Teferi and Tepi in southwest Ethiopia. It is one of the new public universities in the country. Mizan–Tepi University was inaugurated in May 2006, when Mizan - Teferi Agricultural TVET College became the founding center of the university.

2.2. Study population

The study mainly focus on Mizan-Tepi University, Tepi Campus Graduate regular students of CNCS of which contains department of statistics, Biology, physics, Mathematics, chemistry, sport science and geology

2.3. Method of data Collection

The data use in this study was primary sources. The data was collected by using administrative questionnaire, which is filling by the students by preparing questionnaires using English language since they were students of University.

2.4. Sample size determination and sampling procedures

For this study was use stratified sampling technique, because stratified random sampling was applied when the population are internally (with in group) are homogenous but externally (Between groups) are heterogeneous. Those our population (N) is divides in to seven sub population, those are CNCS department include:-Statistics, biology, sport, chemistry, Mathematics, Geology and Physics. The Sampling units in each department were selected by using simple random sampling techniques.

For stratum h (each department), number of sample was calculated by using proportional allocation; based on this the following results were obtained.

n_h = where n_h is sample size of the n^{th} stratum (department)

Therefore, sample size (n) = $n_1 + n_2 + n_3 + n_4 + n_5 + n_6 + n_7 = n$ is calculated.

Where:

$$n_h = \frac{n * N_h}{N}$$

Where:

N=total population of target population.

N_h = total population of each strata.

n=the optimum or normal sample size.

n_0 = the initial sample size

2.5. Study variable

Dependent Variable: Dependent variable of this study was peer learning participation of students, which was categorized as presence of peer learning participation and absence of peer learning participation

Categories	Do you participate in peer learning	Code
Absence of peer learning participation	No	0
Presence of peer learning participation	Yes	1

Independent Variable: The independent variables that used in this study was Sex, Department, Relationships between students, Effects field of study, Confidence of students, Comfortable place, Weather condition, motivation and Attitude of students.

2.6. Methods of Data Analysis

After the Researcher had collected the data from the respondents then edited, summarized analyzed using SPSS latest version software.

2.7. Binary Logistic Regression

Binary Logistic Regression is binary (dichotomous) in this study the binary logistic regression model will be used to analysis whether the dependent variable is presence of peer learning participation or absence of peer learning participation. Binary logistic regression analysis is the odds of success defined as the ratio of the probability of success to the probability of failure:

$$P(X = 1) = \pi \text{ And } P(X = 0) = 1 - \pi$$

The logistic regression model is given as follows:

$$\pi(x) = \frac{\exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k)}{1 + \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k)}$$

Where β_k are the coefficient of independent variable, β_0 is constant term, β_k are the coefficient of independent variable, X_k are an independent variable in the mode, $P(X = 1) = \pi$ is Probability of success (PLP) and $P(X = 0) = 1 - \pi$ is Probability of failure not PLP.

3. Result and Discussion

3.1. Descriptive of the Results

The study was carried out identifying factor that affecting peer learning participation of students in Mizan-Tepi University, out of 121 students 60.33% were involved on peer learning participation and 39.67% not involved on peer learning participation. Respondents 58(47.9%) were males and 63(52.1%) were females. respondents 65 (53.7%) of them were responded no lack of motivation and 56(46.3%) of them were responded lack of motivation. biology student who respond absence of peer learning were 9(18.8%) and who respond presence of peer learning were 13(17.8%), the chemistry student who respond absence of peer learning were 8(16.7%) and who respond presence of peer learning were 5(6.8%), the physics student who respond absence of peer learning were 6(12.5%) and who respond presence of peer learning were 7(9.6%), the sport student who respond absence of peer learning were 11(22.9%) and who respond presence of peer learning were 16(21.9%), the mathematics student who respond absence of peer learning were 4(8.3%) and who respond presence of peer learning were 6(8.2%), the statistics student who respond absence of peer learning were 7(14.6%) and who respond presence of peer learning are 15(20.5%), the geology student who respond absence of peer learning were 3(6.2%) and who respond presence of peer learning were 11(15.1%). of Respondents, 61(50.4%) of them were responded no effect of field of study and 60(49.6%) of them were responded effect of field of study on peer learning participation. responded low attitude towards peer learning participation, were 44(36.4%) responds medium attitude towards peer learning and 56(46.3%) were responds high attitude towards peer learning.

3.2. Results of Binary Logistic Regression Analysis

Lack of Motivation has a significant association with the PLP. The odds of prevalence of PLP among Lack of Motivation were 39.6 (OR=4.070, 95% Confidence interval: (1.163-14.242)) times less likely having Confidence students.

Table 3.1: Binary Logistic Regression Analysis

Variables	Categories	Peer learning participation of students %(n)	P-value
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			Absence (No)	Presence(Yes)	Total%(n)	
Sex	Male		22 (45.8%)	36 (49.3%)	58 (47.9%)	0.708
	Female		26 (54.2%)	37 (50.7%)	63 (52.1%)	
Lack of motivation	No		19(39.6%)	46 (63%)	65 (53.7%)	0.011*
	Yes		29(60.4%)	27(37%)	56(46.3%)	
Department	Biology		9(18.8%)	13(17.8%)	22(18.2%)	0.498
	chemistry		8(16.7%)	5(6.8%)	13(10.7%)	
	Physics		6(12.5%)	7(9.6%)	13(10.7%)	
	Sport		11(22.9%)	16(21.9%)	27(22.3%)	
	mathematics		4(8.3%)	6(8.2%)	10(8.3%)	
	statistics		7(14.6%)	15(20.5%)	22(18.2%)	
	geology		3(6.2%)	11(15.1%)	14(11.6%)	
Effect of field of study	No		31(64.6%)	30(41.1%)	61(50.4%)	0.011*
	Yes		17(35.4%)	43(58.9%)	60(49.6%)	
Weather condition	Bad		19(39.6%)	43(58.9%)	62(51.2%)	0.038*
	Good		29(60.4%)	30(41.1%)	59(48.8%)	
Attitude of students	Low		12(25%)	9(12.3%)	21(17.4%)	0.046*
	Medium		20(41.7%)	24(32.9%)	44(36.4%)	
	High		16(33.3%)	40(54.8%)	56(46.3%)	
Relationship b/n students	No		24(50.0%)	47(64.4%)	71(58.7%)	0.116
	Yes		24(50.0%)	26(35.6%)	50(41.3%)	
comfortable place	No		29(60.4%)	30(41.1%)	59(48.8%)	0.038*
	Yes		19(39.6%)	43(58.9%)	62(51.2%)	
Lack of confidence	disagree		19(39.6%)	36(49.3%)	55(45.5%)	0.469
	undecided		15(31.2%)	22(30.1%)	37(30.6%)	
	Agree		14(29.2%)	15(20.5%)	29(24.0%)	

Attitudes of students had a significant association with the PLP. The odds of prevalence of PLP among Attitudes of students have Negative attitude were 39.6 (OR=0.198, 95% Confidence interval: (0.050-0.781)) times less likely having positive attitude students. Field of study is has a significant association with the PLP. The estimated odds ratio (Exp(B)= 0.210) indicated that effects of fields of study were 0.210 times less likely to have PLP as compared to that of no effect of field of study keeping all other covariates fixed. The odds ratio could be as minimum as 0.071 and as maximum as 0.619 with 95% confidence.

Comfortable place is has a significant association with the PLP. The estimated odds ratio (Exp(B)= 0.365) indicated that students who cannot influence from class room setup were 0.365 times less likely to have PLP as compared to that of students who influence from class room setup keeping all other covariates fixed. The

odds ratio could be as minimum as 0.138 and as maximum as 0.965 with 95% confidence. Weather condition has significant association with the PLP. The estimated odds ratio ($\text{Exp}(B) = 3.546$) indicated that students who affected by a weather condition were 3.546 times more likely to have PLP as compared to that of students who was not affected by a weather condition keeping all other covariates fixed. The odds ratio could be as minimum as 1.356 and as maximum as 9.272 with 95% confidence interval

Comfortable place is has a significant association with the PLP. The estimated odds ratio ($\text{Exp}(B) = 0.365$) indicated that students who cannot influence from class room setup were 0.365 times less likely to have PLP as compared to that of students who influence from class room setup keeping all other covariates fixed. The odds ratio could be as minimum as 0.138 and as maximum as 0.965 with 95% confidence. Weather condition has significant association with the PLP. The estimated odds ratio ($\text{Exp}(B) = 3.546$) indicated that students who affected by a weather condition were 3.546 times more likely to have PLP as compared to that of students who was not affected by a weather condition keeping all other covariates fixed. The odds ratio could be as minimum as 1.356 and as maximum as 9.272 with 95% confidence interval.

Table 3.2: Parameter Estimates of the Final Binary Logistic Regression

Variables in the Equation								
Variable	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex(1)	.036	.477	.006	1	.940	1.037	.407	2.641
Motivation(1)	1.000	.485	4.253	1	.039	2.717	1.051	7.027
Department			5.524	6	.479			
Department(1)	-.460	.953	.233	1	.629	.631	.097	4.089
Department(2)	-2.273	1.076	4.464	1	.035	.103	.013	.848
Department(3)	-1.236	1.049	1.388	1	.239	.291	.037	2.270
Department(4)	-.693	.925	.560	1	.454	.500	.082	3.067
Department(5)	-.494	1.136	.189	1	.664	.610	.066	5.653
Department(6)	-.679	.949	.513	1	.474	.507	.079	3.253
Study(1)	-1.561	.552	7.994	1	.005	.210	.071	.619
Confidence			5.456	2	.065			
Confidence(1)	1.404	.639	4.823	1	.028	4.070	1.163	14.242
Confidence(2)	1.258	.677	3.449	1	.063	3.519	.933	13.276
Condition(1)	1.266	.490	6.659	1	.010	3.546	1.356	9.272
Attitude			6.017	2	.049			
Attitude(1)	-1.622	.701	5.346	1	.021	.198	.050	.781
Attitude(2)	-.866	.527	2.694	1	.101	.421	.150	1.183
Comfortable(1)	-1.007	.496	4.132	1	.042	.365	.138	.965
Constant	.266	.955	.077	1	.781	1.304		

4. Discussion

The Researcher finding showed that: Motivations, Self-confidence, condition of Environment, attitude of students, Relationship between Students and comfortable area have a significant relationship with that of peer learning participation. Peer learning researchers & practitioners have shown that positive peer relationship is essential to Success in HEIs [8]. then student participation, attitude of students, student interest, lack of teacher motivation, environmental condition, class room setup, student's attitude toward department teacher encouragement & student-student interaction positively related to improve critical thinking.

The Researcher finding showed that: the attitude of Students has a significant Effect on Peer learning Participation Students. Similar Finding Conducted on Peer learning showed that: can participate properly if he or she is free from all confusions and problems. Some students do not participate properly; they present in the class but do not pay attention to study. They do not listen to the teachers attentively and feel board. Now we have to see the factors, which affect the action of students in the class. Why they remain restless? Why do not pay attention to the study many factors affect their response parents attitudes is very significant. A neglected student feels helpless and lonely similarly unfair security can also make him irresponsible, selfish and car less. Personal and domestic problems, defective training of the teachers, their attitude, unsuitable course and way of examination, improper environment of school, mental level, partial treatment and act affects the participation of students [9].

The Researcher finding showed that: Environmental Condition has significant effect on peer learning Participation. Similar Literature Showed that, According to experimental evidence, a hot stagnant air condition, noise etc. need not retarded the participation process, provided adequate stimulation is present. However, covered comparatively short period of time and showed merely that when is undertaken with a will, physical discomforts can be overcome [10].

Generally peer learning peer learning of students used for students can enhance their social skill, there can be more individualization of instruction, participation can increase ,anxiety can decrease, motivation & positive attitude toward class can increase & self-esteem & self-confidence can increase[11]. the Roman philosopher, advocated peer (cooperative) learning. Through such statements (when you teach, you learn twice), we learn; 10% of what we read, 20% of what we hear, 30% of what we see, 50% of what we both see & hear, 70% of what is discussed with others, 80% of what we experience personally, 95% of what we teach to someone else ("William Glaser").

5. Conclusion

The study revealed that Explanatory variables had significant the factors affecting peer learning participation of students. The results of the proportional odds model showed that lack of motivation, effects of fields of study, lack of confidence, weather condition, attitude of students, Relationships between students and Comfortable place were the most important determinant factors for affecting peer learning participation.

The peer learning participation of a student is strongly associated with Relationships between students, Effects

field of study, Comfortable place, lack of motivation, lack of confidence, attitude of students and weather condition.

6. Acronomy

DF: Degree of freedom, EHEI: Ethiopia Higher Education Institution, CNCS: Collage of Natural and Computational Science, HEIs: Higher Education Institutes, Km Kilo meter, PIP Peer learning participation, MTU: Mizan-Tepi University, TVET: Technical Vocational Education and Training.

7. Ethical Consideration

The Research Ethics Review Board of Mizan-Tepi University has provided an ethical clearance for this study. The data was obtained from Third year Mizan Tepi University Students.

8. Authors' Contribution

Getahun Dejene and Ifa shiferaw Conceived and designed the study, analyzed and interpreted data and wrote the paper.

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9. Conflicts of Interest

The authors declare no conflict of interest.

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