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CORRELATION STUDY OF THE PERFORMANCE OF MATHEMATICS AND COMPUTER SCIENCE STUDENTS DURING 2017/2018 AND 2018/2019 ACADEMIC SESSION TEACHING PRACTICE

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ABSTRACT

This research work correlated students' performance of Mathematics and Computer science at F. C. E. (T) Bichi between 2017/2018 to 2018/2019 academic session. The design of the study was correlation research design. Area of study was F. C. E. (T) Bichi. The study was guided by 2 research questions and 2 hypotheses. Population of the study consists of 603students from Mathematics and Computer science departments. The sampled population was 100 students. Simple random sampling was used for the study. Instrument used for the study was students teaching practice scores of two consecutive years. Mean, standard deviation and Pearson Product Moment Correlation Coefficient was used to test the relationship that exist between two subjects. t-test statistics was used to test the relationship that exist between Mathematics and Computer science in two years. The study concludes that; the government, stake holders and administrators should improve quality of teacher education by ensuring that all necessary materials/skills needed for teacher education are provided for effective training and supervision. Based on data collected and analyzed findings revealed that: there exist a significant relationship between teaching practice achievement scores between Mathematics and Computer science. The study recommends that: teaching practice allowances should be improved and must be paid on time, student teachers should have good knowledge of subject matter before going in for teaching practice.

INTRODUCTION

Mathematics education as a field of study is concerned with all it takes to learn and teach Mathematics effectively. According to Iji, Abbah and Anyor (2018), Mathematics education is a field of study that deals with tools, methods and approaches that facilitate and promote the practice of teaching and learning of Mathematics. Therefore, students of Mathematics education are prepared for quantitative and symbolic reasoning and apply mathematical skills through general education, services, skills acquisition and problem solving. Jeffa, (2020) observes that Mathematics education is considered in its relationship with the nature of Mathematics as a discipline; considerations of teaching and teacher learning; the design, implementation and effects of curriculum and instructional interventions, implementation and effects; contemporary developments in learning theories and technologies; issues of equity and social justice. With the nature of Mathematics education as explained above, Mathematics education research primarily was focused on identifying problems that bother on teaching and learning of Mathematics, identifying solutions to them and broadening the knowledge base of the field generally. Jeffa, (2020) adds that research in Mathematics education has primarily two purposes: first to better understand the nature of mathematical thinking, teaching, and learning; and second to use such knowledge in practice for learning and teaching Mathematics. This gives a good summary of Mathematics education research. Thus

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primarily in this work, Mathematics education plays important role of guiding students in recording, storage and analysis of data.

Teaching Practice is an important component towards becoming a teacher. It provides experiences to student teachers in the actual teaching and learning environment. During teaching practice, a student-teacher is given opportunity to try the art of teaching before actually getting into the real world of the teaching profession. Student-teacher also lean values of teaching practice and perceive it as an important aspect of preparation for teaching profession since it provides for real interface between student hood and membership of the profession (Rakesh Ranjan, 2013). Teaching practice according to Topara (2020) is an integral part of teacher education program that is aimed at providing students-teacher an opportunity to put into practice theoretical knowledge in a real school life situation. It also offers teachers education a golden opportunities for practical appraisal of effectiveness of teacher educational program. The author further listed some basic objectives of teaching practice as follows:

a. To expose student-teacher to real life classroom experiences under the supervision of professional teacher.
b. To provide the forum for student-teacher to translate educational theories and principles into practice.
c. To enable student-teachers discover their own strengths and weakness in classroom and provide opportunities to enable them overcome their weaknesses.
d. To familiarize student-teacher with the school environment as their future work place
e. To provide student-teacher with an opportunity for further acquisition of professional skills, competence, personal characteristics and experience for full time teaching.

Teaching according to Yahaya and Muhammad (2020) is an interaction between a teacher and learner in which the teacher is expected on a period to educating the learner on predetermined objectives. It is the process of impacting worthwhile knowledge on the expected learner. This worthwhile knowledge is also called values, which are highly needed by society for meaningful developments. Teachers in a society are thought to be agents of change as they are central to the delivery of quality education. Quality teachers are the greatest determinant of student achievement and their impact can promote child knowledge, skills and talents for future use. They can also influence the economic dynamism of the country by imparting skills that translate into innovation and productivity in the workplace. Because of the current changing and challenging world, teachers should be provided with a range of skills, knowledge, attitudes and relevant educational experience that can enable them to cope with societal challenges. Education is expected to play several key roles in an effort of developing countrys socio-economic and cultural status. However, it is impossible to think of quality education without having academically qualified and professionally responsible teachers on the schools. Thus, for teachers to play their role effectively in schools, there must be a well-designed and successfully implemented teaching practice program for student teachers that aims at producing teachers who are academically qualified, professionally skilled, and attitudinally; ethically committed and updating knowledge from time to time to adapt with current changes in science, technology and computer world (Benedicto, Stelyus and Wang 2016).

Mathematics provides theoretical basis for many subfields of computer science, and important analytic tools for others; since most elements of computer comes from

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Mathematics. Computer scientists thus apply specific mathematical skills to specific computing problems(Jensen and Sherry, 2019).Previous studies show that Computer course are so difficult because of Mathematical skills involved in it (Jensen and Sherry, 2019). Mathematics improves students' performance in Computer science and other fields hence the skills obtained help students' teacher during teaching practice (Jers, 2010). Hence, students must have a strong background in Mathematics in which some studies predict success in Computer science and its teaching (Duran, 2020). Works of literature also suggest that Mathematics scores on the College Entrance Test correlate with programming grades in computer science (2018). As such, there is a tendency that students who get high scores in Mathematics during teaching practice can as well perform better in teaching practice in Computer science and other fields. Hence, scores in Mathematics specifically, can be a factor to consider whether a student can be accepted into computer science courses or not (Ali and Farag, 2021). On the other hand, mathematics is found to be significant in dealing with programming courses because it is a good indicator of having the essential cognitive growth to learn to program.

STATEMENT OF THE PROBLEM

Teaching Practice (T.P) is very important and necessary program for all education students because it guide students to develop conceptual knowledge and teaching skills. However, most students did not find it easy to pass through this program. This shows that most students' performances in teaching practice were not encouraging. This was observed by the researcher during the process of supervising students on TP. Difficulties here means students inability in presentation of concept, poor knowledge of the subject matter, poor lesson plan, lack of instructional materials, class control, among others. Poor performance and achievement during teaching practice bring about students frustration, loss of control, confused, low grade, intimidation, drop out, anxiety among others. It also discourages students in furthering their studies. This comes to the mind of the researcher to correlate students' achievements TP scores between Mathematics and Computer science so as to find out the level of students' performance at regular interval and proffer solutions toward low performance.

PURPOSE OF THE STUDY

The aim of this study is to correlation students' teaching practice performance of two consecutive years with the following specific objectives:

(a) Determine the relationship between Mathematics and Computer science students' mean scores during teaching practice in 2017/2018 academic session.
(b) Determine the relationship between Mathematics and Computer science students mean scores during teaching practice in 2018/2019 academic session.

RESEARCH QUESTIONS

The following research questions were used in the conduct of this study:

i. What is the relationship between mean scores of Mathematics and Computer science students during teaching practice in 2017/2018 academic session?
ii. What is the relationship between mean scores of Mathematics and Computer science students during teaching practice in 2018/2019 academic session?

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HYPOTHESES

The following hypotheses were developed for this study:

(a) There is no significant relationship between students' teaching practice achievement scores of Mathematics and Computer science in 2017/2018 academic session.
(b) There is no significant relationship between students' teaching practice achievement scores of Mathematics and Computer science in 2018/2019 academic session.

RESEARCH DESIGN

The research design for this study was correlation research design, this was because students' achievements scores of teaching practice for two consecutive years were analyzed and correlated to observed students achievement trend.

AREA OF STUDY

The area of this study is F.C.E (T) Bichi. The choice of F. C. (T) Bichi for the study was based on the fact that, the researcher had observed poor performance of students during teaching practice supervision for over five consecutive years in the above school.

POPULATION OF THE STUDY

The population of this study consists of 603 students from Mathematics and Computer department of the above school. The following was the breakdown of the population: 89 Mathematics students, 220 Computer students in 2017/2018 session and 78 Mathematics students, 216Computer students in 2018/2019 academic session respectively.

SAMPLE AND SAMPLING TECHNIQUES

The researcher randomly sampled 50 students in the first and second years which gives the total of 100 sampled students. Simple random sampling was used for the study because the researcher wishes each element of the population to have equal and independent chances of being included in the study.

INSTRUMENTATION

Instruments used for the study includes students' teaching practice scores of Mathematics and Computer department of the above school from 2017/2018 and 2018/2019 academic session.

DATA ANALYSIS

Data was analyzed using Pearson Product Moment Correlation Coefficients and □ _test statistics. This was because both the research questions and hypotheses are testing the relationship between two variables. Thus $t = r\sqrt{n-2}/\sqrt{1-r^2}$, where

r = the value of correlation, n total number of cases and
2= 2 degree of freedom.

DATA ANALYSIS AND RESULT

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Research question 1:What is the relationship between mean scores of Mathematics and Computer science students during teaching practice in 2017/2018 academic session?

Table 1: Mean and Standard Deviation of Mathematics and Computer science students during teaching practice in 2017/2018 academic session

S/no	Session	Department	N	Mean	S.D	*r*
		Mathematics	50	60.14	10.45	
1	2017/2018	Computer	50	53.68	8.88	0.54

Table 1, the mean scores of Mathematics students' teaching practice in 2017/2018 academic session was 60.14 and the standard deviation was 10.45. On the other hand the mean scores of Computer students in the same year was 53.68 with standard deviation of 8.88. Comparing the relationship that exist between Mathematics and Computer gives the value of $r = 0.54$. This shows that there exists a significant relationship between Mathematics and Computer students' achievements scores in 2017/2018 academic session. This was because the mean and standard deviation of both departments was above average of 50 marks and the value of *r* was positive.

Research question 2:What is the relationship between mean scores of Mathematics and Computer science students during teaching practice in 2018/2019 academic session?

Table 1: Mean and Standard Deviation of Mathematics and Computer science students during teaching practice in 2019/2018 academic session

S/no	Session	Department	N	Mean	S.D	r
		Mathematics	50	59.30	10.33	
1	2018/2019	Computer	50	52.94	8.32	0.51

In 2018/2019 academic session, the mean scores of Mathematics students was 59.30 and the standard deviation was 10.33. Mean scores of Computer students was 52.94 and standard deviation of 8.32. Comparing the relationship that exist between Mathematics and Computer gives value of $r = 0.51$. This shows that there exist a significant relationship between Mathematics and Computer students' achievements scores in 2018/2019 academic session. This was because the mean and standard deviation of both departments was above average and the value of *r* was positive.

TESTING OF HYPOTHESES

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(a) H_{01}: There is no significant relationship between students' teaching practice achievement scores of Mathematics and Computer science in 2017/2018 academic session.

Table 4: Analysis of students' teaching practice achievement scores of Mathematics and Computer science in 2017/2018 academic session

S/no		n	r	d.f	t_{cal}	t_{crit}	α-level	Decision
1	100	0.54	98	6.35	1.96	0.05	Reject H_0 and retain H_1	

Table 4 t_{cal} (98) = 6.35 > t_{crit} (1.96); α = (0.05), H_0 was rejected and $H_1$was retained therefore there exist a significant relationship between students' teaching practice achievement scores between Mathematics and Computer science in 2017/2018 academic session.

(b) H_{02}: There is no significant relationship between students' teaching practice achievement scores of Mathematics and Computer science in 2017/2018 academic session.

Table 5: Analysis of students' teaching practice achievement scores of Mathematics and Computer science in 2018/2019 academic session

S/no		n	r	d.f	t_cal	t_crit	α-level	Decision
1	100	0.51	98	5.87	1.96	0.05	Reject H_0 and retain H_1	

Table 5t_{cal} (98) = 5.87 > t_{crit} (1.96); α = (0.05), H_0 was rejected and $H_1$was retained therefore there exist a significant relationship between students' teaching practice achievement scores between Mathematics and Computer science in 2018/2019 academic session.

DISCUSSION

The results of data analysis showed a mean achievement score of students' teaching practices in two consecutive years and the relationship that exist between two variables. Students' achievement scores in 2017/2018 academic session has mean scores above average of 50 marks in the two variables, meaning good performance. Students' achievement scores in 2018/2019 academic session also have mean scores that was above average in the two variables, this also gives good performance. The result of two hypotheses indicated that there was a significant relationship between students' teaching practice achievement scores of Mathematics and Computer science in two years. This was because the value of t(98) calculatedwas greater than the table value. This shows that most students have good knowledge of subject matter, good lessons plan, and good teaching methods; provide instructional materials and make good use of them, among

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others. It also shows good teaching skills given to students teachers by school. These could motivate student teacher to perform well after graduation.

CONCLUSION

The result of this study has provided an empirical basis that most students did perform well during teaching practices especially in two academic session. This shows good effort done by the school to ensure effective students' performance during teaching practice and beyond. This study concludes that; government, stake holders and school administrators should promote quality of teacher education by ensuring that all necessary materials/skills needed for teacher education are provided for effective teaching and evaluation.

RECOMMENDATIONS

Based on the findings, this study recommends that:

(a) Teaching practice allowances should be improved by the government and school administrators and should be on time so as to help teachers teach students going for teaching practice effectively.
(b) Student teachers should have good knowledge of the subject matter before going in for teaching practice.
(c) Required materials necessary for teacher education should be provided by the government and administrators.

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APPENDIX A
Students Achievements Scores of TP in Two Years

	2017/2018	**2018/2019**			
S/no	**x**	**y**	**x^2**	**Y^2**	**xy**
1	55	55	3025	3025	3025
2	65	56	4225	3136	3640
	2017/2018	**2018/2019**	**x^2**	**Y^2**	**xy**
3	63	52	3969	2704	3276
4	64	50	4096	2500	3200
5	62	57	3844	3249	3534
6	56	43	3136	1849	2408
7	63	42	3969	1764	2646
8	42	51	1764	2601	2142
9	63	55	3969	3025	3465
10	67	57	4489	3249	3819

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11	57	42	3249	1764	2394
12	44	55	1936	3025	2420
13	55	45	3025	2025	2475
14	60	54	3600	2916	3240
15	55	66	3025	4356	3630
16	64	42	4096	1764	2688
17	60	56	3600	3136	3360
18	55	64	3025	4096	3520
19	64	41	4096	1681	2624
20	65	55	4225	3025	3575
21	56	64	3136	4096	3584
22	56	56	3136	3136	3136
23	44	56	1936	3136	2464
24	42	55	1764	3025	2310
25	62	53	3844	2809	3286
26	41	46	1681	2116	1886
27	66	62	4356	3844	4092
28	60	55	3600	3025	3300
29	43	47	1849	2209	2021
30	43	61	1849	3721	2623
31	54	61	2916	3721	3294
32	65	57	4225	3249	3705
33	47	57	2209	3249	2679
34	43	53	1849	2809	2279
35	60	55	3600	3025	3300
36	43	54	1849	2916	2322
37	50	61	2500	3721	3050
	2017/2018	**2018/2019**	**x^2**	**Y^2**	**xy**
38	50	56	2500	3136	2800

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39	53	44	2809	1936	2332
40	45	65	2025	4225	2925
Total	**2202**	**2156**	**123996**	**117994**	**118469**
Mean	**55.05**	**53.9**	**3099.9**	**2949.85**	**2961.725**
S.D	**8.436642**	**6.766433**	**906.4175**	**715.7444**	**562.3701**

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{\left[n\sum x^2 - \left(\sum x\right)^2\right]\left[n\sum y^2 - \left(\sum y\right)^2\right]}} = 0.09828$$

APPENDIX II
Male and Female Students' Achievement Scores of TP in 2017/2018 Session

			Male	**Female**	
S/n	**x**	**y**	**x^2**	**y^2**	**xy**
1	66	54	4356	*2916*	*3564*
2	62	57	3844	*3249*	*3534*
3	56	43	3136	*1849*	*2408*
4	63	42	3969	*1764*	*2646*
5	42	51	1764	*2601*	*2142*
6	63	55	3969	*3025*	*3465*
7	67	57	4489	*3249*	*3819*
8	57	42	3249	*1764*	*2394*
9	44	55	1936	*3025*	*2420*
10	55	45	3025	*2025*	*2475*
11	65	54	4225	*2916*	*3510*
12	55	66	3025	*4356*	*3630*
13	64	65	4096	*4225*	*4160*
14	60	56	3600	*3136*	*3360*

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15	55		3025	*0*	*0*
16	64		4096	*0*	*0*
17	65		4225	*0*	*0*
18	56		3136	*0*	*0*
19	56		3136	*0*	*0*
20	44		1936	*0*	*0*
21	42		1764	*0*	*0*
22	62		3844	*0*	*0*
23	41		1681	*0*	*0*
24	66		4356	*0*	*0*
25	60		3600	*0*	*0*
26	43		1849	*0*	*0*
Total	**1473**	**742**	**85331**	**40100**	**43527**
Mean	**56.65385**	**53**	**3477.357**	**2864.286**	**3109.071**
S.D	**8.671527**	**7.716117**	**932.8948**	**1571.505**	**1650.532**