

## Approaches to Learning and its Influence on Polytechnic Students' Academic Performance

**Ogbeta.I. Joseph & Awwalu. B. Habiba**

Department of Mathematics & Statistics  
Hussaini Adamu Federal Polytechnic Kazaure Jigawa State  
**Corresponding author:** ogbetaikhide78@gmail.com

### Abstract

The study determines approaches to learning and its influence on students academic performance. The study adopted correlational research design. Population was 813 National Diploma II students. Sample of 261 students was obtained using Krejcie and Morgan table. Instrument for data collection was R-SPQ-2F. Validity of the instrument was ascertained by experts in Educational Psychology. Cronbach's alpha reliability of .78 and .76 was obtained for deep and surface approach subscales. Research question was answered using Pearson correlation and hypothesis tested using multiple regression at 0.05 significant level. Findings reveals positive correlation ( $r = .84$ ) between deep approach and academic performance and negative correlation ( $r = -.68$ ) between surface approach and academic performance. R square value (.715) indicates 71.5 percent variance in performance is explain by approaches to learning.  $F(324.81)$  significant at ( $p0.00 < 0.05$ ) indicates relationship between approaches to learning and academic performance. Study recommend adoption of deep approach considering it role on performance.

**Keywords:** Approaches to Learning, Students, Performance

### Introduction

Polytechnics education in Nigeria is design for training of technical man power in advancing the nation's technological hub, in order to achieve this mandate various polytechnics were established by government for acquisition of relevant technical skills in line with 70:30 admission ratio in favour of science, engineering and technology related courses by the National Board for Technical Education (NBTE) which is the regulatory body for technical education in Nigeria.

In spite of this laudable government policies for students to acquire relevant technical skills that would enable them contributes significantly to technological development which is the driving force of the nation's economy however it is sad to note the consistent poor performance of students in semester examination (Zakairya & Bamidele, 2015; Shahjchav, *et al.*, 2021). This has become worrisome to technical educators and stake holders in education.

Poor performance of students in semester examination could be attributed to factors such as methods of teaching (Jegade, 2009); attitude towards learning (Ngussa & Mbuti, 2017); approaches to learning (Maciejewski & Merchant, 2016). Among these factors, approaches to learning have gain increasing attention in the literatures as factor

influencing students performance at the tertiary institutions.

Approaches to learning are expanding line of study that describe and assesses students learning (Entwistle *et al.*, 2001). Marthon and Saljo (1976) in their seminar work on student learning identifies two ways follows in processing information as deep and surface approaches.

Deep approach is the students intrinsic motivation and intention towards learning for better understanding of concepts (Loyens, *et al.*, 2013). Howie and Bagnall (2013) highlights characteristics associated with deep approach to includes self-assessment, self-questioning and error detection. Students who adopt the deep approach find meaning from text materials and learn in most profitable way (Biggs, 2012). Baris (2016) states that deep approach is the students desire to complete task in most appropriate manner using cognitive function.

Surface approach is the intention to accomplish tasks using low level cognitive ability and putting less efforts in fulfilling requirements (Biggs, 1993). Zakariya, *et al.* (2020) describe surface approach as reflection of external motivation such as students participation in learning to obtain pass mark in examination. Surface approach is the lack of personal engagement in learning, student reproduce learning

materials with the motive of avoiding failure (Diseth, 2013).

Surface and deep approaches influences performance in an opposite way specifically surface approach pre-occupied by memorization results to poor performance of students while deep approach is the in-depth involvement of students in learning for better performance (Yaraten & Kasapoglu, 2012).

### **Approaches to Learning and Academic Performance**

Researchers were prompt by the desire to know why some students learn better than others resulting to research work on approaches to learning (Gurlea, *et al.*, 2013). Ausbel (1968) use the terms meaningful and rote learning to describe approaches to learning. Wittrock (1974) describes approaches to learning as generative and reproductive processing of learning.

Surface approach is the students unreflective intention towards study (Spade & Moneta, 2012). Haggis (2003) highlights the characteristics associated with surface approach to include memorization and recitation of text materials. Deep approach on the other hand is the students understanding of information, relating ideas with content taught for critical thinking (McInerney, *et al.*, 2012). Deep approach is characterized by in depth understanding, error detection, dealing with large data and putting more efforts in learning. Biggs (2003) asserted that students who use deep approach are intrinsically motivated and acquire knowledge in a more coherent way while students who adopt the surface approach are extrinsically motivated to learning.

Ladan, *et al.* (2014) in exploring undergraduate students approaches to learning as predictor performance found a relationship between approaches to learning and academic performance. Baris (2016) in his study on approaches to learning and age in predicting early childhood student academic performance found positive relationship between deep approach and academic performance while a negative relationship was found between surface approach and academic performance. Puteh, *et al.*, (2018) in their study on relationship between approaches to learning and academic performance found significant positive relationship between approaches to learning and academic performance. Hussein, *et al.*, (2018) who in their study on relationship between approaches to learning and academic performance found significant relationship between approaches to learning and academic performance. Kamath, *et al.*, (2018) found positive relationship between deep approach and academic performance while negative relationship was found

between surface approach and academic performance. Although few studies were conducted on approaches to learning and academic performance however not much is known of study on approaches to learning and academic performance for students studying at the polytechnic. Moreover in order to fill this research gap the present study determine influence of approaches to learning on academic performance.

### **Research Question**

What is the relationship between approaches to learning and academic performance?

### **Hypothesis**

H<sub>01</sub>: There is no significant relationship between approaches to learning and academic performance.

### **Methods**

The study adopted correlational design to determine the relationship between approaches to learning and academic performance. Population of the study was 813 National Diploma II students registered in 2022/2023 academic session at Hussaini Adamu Federal Polytechnic Kazaure. Sample of 260 students was obtained using Krejcie and Morgan table. Instrument for data collection was Revised Two Factor Study Process Questionnaire (R-SPQ-2F). The R-SPQ-2F adapted from Biggs, *et al.* (2001) consist of twenty item statements on deep and surface approaches subscales, ten item statements measuring deep approach and another ten item statements measuring surface approach on five points Likert scale. Face validity of R-SPQ-2F was ascertained by expert in Educational Psychology who critically examined each item on the instrument, suggestion and correction given were effected before final production and administration of the R-SPQ-2F on the students. The R-SPQ-2F was trial tested on 45 National Diploma II students who were not part of the main study to determine reliability of the instrument. Cronbach's alpha reliability of .78 was obtained for deep approach subscale and .76 for surface approach subscale. Research question for the study was answered using Pearson correlation to determines the strength of relationship between subscales of deep and surface approaches on academic performance while hypothesis was tested using multiple regression at 0.05 significant level to determine relationship between approaches to learning and academic performance.

Schober, *et al.*, (2018) states the decision rule for determining correlation coefficients ( $r$ ) of study which employs Pearson correlation for analysis as: - Greater than 0.5 strong positive correlation

Between 0.3-0.5 moderate positive correlation  
 Between 0-0.3 weak positive correlation  
 Between -0.3- -0.5 moderate negative correlation  
 Less than -0.5 strong negative correlation  
 Decision rule for accepting hypothesis.

Dulek, (2018) states that when  $p$ -value  $< 0.05$  level of Significance, the null hypothesis is rejected, however accepted when  $p$ -value  $> 0.05$  level of significance.

### Results

Table 1: Correlation Between Deep Approach, Surface Approach and Academic Performance

		Deep Approach	Surface Approach	Academic Performance
Deep Approach	Pearson Correlation	1	-.818**	.847**
	Sig. (2-tailed)			.000
Surface Approach			1	-.687**
				.000
	N	259		

\*\*Significant at 0.05 level.

Table 1 shows a strong positive correlation  $r = .84$  between deep approach and academic performance while a strong negative correlation  $r = -.68$  was found between surface approach and academic performance. Correlation between deep and surface approaches on academic performance was significant at ( $p\ 0.00 < 0.05$ ).

Table 2: Multiple Regression on Approaches to Learning and Academic Performance.

R	R Square	Adjusted R Square	Std. Error of the Estimate	F Change	df1	Sig.
.847 <sup>a</sup>	.717	.715	.64746	324.815	2	.000

\*\*significant at 0.05 level

Table 2 gives R square value of .715 meaning 71.5 percent variance in academic performance is explain by approaches to learning. F-value 324.81 significant at ( $p\ 0.00 < 0.05$ ) indicates a relationship between approaches to learning and academic performance.

Table 3: Beta Coefficients on Approaches to Learning

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	.162	.336		.481	.631
	Deep Approach	.069	.005	.863	14.920	.000
	Surface Approach	.003	.009	.019	.334	.739

a. Dependent Variable: Academic Performance

Table 3 shows beta ( $B = .016; t = 14.920\ P .000 < .05$ ) indicates deep approach predicts students academic performance while beta ( $B = .06; t = 0.334\ P .073 > .05$ ) indicates surface approach does not predicts academic performance.

### Discussion

The study found positive relationship between deep approach and academic performance and a negative relationship between surface approach and academic

performance this finding was in agreements with Baris (2016) who found positive relationship between deep approach and academic performance and negative relationship between surface approach and academic performance. Kamath, *et al.*, (2018) in supports of present study reported a positive relationship between deep approach and academic performance and a negative relationship between surface approach and academic performance. Mutatayi, *et al.*, (2018) in contrary to the present

finding reported positive relationship between surface approach and academic performance.

Significant relationship was found between approaches to learning and academic performance this agrees with Hussaini, *et al.*, (2018) who found a relationship between approaches to learning and undergraduate medical students academic performance. Puteh, *et al.*, (2018) reported significant positive relationship between approaches to learning and academic performance.

Deep approach predicts students academic performance this finding corresponds with Landan, *et al.*, (2014) who found deep approach as predictor of undergraduate students academic performance. In support of present finding was study by Salamonsen, *et al.*, (2013) who reported deep approach as predictor of academic performance. Negash, *et al.*, (2022) found deep approach as predictor of students academic performance. Burton and Sztaroszo (2007) who reported deep approach did not predict of students academic performance contradicts the present finding.

### Conclusion

The study revealed that approaches to learning significantly influence students academic performance. Students who adopt deep approach perform better academically than those who adopt the surface approach more over deep approach was found be predictor of academic performance.

### Recommendation

The study recommends encouraging students to adopt deep approach considering its positive role on performance however discourage adoption of surface approach due to its negative impacts on performance.

**Acknowledgement:** Researchers wish to acknowledge the Tertiary Education Trust Fund (TETFU) for funding the research.

### References

Ausubel, D. P. (1968). Educational psychology. A cognitive view. New York: Holt, Rinehart and Winston.  
<http://www.jstage.jst.go.jp/psychologies.1954>.

Baris, C. (2016). Approaches to learning and age in predicting college students academic achievement. *Journal of College Teaching and Learning*. 13(1), 21-28. <https://file.eric.ed.gov>

Biggs, J. B. (1993). What do inventories of students learning processes really measure? A theoretical review and clarification. *British Journal of Educational Psychology*. 63, 3-19.  
<http://doi.org/10.1111/j.2044-8279.1993.tb.1038x>.

Biggs, J. B. (2003). Aligning teaching and assessment to curriculum objectives. Imaginative curriculum project, 23-34 LTSN Generic Centre. <http://www.scirp.org>.

Biggs, J. (2012). Enhancing learning through constructivist alignment. In Kirby, J. B & Lawson, M. J. (Eds.). *Enhancing the quality of learning: Disposition, instruction and learning process*. (pp. 117-136). Cambridge university Press.  
<https://doi.org/10.1017/CB09781139048224.009>.

Biggs, J., Kember, D., & Leung, D. Y. P. (2001). The revised two factor study process questionnaire. R-SPQ-2F. *British Journal of Educational Psychology*. 71.133-149.  
<http://dx.doi.org/10.1348/000709901158433>.

Burton, L.B., & Sztaroszo, J. (2007). The relationship among conception of knowledge application to learning personality and academic success. Toowoomba, Australian Psychological Society. <http://research.usq.edu.au>.

Diseth, A. (2013). Students evaluation of teaching, approaches to learning and academic achievement. *Scandinavian Journal of Educational Research*. 41(8), 1297-1308.  
<http://dx.doi.org/10.2224/sbp.2013.41.8.1297>.

Dulek, B. (2018). Optimal decision rule for simple hypothesis testing under general criterion involving error publication. <http://arxiv.org>.

Entwistle N. J, Tait, H. & McCune, V. (2001). Patterns of response to approaches to studying inventory across contrasting groups and contexts. *European Journal of the Psychology of Education*, 15(1), 33-48. <http://psycnet.apa.org/record/2001-16270-005>.

Gurlean, E., Turan, S., & Senemoglu, N. (2013). The relationship between learning approaches of prospective teachers and their academic achievement. *African Journal of Medical Education*. 1(5), 185-204. [www.international-scholars-journal.org](http://www.international-scholars-journal.org)

Haggis, T. (2003). Constructing images of ourselves. A critical investigation into approaches to learning research in higher education. *British Educational Research Journal*. 29(1), 89-104.  
[doi.10.1080/0141192032000057401](https://doi.org/10.1080/0141192032000057401).

Howie, P. & Bagnall, R. (2013). A critique of the deep and surface approaches to learning. *Journal of Teaching in Higher Education*. 18(4), 389-400.  
<https://doi.org/10.1080/13562517.2012.733086>.

Husseini, R. Z., Enayatrada, M., Ebrahimi, H., Raei, M., Zamani, S & Mahdavi, S. (2018). Investigating the relationship between learning approaches and academic achievement among the students of Shahrood University of medical sciences. *International Journal of Health Studies*. 4(4), 33-37.

Jegede, S. A. (2009). The effect of component task analysis model of instruction on students performance in chemistry. An unpublished PhD Thesis, university of Ado-Ekiti, Nigeria.





- Kamath, A., Roa, R. R., Shenoy, P. J., Ullal, S. D. (2018). Approaches to learning and academic performance in pharmacology among second year undergraduate medical students. *Science Medical Journal*. 28(4). 23-32: ID32395. Doi:10.1544811980.6108.2018.3239.
- Ladan, M. A., Balarabe, F., Sani, D. K., Musa, H. A., Salihu, A. A., & Salihu, M. A. (2014). Learning approaches as predictor of academic performance of undergraduate students in Ahmadu Bello University Zaria. *Journal of Nursing and Health Science*. 3(3), 45- 50. [www.iosjournal.org](http://www.iosjournal.org).
- Loyens, S. M. M., Gijbels, D., Coertjens, L., & Cote, D. (2013). Students approaches to learning in problem-base learning. Taking into account students behaviour in the tutorial groups, self-study time and different assessment aspect. *Studies in Educational Evaluation*. 39(1), 23-32. doi: 10: 1016/j.stueduc.2012.10.004.
- Maciejewski, W. & Merchant, S. (2016). Mathematical tasks, study approaches and course grade in undergraduate mathematics: A year by year analysis. *International Journal of Mathematics Education, Science and Technology*. 47(3), 1-15. <https://eric.ed.org>.
- Marton, F. & Saljo, R. (1976). On qualitative differences in learning: outcome and process. *British Journal of Educational Psychology*. 46(1), 4-11. <http://doi.org/10.1111/j.2044-8279.tb02980.x>.
- McInerney, D. M., Cheng, R. W., Mok, M. M. C., & Lam, A. K. H. (2012). Academic self- concept and learning strategies. Direction of effect on students academic achievement. *Journal of Advanced Academic*. 23(3), 249-269.
- Murayama, K. Pekrum, R., Lichtenfeld, S., & VomHofe, R. (2013). Predicting long-term growth in student mathematics achievement: The unique contribution of motivation and cognitive strategy. *Child Development*. 84(4), 1475-1490. <http://psycnet.apa.org>.
- Mutatayi, M. K., Mukendi, P., & Elen, J. (2018). Students approaches to learning: Validating study process questionnaire for use in Congolese setting. *Journal of Advances in Educational Research*. 3(20), 109-120. <http://www.researchgate.net>.
- Negas, T. T., Eshete, M. T., & Hanago, C. A. (2022). Students learning approaches as a factor of academic achievement of selected public universities: A cross-sectional study. *Front. Education*. 7:965573 doi: 10.3389/educ.2022.965573.
- Ngussa, B.M., & Mbuti, E. E. (2012). The influence of humour on learning attitude and mathematic achievement: A case of secondary in Arusha city. Tanzania. *Journal of Educational Research*, 2(3), 170-181. Retrieved from <http://www.researchgate.net/publication/315776039>.
- Puteh, M. S., Abdul Lafit, N. E., Mansor, N., Halid, S., & Ghazali, Z. (2018). Learning approaches and academic performance. *Journal of Social Science Research*. 9(6), 746- 752.
- Salamonson, Y., Roslyn weaver, R., Chang, S., Koch, J., Bhathal, R., Khou, C., & Wilson, I. (2013). Learning approaches as predictors of academic performance in first year health and science students. *Nurse Education Today*. 33, 729-733.
- Schober, P., Boer, C. M., & Schwarte, L.A. (2018). Correlation coefficients: Appropriate use and interpretation. 126(5), 1763-1767. [www.onesthesis.analgescasca.Org](http://www.onesthesis.analgescasca.Org).
- Shahjcha, V.M., Ahmed, K.R., Handram, A.I., Rabi I., Hossaini, S, & Khan, M.S. (2021). Factors influencing poor academic performance among urban university students. *International Journal of Evaluation and Research in Education*. 10(4). 1140-1149. [www.doi.10.11591/ijere](http://www.doi.10.11591/ijere).
- Spada, M., & Moneta, G. B. (2012). A metacognitive motivational model of surface approach to studying. *Educational Psychology*. 32(1), 45-62. <https://file.eric.ed.org>
- Wittrock, M. C. (1974). Learning as a generative process. *Educational Psychologist*. 11,87-95 <https://doi.org/10.1080/00461527409529129>.
- Zakariya, Y. F., Bjorkestol, K., Nilsen, H. K., Goodchild, S., & Loras, M. (2020). University students learning approaches: An adaptation of the revised two factor study process questionnaire to Norwegian. *Studies in Education Evaluation*, 100816. <https://doi.org/10.101615.stueduc>.
- Zakariya, Y. F. & Bamidele, E.F. (2015). Investigation into the causes of poor academic performance in mathematics among Nigeria undergraduate students. *World Journal of Social Science and Humanities*. 1(1), 1-5.