Influence of Learning Approaches on Academic Performance among University Education Students of Federal University Gusau, Zamfara State

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Abstract

This study investigated the influence of learning approaches on Academic performance among University Education students of Federal University Gusau, Zamfara State, North-West, Nigeria. Ex-post facto design was used. The study used 192 students as samples drawn from the university. The Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) was adopted to measure learning approaches. Cronbach Alpha, Pearson Product Moment Correlation Coefficient values of Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) were .77, and .62 respectively. The t-test for independent sample statistic tool was used to analyze the data. Two null hypotheses were formulated and tested. The study found difference in the academic performance of university education students of deep learning approach and university education students of surface learning approach in arts-based courses, though the difference was not significant. On the other hand, the study found significant difference in the academic performance of University Education students of deep learning approach and University Education students of surface learning approach in science-based courses. It was recommended that lecturers need to determine students' background knowledge, and learning approach and they should employ techniques that encourage deep learning approach.

Keywords: *Learning approaches, deep learning, surface learning, Revised Two-Factor Study Process Questionnaire (R-SPQ-2F).*

Introduction

Learning approaches are set of approaches that learners use to attend to learning activities and process information and organize knowledge for proper utilization for future use (Muelas and Navarro, 2015). Also, effective learning approaches refer to techniques students use to achieve the acquisition, storage, retention, recall and adaption of knowledge (Olorode, 2016). Cognitive learning theories consider learners as primary participants in the education process in which their role goes beyond passively acquiring information to being active participants. Consequently, students not only receive information and knowledge but also perform mental activities to process and adopt information effectively (Almoslamani, 2022). Montero and Arizmendiarrieta (2017) identified ten learning strategies which consist of time and effort, perseverance, organization, classmates' support, metacognition, self-questioning, the study environment, repetition and instructors' help. While Justen and Lopez (2010) identified seven learning strategies that include the planning and reinforcement of self-esteem, classification, problem-solving, repetition, cooperation, deduction and inference, and prediction and assessment. Nikou and Economides (2019) put forth that, homework is one of the main examples of a micro learning strategy, and this explains why micro strategies are often used among students. Micro learning delivers learning through small and short units within short, focused activities. In micro learning, students summarize and highlight content to obtain smaller units, such as definitions, formulas and brief paragraphs.

According to Negash, Eshete, and Hanago (2022) Learning approaches are strategies applied to learning that are vital and critical to success, considered essential for acquiring good grades. Researchers and experts identified three types of learning approaches which includes; deep, surface, and strategic approaches to learning. Learning approach refers to a persons' concept on learning motivation via employment of suitable strategies.

Gurjiya (2021) views learning approaches as a concept originated from the work of two Swedish university teachers, namely; Ference Merton and Roger Saljo at the University of Gothenburg, Sweden in 1976. They theorized that students may take to a deep learning approach with a clear intention to understand the meaning of the study material and linking it to their previous knowledge and experience. He further stated that, some students will adopt a surface learning approach where the intention here is to memorize and reproduce the learning material without understanding. While Negash, Eshete and Hanago (2022) opines that, Learning approaches are strategies applied to learning that are critical to success, considered essential for acquiring good grades, and useful for learning throughout one's life. Sani (2015) identified three types of learning approaches that students can follow in higher education institutions.

The surface learning approach is memorizing, syllabus-bound, and exam-oriented, whereas the deep approach to learning is seeking for meaning, relating ideas, and using evidence in learning. According to Rosland and Abdullah (2021) views that, surface learning involves low-order cognitive skill as it only concentrates on recall of fact rather than associate with deep learning like analysis, extending idea, synthesis, and evaluation. The superficial approach to learning simply involves scraping the surface of the material being studied and focusing only on the assessment requirements without deeper exploration. This passive approach to learning is mainly requiring students learn what they supposed to learn and nothing more. Coertjens,Vanthournout, Lindblom-Ylänne and Postareff (2020) opined that deep learning strategies includes critical thinking, detecting pattern, understanding students' intention to engage in Deep Learning: Application of the Theory of Planned Behaviour problem solving skills and being critical of arguments and evidence. This approach is particularly relevant in the context of education for sustainability. A deep approach to learning can help students to understand the concept and improve their academic performance. Students may follow the surface learning approach due to fear of failure, stress, and lack of purpose. The third approach is strategic learning, which focuses on using either deep or surface learning approaches depending on the context or situation accordingly. This approach is efficient in terms of time and space, which emphasizes achieving the best grades. Ali (2018) recommended that, higher education educators to advocate and support students to follow deep approaches to learning to enable students to understand concepts and retain knowledge for future application. According to this researcher, the curricula of higher education should be shifted from a teacher-centered approach to a student-centered approach using constructive alignment of learning out comes with appropriate content, teaching, and assessment methods to enhance student's learning and academic performance.

Education Students from North-West universities were mostly using both deep and surface learning approaches but, majority of them were using deep learning approach. Deep learners have the habit of studying wide range of learning materials in order to obtain broader picture of the issue under consideration. Deep learners show inclination to search for relevant meaning for a course or material of study (Gurjiya, 2021b). They have ability of connecting learning materials with daily life and personal experience. Deep learners are often academically high achievers and maintain feelings of great satisfaction. Students taking a deep learning approach display the ability to relate new information to previous knowledge

and experience in the course of their studies and subsequent assessment. This can be added an advantages to them to obtain good grade result and to get more experience in their studies. While surface learning approach on the other side, had characteristics which are opposite of deep learning approach. Students who take to surface learning approach are in the habit of choosing the quickest way to complete the learning task. They acquire the learning material without necessarily understanding its meaning. When learning a material they do not show intense interest in the learning material, activity or the need to understand it completely. Tan and Laswad (2015) stated that, surface learners are fond of learning by rote, relying heavily on memorization and not on comprehension and to be more concerned with the time needed to complete the assignment. While Iroanya (2020) opines that, surface learners are mostly motivated by need to avoid failure at school and their desire to minimize effort while completing assigned tasks. In other words, the surface approach is connected to surface motivation or to extrinsic motivation.

Almoslamani (2022) examines the learning strategies adopted by Saudi university students and explore the differences in the use of learning strategies due to gender and academic achievement. The study utilized a cross-sectional descriptive analytic approach and adopted the brief "ACRA-C" learning strategies scale. The study sample consisted of 365 students enrolled at a Saudi university selected using the random clustering technique. The study revealed that micro strategies and study habits are the most preferred strategies by Saudi university students. Statistically significant differences in the use of learning strategies were found between male and female students in favor of the female students. The study also found that learning strategies are a significant predictor of students' academic achievement.

Gurjiya, (2021) conducted a study on learning approaches and academic performance among Colleges of Education science students in Katsina State. He used 166 sampled students and the result of the study revealed that deep learning pure science students were significantly better than surface learning pure science students.

Mel (2021) investigated in deep versus surface learning among thermodynamics students of Polytechnic Kuching, Sarawak. The Revised Two Factor Study Process Questionnaire (R-SPQ-2F) was conducted on the respondents. The findings of this study showed that deep learning approach was the most dominant learning approach used by the students. Then, the findings also showed that the deep learning approach had positive correlation with academic attainment while the surface learning approach was inversely proportional with academic attainment.

Negash, Eshete, and Hanago (2022) investigated in students' learning approaches as a factor of academic achievement at selected public universities: A cross-sectional study was conducted on 123 anesthesia students. All 3rd- and 4th-year students were recruited for the study. Study Skills Inventory for Students (ASSIST) was used to assess students' learning approaches. There were no statistically significant differences between the groups on most of the learning approaches and academic achievement measures.

Burke and Plunkett (2022) examined the Deep or surface learning Perceptions of Chinese international and local students in Australian universities. Surveys incorporating the Two-Factor Revised Study Process Questionnaire (R-SPQ-2F) were conducted with 156 Chinese international students (CIS) and 212 Australian domestic students (ADS) from two Australian universities. The findings demonstrated that perceived disparities existed between the two cohorts in terms of their approaches to learning.

Amade and Ironya (2020) evaluated learning approaches and students' academic performance in cost accounting in State Universities in South-South, Nigeria. The study adopted

correlation design and was conducted in State Universities in South-South, Nigeria. Findings from the study revealed that problem-based learning and guided discovery deep learning approach relates with students' academic performance in cost accounting to a high extent.

Statement of the problem

Students in Zamfara state have been observed to consistently record low performance especially in West African Examination Council (WAEC) and National Examination Council (NECO) examinations in recent years. In fact, Zamfara state is considered as the most backward state educationally as it ranked 37th in WAEC (9.2%) 2022. The few brighter students will proceed to universities and the weak ones will find their way into the university through NCE and diploma programmes of the higher institutions in the state. As a result of this, many of these students will not make any appreciative progress due to the challenges of the learning environment and assessment tools used. Many employers of teachers were not happy with the level of performance of many of these teachers and their commitment to service. Therefore, there is the need to investigate what causes the difference on deep learning approach (DLA) and surface learning approach (SLA) dimension among education students of Federal University Gusau, Zamfara state, Nigeria. These issues make the research worthwhile as it will empirically solve the issues under investigation.

Objectives of the study

The general objective of this study is to find out whether there is difference in learning approaches and academic performance among education students of Federal University Gusau, Zamfara state, Nigeria.

However, specific objectives are stated to assist in achieving the main objectives. These are:

i) to find out if there is difference in academic performance of university education students of Deep Learning Approach (DLA) and Surface Learning Approach (SLA) of Science-based courses in Federal University Gusau, Zamfara state, Nigeria.
ii) to examine if there is difference in academic performance of education students of Deep Learning Approach (DLA) and Surface Learning Approach (SLA) of Arts-based courses in Federal University Gusau, Zamfara state, Nigeria.

Hypotheses

In carrying out the study, two null hypotheses were formulated:

H_{o1} There is no significant difference in the academic performance of education students of

Deep Learning Approach (DLA) and Surface Learning Approach (SLA) of Science-

based courses in Federal University Gusau, Zamfara state, Nigeria.

H_{o2} There is no significant difference in the academic performance of education students of

Deep Learning Approach (DLA) and Surface Learning Approach (SLA) of Arts-based

courses in Federal University Gusau, Zamfara state, Nigeria.

Methodology

Population and Sample

The population of this research consist 408 education regular students in Federal University Gusau, Zamfara state, Nigeria.

Out of the population, one hundred and ninety-two (192) education students were sampled (Research Advisors, 2006). They were drawn from Department of Educational Foundations and Department of Science Education of the University. Multi-stage sampling technique was employed in the research. Proportionate sampling technique was used to select the participants by department, while simple random sampling technique (hat-and-draw) was employed in selecting the actual participants of the study.

Instrumentation

The instrument used to identify deep learners and surface learners in this study was the 20-item Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) developed by Biggs, Keber and Leung (2001) which was adopted. The instrument has Section A, which required the participants to provide personal information about them and Section B, which contains the 20-item 5-point Likert Scale loaded with deep/surface learning approaches items. The instrument was used to measure the learning approaches the education students of Federal University Gusau, Zamfara State. For reliability, the Cronbach Alpha analysis of the instrument was scored at .77, which indicated a very high reliability level. The content validity of the instrument was determined via a panel of experts at the Department of Education, Sule Lamido University, Kafin Hausa, Jigawa State. These experts concluded that the instrument has good content validity.

Procedures

Data about students' learning approaches was obtained via Revised Two-Factor Study process questionnaire (R-SPQ-2F) developed by Biggs, Kember and Leung (2001). Students' academic performance records were obtained from the Office of the HOD, Educational Foundations, Federal University Gusau, Zamfara state, Nigeria. The students' academic performance was assessed by the overall result students obtained in 200 Level Grade Point Average (GPA).

The researcher used one day in the institution to administer the questionnaire with the assistance of the lecturer holding lectures at the time of the visit. The participants were then requested to fill in and submit the questionnaire within the lecture period.

Method of Data Analysis

The data collected were at the interval scale and each of the hypotheses was tested using t-test for independent sample. The t-test statistical tool was used to analyze the data of arts-based and science-based university education students' learning approaches and academic performance. The null hypotheses were tested at a 0.05 level of significance.

Results

The first hypothesis was concerned with ascertaining whether there was no significant difference in the academic performance of university education students of deep learning approach and surface learning approach of arts-based in Federal University Gusau, Zamfara State, Nigeria. The courses considered as arts-based education courses include studies Education/Hausa, Education /Islamic Studies, Education/English and Education/Arabic.

The t-test analysis is shown in table 1.

Table 1: Difference in the Academic Performance of University Education Students of Deep Learning Approach (DLA) and University Education Students of Surface Learning Approach (SLA) of Arts-based Courses (N=29)

Variables	N	Mean	SD	t-cal	p-value	Decision
Deep	21	37.33	6.256	3.96	.13	Not Significant
Surface	10	26.20	9.259			

Table 1 reveals the result of t-test for independent sample analysis of arts-based education students. The result indicates that Deep Learners (DL) *(M = 37.33, SD = 6.26)* performed better than Surface Learners (SL) *(M = 26.20, SD =9.26), t (31) = 3.96, p = .13)*. The table also establishes that t-calculated was greater than t-critical. In addition, the p-value indicated that the difference between the two groups was not significant at 0.05 (p> 0.05). The null hypothesis, which foresaw no significant difference in the academic performance of arts-based education students on deep learning approach and surface learning approach constructs, was therefore rejected.

The courses that were regarded as science-based education courses are; Education/ Physics, Education/Mathematics, Education/Biology and Education/Chemistry. The second hypothesis was set to ascertain whether there is no significant difference in the academic performance of university education students of deep learning approach and surface learning approach of science-based in Federal University Gusau, Zamfara State, Nigeria.

Table 2 shows the t-test analysis.

Table 2: Difference in the Academic Performance of University Education Students of Deep Learning Approach (DLA) and University Education Students of Surface Learning Approach (SLA) of Science-based Courses (N=159)

Variables	N	Mean	SD	t-cal	p-value	Decision
Deep	100	34.40	6.184	9.073	.000	Significant
Surface	61	25.64	5.523			

Table 2 shows the result of the t-test for independent sample analysis of science-based university education students. The result indicated that deep science-based students *(M = 34.40, SD = 6.184)* performed better in academic performance more than their surface science-based students counterpart *(M = 25.64, SD = 5.523), t (159) = 9.073, p = .000)*. The table also establishes that t-calculated was greater than t-critical. In addition, the p-value indicated that the difference between the two groups was significant at 0.05 (p< 0.05). Therefore, this support the rejection of the null hypothesis which predict no significant difference in the academic performance of university education students of deep learning approach and university education students of surface learning approach of science-based in Federal University Gusau, Zamfara State, Nigeria.

Discussion

This research work investigated the influence of learning approaches on academic performance of arts-based and science-based education students of Federal University Gusau Zamfara State, Nigeria. The findings of the study revealed that arts-based deep learning students performed better than arts-based surface learning students. Though, the difference was not significant.

The study was in agreement with the studies of Amade and Ironya (2020), Samosa (2020) and Burke and Plunkett (2022). All these research works showed that deep learning approach was

positively related with academic performance. However, low academic performance was associated with surface learning approach.

Education Arts students of this university have found it rewarding to adopt strategies that are guaranteeing higher grades. They try to understand the meaning of the concepts being taught by lecturers of the two departments. They have formed the habit of using higher order cognitive skills that ensure better grades. Moreover, part of the reasons for good performance of these students might be due to the use of teaching strategies that were interesting and encourage understanding. Teachers here were fond of using activity method, co-operative learning and problem-based learning. These techniques of teaching are good in ensuring deep learning in students.

This research also studied differences in the academic performance of students of deep learning approach and surface learning approach of science-based courses. The result of the analysis showed high academic performance scores among deep learners and low academic performance scores among surface learners in science-based courses. The finding was similar with the report of Mel (2021) and Gurjiya (2021a). Both studies established that deep learners performed significantly higher than surface learners in science-based courses. This has invariably indicated that those science teachers are undisputedly using learner-centred methods of teaching such as activity method, project method as well as laboratory method among others. They seem to be using higher order cognitive ability assessment tools in assessing their students.

Conclusion

Given the result of this investigation the following conclusions were made about the study. Arts-based and science-based deep learners education students performed well when compared with surface learners' arts -based and science-based education students across the institutions investigated. This has revealed that teachers here were using both good assessment techniques and effective teaching methods in teaching their students. Most students have discovered the tricks and were using them to their advantage.

Recommendations

Given the findings of this study, the following recommendations were made:

1. Lecturers should use Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) on their new students so as to find out the students' learning approach. Having got dependable information about their students' learning approach they will use it and tailor their teaching style and assessment style to encourage deep learning approach and discourage surface learning approach.
2. Lecturers should use test items that evaluate higher order cognitive domain. In other words, lecturers should endeavour to expose their students to examination questions that include test items from analysis, synthesis and evaluation. It is believed that these three higher order cognitive domain have the capability to encourage deep learning approach to students'

References

Aflalo, Ester & Gabay, Eyal (2013) Learning approach and learning: Exploring a new technological learning system. *International Journal for the Scholarship of Teaching and Learning*, 7(1), Article 14. Available at: http://digitalcommons.georgiasouthern.edu/ij-sotl/vol7/iss1/14

Ali, L. (2018). The design of curriculum, assessment and evaluation in higher education with constructive alignment. J. Educ. e-Learn. Res. 5, 72–8. doi: 10. 20448/journal.509.2018.51.72.78

Almoslamani, Y. (2022). The impact of learning strategies on the academic achievement of university students in Saudi Arabia. *International Journal of Learning and Teaching in Higher Education: Gulf Perspectives,* 18 (1), 4-18. DOI 10.1108/LTHE-08-2020-0025.

Amade, E. A. & Ironya, C. J. (2020). Learning approaches and students' academic performance in cost accounting in state universities in South-South, Nigeria. *International Journal of Innovative Social & Science Education Research* 8 (3): 75 82. www.seahipaj.org

Burke, J. & Plunkett, M. (2022). Deep or surface learning? Perceptions of Chinese international and local students in Australian universities. *Issues in Educational Research*, 32 (1), 149- 181. http://www.iier.org.au/iier32/li.pdf

Coertjens, L., Vanthournout, G., Lindblom-Ylänne, S., & Postareff, L. (2020). Understanding individual differences in approaches to learning across courses: A mixed method approach. *International Academic Research Journal of Social Science* 3(1), 122-127.

Gurjiya, S. A. (2021). Disparity in learning approaches and academic performance among science education students in Colleges of Education in Katsina State**.** In *Zamfara International Journal of Education. The Official Journal of Faculty of Education, Federal University Gusau, Zamfara State, Nigeria, Maiden Edition,1(1),494-501.*pISSN: 2814-1377; pISSN: 2814-1369. **DOI**:https://doi.org/10.5281/zenodo.7264676A publication of the Faculty of Education, Federal University Gusau.

Gurjiya, S. A. (2021). Gender Disparity in Learning Approaches and Academic Performance among Colleges of Education Students in Katsina State, Nigeria. *Kano Journal of Educational Psychology (KaJEP),* 3 (1), 130-134. At www.kjnisepjournal.com

Iroanya, C. J. (2020). Learning Approaches and Students' Academic Performance in Cost Accounting in State Universities in South-South, Nigeria. Unpublished Dissertation. Rivers State University, Nkpolu Oroworukwo, Port Harcourt, Rivers State.

Justen, M. P., & Lopez, B. R. (2010). Learning strategies in higher education. International Journal of Learning, 17(1), 259–274. doi: 10.18848/1447-9494/CGP/v17i01/46813.

Mel, B. N. (2021). Deep vs. Surface Learning: A Study among DTP3 Thermodynamics Students in Politeknik Kuching Sarawak, Malaysia. *Asian Journal of Research in Education and Social Sciences,* 3 (1), 25-32. At http://myjms.mohe.gov.my/index.php/ajress

Montero, C. R., & Arizmendiarrieta, B. S. Y. (2017). The effectiveness of a learning strategies program for university students. Psicothema, 29(4), 527–532. doi: 10.7334/psicothema2016.171.

Muelas, A., & Navarro, E. (2015). Learning strategies and academic achievement. Procedia Social andBehavioral Sciences, 165, 217–221. doi: 10.1016/j.sbspro.2014.12.625, Proceeding in CPSYC 2015.

Negash, T. T., Eshete, M. T. & G. T. Hanago (2022). Students' learning approaches as a factor of academic achievement at selected public universities. *International Journal in frontier education,* 1 (3), 1-9. DOI: 10.3389/feduc.2022.965573.

Nikou, S. A., & Economides, A. A. (2019). Mobile-based micro-learning and assessment: Impact on learning performance and motivation of high school students. Journal of Computer Assisted Learning, 34(3), 269–278. Doi: 10.1111/jcal.12240.

Nnorom, N. R. (2015). Effect of cooperative learning instructional strategy on senior secondary school students' achievement in biology in Anambra state, Nigeria. *International Journal for Cross-Disciplinary Subjects in Education*, 5(1), 2424-2427

Olorode, J. J. (2016). Effect of Guided Discovery Learning Method on Students' Academic Achievements in Financial Accounting in Colleges of Education in Ogun State. A Thesis Submitted to Postgraduate School, Tai Solarin University of Education, IjagunIjebu-ode, Ogun State.

Rosland, T. N. & Abdullah, O. Y. (2021). Understanding Students' Intention to Engage in Deep Learning: Application of the Theory of Planned Behaviour.*Ilkogretim Online - Elementary Education Online,* 20 (4): 490-501 http://ilkogretim.

Samosa, R. C. (2021). *Cooperative Learning Approach as Innovation to Improve Students' Academic Achievement and Attitude in Teaching Biology.* Journal of World English and Educational Practices (JWEEP), 3 (1), 1-10.Doi: 10.32996/jweep.2021.3.1.1

Sani, U. T. (2015). Effects of cooperative learning strategy on senior secondary school students' performance in quantitative chemistry in Kebbi state, Nigeria. *Journal of Education and Social Sciences*, *1*, 30-35.

Tan, L. M. & Laswad, F. (2015). Academic performance in introductory accounting, Do learning style matter? *Accounting Education,* 24 (5): 383.