Faculty of Natural and Applied Sciences Journal of Applied and Physical Sciences
Print ISSN: 3026-9857
www.fnasjournals.com
Volume 2; Issue 1; September 2024; Page No. 72-79.

Assessing Student Attendance and Question Selection in a Circuit Theory Course

[1]Enochoghene., S.O., [1]Ayanlade., S.O., & [2]Olayiwola, O.I.
[1]Department of Electrical and Electronic Engineering Lead City University, Ibadan, Nigeria
[2]Institute for Safe Autonomy, University of York, York, United Kingdom

***Corresponding author email**: samuelenochog@gmail.com

Abstract

This study investigated the relationship between class attendance and the choice of exam questions in a circuit theory course within an electrical engineering program at a Nigerian university. The course comprised four modules: Foster & Cauer LC Network Realisation, Two Port Network Synthesis, Filter Fundamentals, and State Variable Method to Circuit Analysis. Thirteen students, who attended at least one class and took the final exam, participated in the study. Data was collected on attendance and exam performance, focusing on which questions were chosen by the students and their attendance rates. Analysis revealed that while attendance was generally low, with an average of 35%, it had some influence on the choice of exam questions. The highest attendance rate was 84%, and the lowest was 5%. Most students opted for questions on Foster & Cauer Form and Two Port Network Analysis, with question five being the most attempted. This suggests a potential correlation between topics covered in class and their selection in exams, indicating the importance of in-person engagement for understanding complex concepts. The study concludes that while class attendance did impact question choice, other factors such as student motivation and participation likely play significant roles.

Keywords: Circuit Theory, Class Attendance, Exam Questions, Choice, Hybrid Parameters, Filters, Simulation

Introduction

As learning and teaching continue to evolve, there is a great need to investigate aspects of traditional course delivery which includes class attendance. The need to investigate the class attendance relationship is borne out of the need to understand the rationale of question selection between students who are well-known for high-class attendance compared to those who often have to miss out on classes. This study is broadly focused on investigating the root determinants impacting the level of performance for individual academic courses at the tertiary level. As part of several studies that have been conducted with respect to this theme, the approach in this work is to examine the relationship between the lectures/classes a student attends and how this impacts the choice of questions answered in the final examination. The specific case study selected is from a circuit theory course within an electrical engineering programme. To develop an in-depth understanding of the scope of this work, we first provide an understanding of the main terminologies used in this study, with respect to "attendance", and "academic performance."

The concept of class attendance is often streamlined traditionally as on-site participation in class. However, given advances in technology and drastic changes that conventional University settings have been forced to make, the definition of attendance can no longer be solely interpreted as In-person (Gardner et al., 2022). It now includes fully online participation for online courses as well as online participation in a hybrid setting (Jones, 2022; Ha et al., 2024; Karnik et al., 2020). Note that this depends on the level of practical involvement required for the class sessions as seen with laboratory work. For class sessions that do not include practical laboratory work, surveys indicate a wide-ranging performance among learners when given alternative options that include pre-/post-recorded class sessions, mentor sessions, and tutorial sessions where they can review the taught session (Ontong et al., 2020; Almutawa & Suwaidan, 2020). While some students see this opportunity to review the concept others may not be favourably disposed hence resulting in less than expected performance as they often miss out of vital concepts.

As indicated in (Almutawa & Suwaidan, 2020; Swanepoel et al., 2021, Enochoghene & Enochoghene, 2024),

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

students' attendance can be highly impacted by various factors such as "inappropriate lecture-schedule timing", lecture clashing with sessions from other subjects/courses, health reasons, part-time jobs, poor lecture delivery by lecturers, and belief that online resources are sufficient. While the reasons are valid, the goal-orientation focus of a student determines their preferred choice of prioritization (Gardner et al., 2022). Despite the several benefits of In-person attendance (Ta et al., 2020), studies have shown that forced attendance does not imply that there will be an average increase in student grades.

Previous studies (Goulas et al., 2023; Kilnani, 2023; Suárez, 2021; Emahiser et al., 2021; Büchele, 2021) on the relationship of attendance and students' performance have highlighted a range of unique peculiarities in terms of course of study and other situation around participatory levels of the students. For example, (Goulas et al., 2023) suggest that higher performances were observed for top-performing students if they are allowed to skip classes when possible, providing them a level of autonomy to prioritize and focus better. A study (Büchele, 2021) highlights that there is at best only a weak positive correlation between attendance and performance, stressing that it is rather the level of participation in the classes that matters. Suárez (2021) reports a significant negative impact on academic performance caused by absenteeism mostly on first-year students at a European University who were probably still adjusting to the University settings and new concepts being taught. The study on medical students (Khilnani, 2023) showed a strong correlation between attendance and percentage marks obtained. According to (Ancheta et al., 2021) students' class attendance is very critical in terms of learning as it affects students' achievement. Kauffman et al. (2018) concluded that different facets of self-regulated learning predict attendance, with highly confident students being the least likely to attend, and that attendance at in-class sessions is no longer a good marker for performance. The wide range of results from these studies indicates that there may be several factors in play that have not been fully quantified, particularly in terms of the type of course being studied.

To better understand the relationship between attendance and academic performance, rather than focus solely on general performance, this work attempts to draw a correlation with the choice of questions the learners (students) select in the examination. We investigate the relationship between class attendance in a heavily mathematical and calculation-based course that circuit theory and the final examination scores, as well as the choices of questions answered by candidates and the possible reasons for such choices. In a typical examination, candidates are more likely to gravitate towards questions that appear simpler to them. Because how simple or difficult a question is perceived is not entirely an intrinsic thing. It could be due to factors such as teacher-student engagement on the subject matter etc. Insight into this can provide lessons for future delivery and participation in such a course as well as give insight into subject areas that are more critical with respect to in-person delivery. This study aimed to ascertain the relationship between class attendance and the choice of questions answered in engineering coursework at a Nigerian University. The objectives were to develop a set of modular frameworks in line with the existing framework to enhance teaching and learning. Also, to implement the developed framework within the required semester period of thirteen (13) weeks. Furthermore, to curate data on students' performance in the final examination and lastly, to analyse curated data statistically in order to ascertain existing relationship(s) with the stated aim.

Materials and Methods

Context of Study

The course, a second in circuit theory, was in four modules: Foster & Cauer form of LC Network Realisation, Two Port Network Synthesis, Filter Fundamentals, and State Variable Method to Circuit Analysis, as shown in Table 1. A total of thirteen (13) registered students, who attended at least one class and sat for the final semester exam were used in this study.

Table 1: Course Modules and Breakdown

MODULE	TOPICS / AREA COVERED	DESCRIPTION
1.	Foster and Cauer Form of LC Network Realisation	Foster 1 and Cauer 1 were covered. Forms II were only highlighted.
2.	Two Port Network Analysis and Synthesis	Hybrid parameters, z-parameters and y-parameters are covered under analysis. Synthesis of LC, RLC networks was covered as well.
3.	Filter Fundamentals	Introduction to Passive filters and types covered.
4.	State Variable Method to Circuit Analysis	Writing of state-space equations to represent simple circuits.
5.	Computer Aided Analysis of Circuits	Use of SPICE for simple passive networks

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

Teaching and Examination Strategies

Teaching and Learning Strategies

Being a three-unit course, it was entitled to three (3) hours each week for the entire semester. This required mastery of both lecture delivery as well as class management and student follow-up. A pre-course assessment assignment was administered to the students to ascertain their understanding of the foundation topics such as Kirchoff's Laws (Voltage and Current), the Superposition Principle, etc. Other tools included regular attendance, assignments, and continuous assessments. Furthermore, an EPBL approach (Jalani et al., 2015) was opted for in order to strike a balance between keeping students' interest and motivation high as well as the communication of key concepts. This involved solving example problems in class and explaining the theoretical constructs behind the steps taken as well as the implications of the solutions arrived at. A typical problem utilised is: For the h-parameter equivalent network (shown in Figure 1) find the voltage gain. Assume load resistance to be R_L. To keep participants' motivation high, reference was made to practical scenarios using a typical example of the BC547B bipolar junction transistor, which was readily accessible. The use of hybrid parameters in generating device datasheets was highlighted during one of the class sessions. This was to help situate and give a physical feel to the concept.

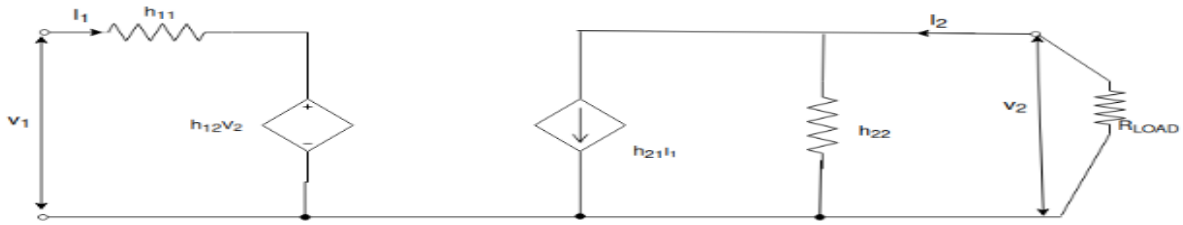

Figure 1: H-parameter equivalent network

Examination Strategies

Although the course involved continuous assessments, they do not form part of this study which focused only on the final examination. The final examination was designed around the topics covered as shown in Table 2. Careful choice of questions was made to ensure adequate representation of each topic and the specific aspects taught.

Table 2: Final Examination Question Distribution

Question Number		Topic(s) Covered
1	a	Foster and Cauer Form of LC Network Realisation
	b	Filter Fundamentals
	c	Two Port Network Analysis and Synthesis
2	a	Foster and Cauer Form of LC Network Realisation
	b	Filter Fundamentals
	c	Two Port Network Analysis and Synthesis
3	a	Two Port Network Analysis and Synthesis
	b	Computer Aided Analysis of Circuits
	c	Filter Fundamentals
4	a	State Variable Method to Circuit Analysis
	b	Foster and Cauer Form of LC Network Realisation
	c	Foster and Cauer Form of LC Network Realisation
5	a	Foster and Cauer Form of LC Network Realisation
	b	Two Port Network Analysis and Synthesis
6	a	Foster and Cauer Form of LC Network Realisation
	b	State Variable Method to Circuit Analysis

Data Collection and Analysis Strategies

Firstly, the relevant data which were the scores of the participants under study were collated by the use of Libre Office Calc which has been reported as having security advantages as functional as Microsoft's Excel (Oualline & Oualline, 2018). Secondly, the use of probability tools for analysis of the relationship between attendance and choice of question in the examination was decided (Ruiz et al., 2020; Tran & Gershenson, 2021; Tetteh, 2018).

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

The primary probability tool used was that of the probability of two events A (attendance) and B (choice of a particular question) occurring. A simplified usage of equation (1) was made.

$$P(A \cap B) = P(A) \times P(B) \quad (1)$$

Where P(A) is the probability of attendance taking place, P(B) is the probability of choosing a particular question and P(A∩B) is the combined probability of attendance and choice.

Results

The results obtained from this study (Table 3 – Table 6 and Figure 2 – Figure 3) are presented in this section and Appendix A.

Table 3: Attendance - Question Choice Distribution

Participant	Attendance (%)	Questions Attempted
A	26	3,4,5,6
B	11	3,4,5,6
C	47	1,4,5,6
D	5	1,4,5,6
E	84	1,4,5,6
F	53	1,2,5
G	21	1,4,5,6
H	42	1,3,5,6
I	42	1,2,5
J	63	1,4,5,6
K	5	1,2,3,5
L	47	1,4,5,6
M	11	1,3,5,6

Table 4: Probability of Choice of Question

Question	**1**			**2**			**3**			**4**			**5**		**6**	
Sub Question	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b
Probability per sub-question	0.79	0.79	0.79	0.21	0.21	0.21	0.36	0.36	0.36	0.57	0.57	0.5	0.93	0.93	0.71	0.71
Total Probability per question	0.01			0.01			0.05			0.16			0.86		0.51	

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

Table 5: Probability of Attendance and Answering Questions

		Question Number & Probability per Question					
	Attendance Probability	1 0.01	2 0.01	3 0.05	4 0.16	5 0.86	6 0.51
A	0.26	0	0	0.01	0.04	0.22	0.13
B	0.11	0	0	0.01	0.02	0.09	0.06
C	0.47	0	0	0.02	0.08	0.4	0.24
D	0.05	0	0	0	0.01	0.04	0.03
E	0.84	0.01	0.01	0.04	0.13	0.72	0.43
F	0.53	0.01	0.01	0.03	0.08	0.46	0.27
G	0.21	0	0	0.01	0.03	0.18	0.11
H	0.42	0	0	0.02	0.07	0.36	0.21
I	0.42	0	0	0.02	0.07	0.36	0.21
J	0.63	0.01	0.01	0.03	0.1	0.54	0.32
K	0.05	0	0	0	0.01	0.04	0.03
L	0.7	0.01	0.01	0.04	0.11	0.6	0.36
M	0.11	0	0	0.01	0.02	0.09	0.06

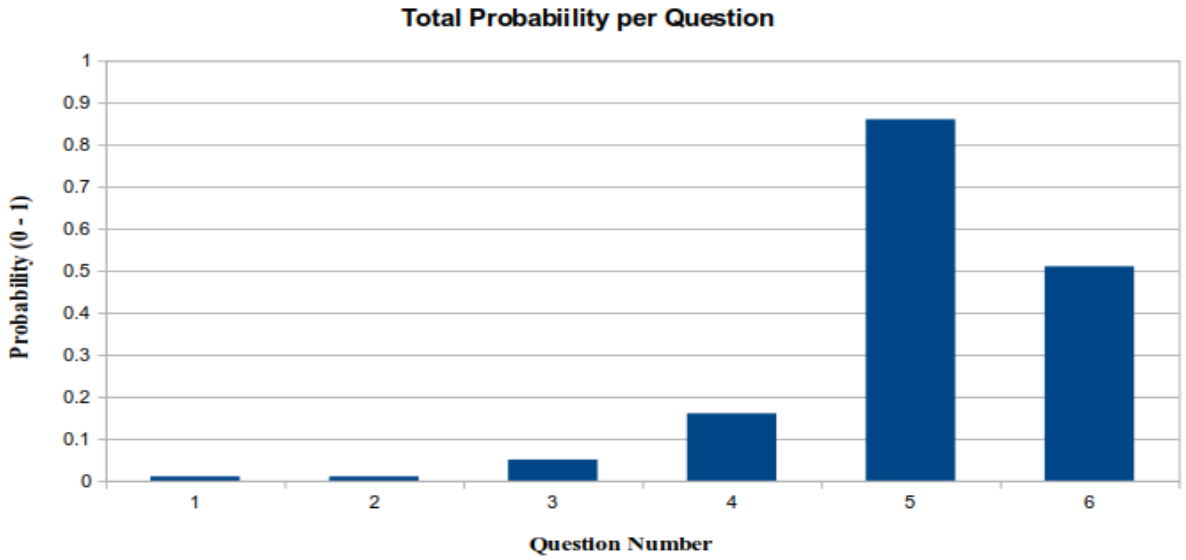

Figure 2: Total Probability per Question

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

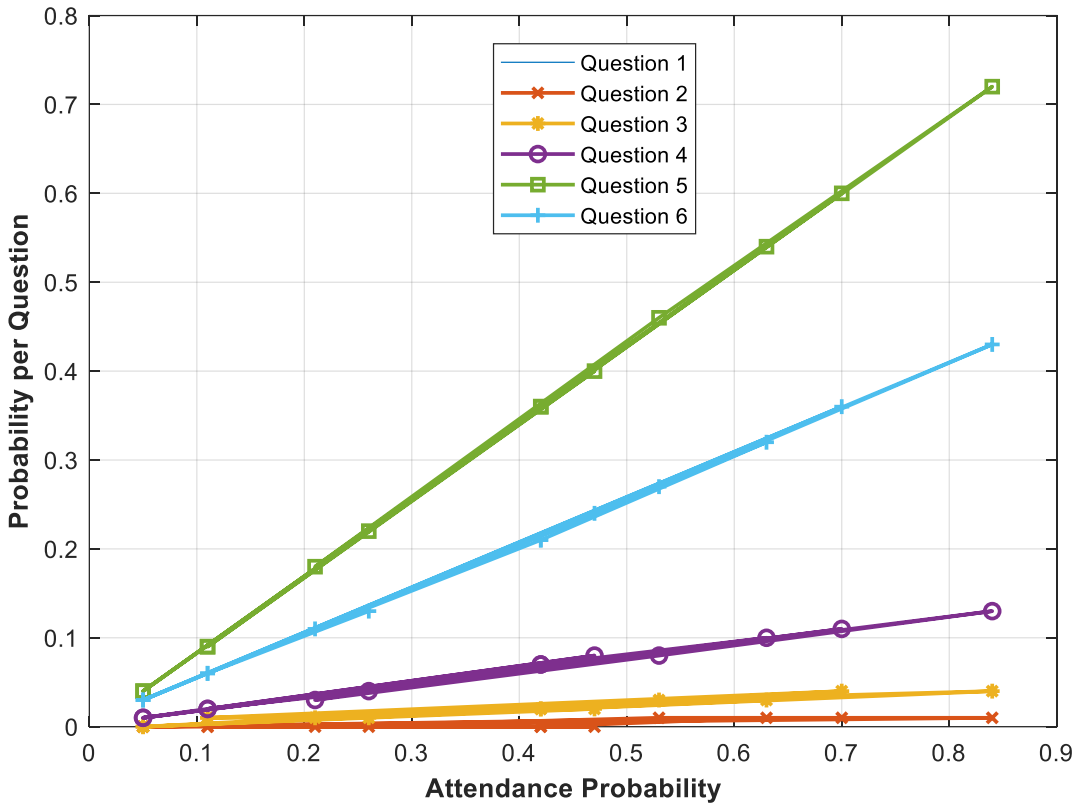

Figure 3: Probability per Question vs Attendance Probability

Discussion

The final exam on which this study is hinged consisted of six (6) questions, out of which the students were required to answer any four (4). A total score of 60 Marks was obtainable. Table 6 (see Appendix A) shows the details of the sub-questions and consequently questions that were answered by the candidates. It also shows in the last column the attendance as a probability. The penultimate column displays it as percentages (%). The probabilities were obtained by simply dividing the percentage attendance by 100. Analysis of the results in Table 3 shows that the highest attendance was 84% by participant E. The average attendance was 35% while the mode attendance was approximately 5%. These stats overall indicate poor attendance (and much less participation). A median attendance of approximately 42% was observed which again corroborated the poverty of attendance for the course. Table 3 further shows that question five (5) was answered by all the participants. This question was on Foster & Cauer Form of LC Network Realisation and Two Port Network Analysis & Synthesis. The least attempted question was question number two (2) which had three (3) sub-questions with the same distribution as question five plus a sub-question on Filter Fundamentals. A median of 8.5 is indicative that a higher density of answers to questions occurred for questions five and six than for questions one, two and three. Both of them shared three topics of which Filter Fundamentals and Computer-Aided Analysis of Circuits were the only topics of the entire course gamut that were absent.

Table 3 shows the Attendance - Question Choice Distribution and Table 4 the Probability of Choice of Question which combined, generate Table 5 which shows the Probability of Attendance and Answering Questions. From Figure 3 and Table 5, for each question, a directly proportional relationship was observed between the probability of attending class and that of attempting a question for the study sample. However, the slope was greatest for question 5 (Foster & Cauer form of LC network realisation and Two Port Analysis & Synthesis, see Table 2), and least for question 2 which had Filter fundamentals added to the same topics in question 5. The correlation coefficients between attendance probability and each of the six questions provide insight into the linear relationship between the two sets of data. Questions 1 and Question 2, both have a correlation coefficient of 0.8138, indicating a strong positive correlation. This suggests that as attendance probability increases, the probabilities for Questions 1 and 2 also tend to increase in a strongly linear fashion. The identical values imply that Questions 1 and 2 likely have very similar patterns relative to attendance. With Question 3, the correlation coefficient is 0.9719, which indicates an even stronger positive correlation. This suggests that the relationship between attendance probability and Question 3 is almost perfectly linear, with higher attendance probabilities

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.

closely associated with higher probabilities for this question. With Question 4, the coefficient of 0.9976 shows an almost perfect linear relationship. This indicates that the probability for Question 4 increases in near-perfect sync with attendance probability. For Question 5, the correlation coefficient is 1.0000, which is a perfect positive correlation.

This implies that the probability for Question 5 is exactly linearly related to the attendance probability. An increase in attendance probability directly translates to a proportionate increase in the probability for Question 5. For Question 6, a coefficient of 0.9998 was obtained. This relationship is also extremely close to a perfect positive correlation. This shows that the probabilities for Question 6 are almost perfectly linearly related to the attendance probability. The correlation coefficients for all questions are very close to or equal to 1, which indicates strong or perfect positive linear relationships between attendance probability and the probabilities for all questions. This high level of correlation suggests that the variation in attendance probability can explain almost all of the variation in the question probabilities. Specifically, as the attendance probability increases, the probabilities for all questions consistently and predictably increase as well. These results imply that attendance is a significant predictor of the probability of a particular question occurring, especially for Questions 5 and 6, where the relationship is nearly perfect.

Conclusion

Summarily, we state that although class attendance did appear to have some influence on the choice of questions, it was not conclusive. This study attempted to observe attendance and choice in exam questions in an offering taught using example problem-based learning. The findings although not conclusive are indicative of the need to adapt creative approaches such as increased use of hybrid classes and multi-faceted teaching and learning strategies.

Recommendations

1. There is a need to study the more contributory factors such as students' motivation, aptitude and class participation using a more robust assessment set of tools. This is in order to identify a more appropriate lecture content and delivery strategy mix.
2. In the light of diminishing attendance and participation in classes, proactive and well-informed changes to traditional lecture formats are needed for teaching reasonably abstracted courses like circuit theory.
3. Further studies should involve relating the choice of questions to the actual performance of the students as this will provide good feedback for the implementation of more effective teaching and learning strategies in future course cohorts.
4. It is also recommended that future studies with a larger number of students and over a three (3) to five (5) year period are conducted. Such studies should also incorporate insight into the difficulty/challenge levels for each topic studied.

References

Almutawa, A., & Suwaidan, M. S. (2020). Students' perceptions regarding classroom attendance and its impact on their academic performance: evidence from a developing country. *Education + Training*, *62*(6), 693–706. https://doi.org/10.1108/et-10-2019-0233

Ancheta, R. F., Daniel, D., & Ahmad, R. (2021). EFFECT OF CLASS ATTENDANCE ON ACADEMIC PERFORMANCE. *European Journal of Education Studies*, *8*(9). https://doi.org/10.46827/ejes.v8i9.3887

Büchele, S. (2020). Evaluating the link between attendance and performance in higher education: the role of classroom engagement dimensions. *Assessment & Evaluation in Higher Education*, *46*(1), 132–150. https://doi.org/10.1080/02602938.2020.1754330

Emahiser, J., Nguyen, J., Vanier, C., and Sadik, A. (2021). Study of live lecture attendance, student perceptions and expectations. *Medical Science Educator, 31*(2), 697–707. https://doi.org/10.1007/s40670-021-01236-8

Enochoghene S.O.,& Enochoghene, A.E. (2024). Tackling the e-waste problem through innovative teaching of electrical and electronic engineering. *Nigerian Journal of Environment and Health, 4.* Print Version.

Gardner, G., Feldman, M., Santen, S. A., Mui, P., and Biskobing, D. (2022). Determinants and outcomes of in-person lecture attendance in medical school. *Medical Science Educator, 32*(4), 883–890. https://doi.org/10.1007/s40670-022-01581-2

Goulas, S., Griselda, S., & Megalokonomou, R. (2023). Compulsory class attendance versus autonomy. *Journal of Economic Behavior & Organization, 212*, 935–981. https://doi.org/10.1016/j.jebo.2023.06.018

Ha, W., Ma, L., Cao, Y., Feng, Q., & Bu, S. (2024). The effects of class attendance on academic performance: Evidence from synchronous courses during Covid-19 at a Chinese research university. *International*

Journal of Educational Development, 104. https://doi.org/10.1016/j.ijedudev.2023.102952
https://doi.org/10.3389/feduc.2022.906601

Jalani, N. H.,& Sern, L. C. (2015). Efficiency comparisons between example-problem-based learning and teacher-centered learning in the teaching of Circuit Theory. *Procedia - Social and Behavioral Sciences, 204*, 153-163. https://doi.org/10.1016/j.sbspro.2015.08.128

Jones, T. J. (2022). Relationships between undergraduate student performance, engagement, and attendance in an online environment. *Frontiers in Education, 7*.

Jones, T. J. (2022c). Relationships between undergraduate student performance, engagement, and attendance in an online environment. *Frontiers in Education, 7*. https://doi.org/10.3389/feduc.2022.906601

Karnik, A., Kishore, P., & Meraj, M. (2020). Examining the linkage between class attendance at university and academic performance in an International Branch Campus setting. *Research in Comparative and International Education, 15*(4), 371–390. https://doi.org/10.1177/1745499920958855

Kauffman, C. A., Derazin, M., Asmar, A., & Kibble, J. D. (2018). Relationship between classroom attendance and examination performance in a second-year medical pathophysiology class. *Advances in Physiology Education, 42*(4), 593–598. https://doi.org/10.1152/advan.00123.2018

Khilnani, A. K. (2023). Correlation between attendance and performance of undergraduate medical students in otorhinolaryngology: A retrospective cohort study. *Indian Journal of Otolaryngology and Head and Neck Surgery, 75*(4), 3349–3352. https://doi.org/10.1007/s12070-023-03995-9

Ontong, J. M., Bruwer, A., & Dreyer, J. A. (2020). An investigation of the interaction of class attendance, tutorials, mentor sessions, video presentations and external tutoring, and the effect thereof on student performance. *South African Journal of Higher Education, 34*(4). https://doi.org/10.20853/34-4-3531

Oualline, S., & Oualline, G. (2018). *Practical Free Alternatives to Commercial Software*. https://doi.org/10.1007/978-1-4842-3075-6

Ruiz, S., Urretavizcaya, M., Rodríguez, C., and Fernández-Castro, I. (2020). Predicting students' outcomes from emotional response in the classroom and attendance. *Interactive Learning Environments, 28*(1), 107-129. https://doi.org/10.1080/10494820.2018.1528282

Suárez, M. M., & Tejero, N. C. (2021). Impact of absenteeism on academic performance under compulsory attendance policies in first to fifth year university students. *Revista Complutense De Educación*, *32*(4), 627–637. https://doi.org/10.5209/rced.70917

Swanepoel, C., Beukes, R., and Yu, D. (2021). Investigating factors influencing class attendance and performance of first-year Economics students. *South African Journal of Higher Education, 35*(4). https://doi.org/10.20853/35-4-4129

Ta, A., Neumiller, J. J., Kim, A. P., Remsberg, C. M., & Gothard, M. D. (2020). The effect of pharmacy students' attendance on examination performance in two sequential Active-Learning Pharmacotherapy courses. *American Journal of Pharmaceutical Education, 84*(9), ajpe7749. https://doi.org/10.5688/ajpe7749

Tetteh, G. A. (2018). Effects of classroom attendance and learning strategies on the learning outcome. *Journal of International Education in Business, 11*(2), 195-219. https://doi.org/10.1108/JIEB-01-2017-0004

Tran, L., & Gershenson, S. (2021). Experimental estimates of the student attendance production function. *Educational Evaluation and Policy Analysis, 43*(2), 183-199. https://doi.org/10.3102/0162373720984463

Appendix

Table 6: Detailed Answer Choice and Attendance sheet

Question →	1			2			3			4			5		6			
Sub Question →	a	b	c	a	b	c	a	b	c	a	b	c	a	b	a	b	Attendance (%)	Attendance (Probability)
Participant ↓																		
A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	A	A	A	26	0.26
B	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	A	A	A	11	0.11
C	A	A	A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	47	0.47
D	A	A	A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	5	0.05
E	A	A	A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	84	0.84
F	A	A	A	A	A	A	NA	NA	NA	NA	NA	NA	A	A	NA	NA	53	0.53
G	A	A	A	NA	NA	NA	NA	NA	NA	A	A	NA	A	A	A	A	21	0.21
H	A	A	A	NA	NA	NA	A	A	A	NA	NA	NA	A	A	A	A	42	0.42
I	A	A	A	A	A	A	NA	NA	NA	NA	NA	NA	A	A	NA	NA	42	0.42
J	A	A	A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	63	0.63
K	A	A	A	A	A	A	A	A	A	NA	NA	NA	A	A	NA	NA	5	0.05
L	A	A	A	NA	NA	NA	NA	NA	NA	A	A	A	A	A	A	A	47	0.7
M	A	A	A	NA	NA	NA	A	A	A	NA	NA	NA	A	A	A	A	11	0.11
N=13	11	11	11	3	3	3	5	5	5	8	8	7	13	13	10	10	13	13

Table Legend

A	Answered
NA	Not Answered

Cite this article as:
Enochoghene., S.O., Ayanlade., S.O., & Olayiwola, O.I (2024). Assessing student attendance and question selection in a circuit theory course. FNAS Journal of Applied and Physical Sciences, 2(1), 72-79.