

Assessment of Flipped Classroom Learning Perceptions of Medical Students at Gondar University, College of Medicine and Health Sciences

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Abstract

Background: Instructors as well as pupils can concentrate more on higher-order-thinking-abilities in flipped-classrooms. Students also become active learners with the aid of this teaching technique, and the role of the teacher is transformed into that of a facilitator.

Objective: The study's goals were to learn what the medical students at Gondar University's College of Medicine and Health Sciences thought of it and to provide practical guidance on the benefits of flipped instruction for future use to both private and public universities.

Methods: The descriptive method was applied in this study. Using a convenience sample technique, 350 medical students from the University of Gondar (127, 88, 84, and 51) from the second, third, fourth, and fifth year respectively were selected. Version 25 of SPSS (Statistical Package for the Social Sciences) was used to analyze survey data. The data were examined using the mean, standard deviation, and two-way ANOVA. In higher education, flipped classrooms, which help students improve their higher-order-thinking and problem-solving abilities.

Results: This study had 350 participants. 155 (44.3%) of them were women, and 195 (55.7%) were men. The perceptions of Gondar University medical students about flipped classroom learning varied statistically significantly according to study year and gender, with p-values of 0.001 and 0.035, respectively. Furthermore, with p-values of 0.0001 and 0.009, respectively, fifth-year students perceive flipped-classroom-learning better than second- and third year-students.

Conclusion: The results of the current study show that flipped classroom training is well-liked by Gondar University medical students. It also demonstrated that opinions among medical students about the study year and sex variables differ significantly, with male students favoring the latter. Additionally, longer study times lead to more favorable opinions about the adoption of new technologies. Thus, this research will contribute to a better implementation of flipped classroom learning at both public and private universities.

Keywords: flipped; classroom; flipped learning; new technology; medical students; gondar university

Introduction

The higher education sector, which is embodied by colleges and universities all over the world, aims to emphasize the need of adopting new teaching strategies like the flipped learning strategy, in addition to the need of inventive thinking. There isn't much written about classroom flipping at the university level, according to the associated literature study [1]. The majority of the lecture, in the researcher's opinion, is squandered on imparting rudimentary knowledge rather than addressing the higher-order-thinking-abilities that members of the 21st - century-society need to possess [2-4].

In many higher education institutions throughout the world, the student-centered learning approach has changed teaching methods and demonstrated

notable learning increases in recent decades. Based on the ideas of "active" and "discovery" learning, more adaptable, student-centered classroom teaching strategies have been promoted throughout the past 30 years [5]. On the other hand, the teacher-centered learning paradigm is still popular and widely adopted in many developing nations, including Ethiopia. In lecture-based training, the instructor actively contributes to the classroom's knowledge distribution. Information travels in a single path during transmission. Students learn passively in such an atmosphere, depending instead on memorization, listening, and repeating what they have been taught [6, 7].

The concept of the flipped classroom was inspired by instances in which students had to miss classes due to unforeseen circumstances, such as illness or family issues. Additionally, flipped classrooms are an excellent way to address various instances of student misinterpretation, misunderstanding, and topic ambiguity in the classroom [8, 9]. The concept of the "flipped classroom" was first implemented by Jonathan Bergmann and Aaron Sams, who produced numerous instructional videos to help their students grasp the essential ideas of brand-new lessons and to shed light on any ambiguity surrounding certain subjects. This allowed students to advance their learning by simulating real-life scenarios [10].

Both teachers and students can focus more on higher-order-thinking skills when they use flipped learning, in which the instructor gives students background information before they arrive at the class. Teachers must strike a balance between three key areas to make flipped learning successful: content delivery, pedagogical expertise, and technology integration, which involves using technology in the classroom for instructional purposes [11]. With the help of this teaching strategy, students also become active learners, and the teacher's job description is changed to that of a facilitator, who starts class discussions to make sure all students grasp the material, in order to facilitate meaningful and successful learning [12]. Flipped-classroom-Theory states that assignments, tests, multimedia, and webpages can help students prepare for the class [13].

Even with all of the advantages of flipped learning, the effectiveness of this approach in the teaching and learning process ultimately depends on the perceptions of the students. The benefits of the flipped classroom model on improved attendance and academic achievement have been shown in earlier research [14-16]. Additionally, a plethora of research indicates that the flipped classroom model and interactive learning techniques enhance student satisfaction [17-19]. Nevertheless, a few studies found that students' performance in the flipped classroom was not improved by it [20, 21] or that students' satisfaction with the format was significantly lower than that of the regular lecture [22].

There are four components to the flipped classroom approach. It is stated that instructors must take into account these four factors in order to implement this technique [23]. The following is an explanation of the features of this technique, whose English correspondence is "Flip," using the initial letters [24].

“F” (Flexible Environment): It denotes the availability of flexible learning times and locations.

“L” (Learning Culture): The teacher serves as the source of knowledge in the conventional teacher-centered approach. The teacher-centered approach gives way to the student-centered approach in the flipped classroom model.

“I” (Intentional Content): Teachers that employ flipped classrooms consider ways to help students improve cognitive understanding as well as how education might help them become more fluent.

“P” (Professional Educator): Teachers who use flipped classrooms have greater responsibility than those who use traditional methods. Teachers in flipped classrooms continually monitor their students during the lesson, assess their academic performance, and provide comments.

Relevance of the research: The impact of certain demographic criteria, such as age, sex, or economic background, on students' experiences with the flipped approach, is not well-established [15]. Additionally, there is criticism of the approaches used in earlier studies to assess the effects of flipped classrooms, citing a lack of rigor and sometimes ambiguous findings [25]. Other potential outcomes, such as improved learning experiences, problem-

solving, critical-thinking abilities, and teamwork, should also be included, even though some research compares improvements in academic performance by taking students' grades into account [15, 26].

Since there hasn't been any published research on flipped classroom instruction in Ethiopia up to this point, the study's objectives were to find out how medical students at Gondar University's College of Medicine and Health Sciences felt about it and to offer actionable advice to those involved in higher education both private and public about the value of flipped instruction going forward. Both teachers and students will benefit from this study, as it will give teachers new and essential learning styles that can inspire and encourage the way the material is delivered, as well as encourage students to become more engaged once the material suits their requirements and preferences. Additionally, this study will highlight the significance of flipped classrooms for decision-makers.

Methods

Study Period and Area: The study was conducted at University of Gondar, College of Medicine and Health Science, found northwestern, Amhara region, Ethiopia, which is 734 km far from the capital city of Ethiopia (Addis Ababa). The study, was conducted from May 1, 2023 to August 30, 2023.

Study Design: A structured questionnaire served as the basis for conducting the cross-sectional investigation.

Source Population: All under graduate health science students at University of Gondar, College of Medicine and Health Science were used as a source of population for this study

Study Population: The target audience was chosen from medical students currently enrolled in the University of Gondar's College of Medicine and Health Science

Sample Size and Sampling Method: The convenience sampling approach was used in this study. The primary criterion for selection was availability, and 350 medical students (127, 88, 84, and 51 from the second, third, fourth, and fifth years, respectively) were chosen. The researcher gave the questionnaire to the participants directly.

Instrument: The researcher used previous research and pertinent literature to build a thirty-item questionnaire [27-30]. The questionnaire for this study included a five-level Likert-item with the following values: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. The values were 1, 2, 3, 4, and 5, respectively. There were two sections to the survey: The first concerned demographic data, and the second focused on students' opinions on flipped classrooms. The researcher gave the study's volunteer sample an explanation of what flipped classrooms entailed before distributing the questionnaire. The questionnaire was evaluated by the professionals. Their feedback was included while creating the final draft of the questionnaire.

Data Analysis: The researcher devised a questionnaire to ascertain students' opinions regarding flipped classes. Survey data were analyzed using SPSS (Statistical Package for the Social Sciences) version 25. Two-way ANOVA, the mean, and the standard deviation were used to examine the data.

Ethical clearance and participation consent

The University of Gondar's College of Medicine and Health Science, School of Pharmacy, received ethical clearance (SOP/146/2023) on the date of May 1, 2023 from its ethical review board. The objectives and importance of the study were explained to the participants. Their names and other personally identifying information were withheld in order to preserve the anonymity of the data, after their informed written consent was obtained.

Results

There were 350 participants in this research. Of them, 155 (44.3%) were female and 195 (55.7%) were male. These individuals were second, third, fourth-, and fifth-year medical students: 127 (36.3%), 88 (25.1%), 84 (24.0%), and 51 (14.6%), respectively. Fifth-year medical students had the highest mean score on the perception of flipped classrooms (112.1935 for males and 110.9500 for females) (Table 1).

Study year	Sex	Mean	Std. Deviation	N
Second year	Male	107.0847	7.06689	59
	Female	105.7059	7.61589	68
Third year	Male	108.0192	6.21980	52
	Female	107.0000	8.30834	36
Fourth year	Male	109.6604	8.25307	53
	Female	106.1613	6.78772	31
Fifth year	Male	112.1935	6.24724	31
	Female	110.9500	7.61906	20

Table 1: The study year-specific means and standard deviations of the participants' perceptions of flipped-classroom-learning by sex.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Study year	948.952	3	316.317	5.889	.001
Sex	240.465	1	240.465	4.477	.035
Study year * sex	78.661	3	26.220	.488	.691
Error	18369.544	342	53.712		
Corrected Total	19781.214	349			

Table 2: Results of a two-way ANOVA depending on research year and sex about participants' perceptions of flipped-classroom-learning at Gondar University.

Based on study year and sex factors, Figure 1 displays the medical students' opinions of flipped-classroom-learning at Gondar University. Male medical students see flipped-classroom-learning more favorably than female medical students do, as the study year lengthens (Figure 1).

Discussion

Table 2 demonstrated that, for the sex variable, there were statistically significant variations in the opinions of Gondar University students about flipped-classroom-learning, with a p-value of 0.035. The opinions of male pupils about flipped-classroom-instruction were more favorable than those of female students. This indicates, that male students were more likely to use new technologies and preferred learning strategies that supported informal learning. Our findings ran counter to those of earlier research [31, 32]. It could allude to the influence of culture. Furthermore, there is still a gender disparity in the use of technology, favoring men. Even with the important steps that higher education institutions have taken to close that gap, men continue to use new technology more frequently than women, especially in developing nations. The researcher's experience teaching flipped classrooms led us to notice that female students were less likely to participate and share in online debts. This can be simply explained by the fact that, because of societal norms and cultural beliefs, female students are more reticent to voice their opinions.

Regarding the study year, there are statistically significant changes in the way Gondar University students perceive flipped classroom learning, a p-value of 0.001. This study demonstrated that students at Gondar University experience different circumstances. Additionally, the facilities and infrastructure that students used varied, which validates the findings of

There were statistically significant differences in how medical students at Gondar University perceive flipped classrooms based on study year ($F(3,342) = 5.889, p = 0.001$) and gender ($F(1,342) = 4.477, p = 0.035$). However, based on a research year and sex combination, there was no statistically significant difference in the perspective of flipped classrooms (Table 2).

earlier research [33]. In general, students in Gondar University came from in different culture and environment.

Tukey HSD Post Hoc Test showed fifth year students have better perception for flipped classroom learning as compared to second year and third year students with $p = 0.0001$ and $p = 0.009$, respectively. One explanation could be that longer study terms lead to more favorable perceptions towards the adoption of new technologies. As the length of the study year increases, so too will the students' participation in assigned work, teamwork with teachers and other students, meaningful learning, active learning, effective participation, and active engagement in the classroom. By transferring knowledge outside of the classroom, the students' past knowledge can offer chances to customize the learning process and learning styles.

Study Recommendations and Limitations

This investigation is subject to many restrictions. Even though it's easy, the study's simple sample approach limits how broadly the conclusions may be applied. The new study only uses a descriptive methodology. Actually, the study's primary focus was on how Gondar University students felt about the flipped classroom model of instruction. More quasi-experimental research is required to determine, how flipped classroom instruction students' performance affects. Additionally, more research on the actual state of flipped-classroom-implementation in Gondar University's many departments is needed. This study suggested that the flipped classroom approach be used and embraced in all facets of higher education's student instruction. Incorporating female students into training courses is another way to encourage them to adopt the flipped classroom approach.

Conclusion

The results of the current study show that flipped classroom training is well-liked by Gondar University medical students. It also demonstrated that opinions among medical students about the study year and sex variables differ significantly, with male students favoring the latter. Additionally, longer study times lead to more favorable opinions about the adoption of new technologies. Thus, this research will contribute to a better implementation of flipped classroom learning at both public and private universities.

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Consent for publication

Not relevant

Availability of data and materials

All the data generated during this study included within the article.

Competing interests

No competing interests existed.

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Author's contributions

I committed to handling every aspect of the project, including data analysis, article drafting and revision. Additionally, I approved the published version in its whole.

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References

1. Roach T. (2014). Student perceptions toward flipped learning: new methods to increase interaction and active learning in economics. *International review of economics education*.; 17:74-84.
2. McGoldrick K, Rebelein R, Rhoads JK, Stockly S. (2010). Making cooperative learning effective for economics. *Teaching innovations in economics: Strategies and applications for interactive instruction*.:65-94.
3. Aljaraideh Y. (2019). Students' perception of flipped classroom: A case study for private universities in Jordan. *JOTSE: Journal of Technology and Science Education*.;9(3):368-377.
4. McGoldrick K. (2012). Using cooperative learning exercises in economics. *International handbook on teaching and learning economics*.:57-67.
5. Greitzer FL, editor A cognitive approach to student-centered e-learning. proceedings of the human factors and ergonomics society annual meeting; 2002: SAGE Publications Sage CA: Los Angeles, CA.
6. Danker B. (2015). Using flipped classroom approach to explore deep learning in large classrooms. *IAFOR Journal of Education*.;3(1):171-186.
7. Elrayies GM. (2017). Flipped Learning as a Paradigm Shift in Architectural Education. *International Education Studies*.;10(1):93-108.
8. Halili SH, Zainuddin Z. (2015). Flipping the classroom: What we know and what we don't. *The online Journal of Distance Education and E-learning*.;3(1):15-22.
9. Zainuddin Z, Halili SH. International Review of Research in Open and Distributed Learning. *Flipped Classroom Research and Trends from Different Fields of Study*, 17 (3).
10. Tucker B. (2012). The flipped classroom. *Education next*.;12(1):82-83.
11. Koehler MJ, Mishra P, Cain W. What is technological pedagogical content knowledge (TPACK)? *Journal of education*. 2013;193(3):13-19.
12. Goh PSC. The Malaysian Teacher Standards: a look at the challenges and implications for teacher educators. *Educational Research for Policy and Practice*. 2012;11(2):73-87.
13. Karlsson G, Janson S. (2016). The flipped classroom: a model for active student learning. *From books to MOOCs*.:127-136.
14. Mason GS, Shuman TR, Cook KE. (2013). Comparing the effectiveness of an inverted classroom to a traditional classroom in an upper-division engineering course. *IEEE transactions on education*.;56(4):430-435.
15. O'Flaherty J, Phillips C. (2015). The use of flipped classrooms in higher education: A scoping review. *The internet and higher education*.; 25:85-95.
16. Tune JD, Sturek M, Basile DP. (2013). Flipped classroom model improves graduate student performance in cardiovascular, respiratory, and renal physiology. *Advances in physiology education*.;37(4):316-320.
17. Critz CM, Knight D. (2013). Using the flipped classroom in graduate nursing education. *Nurse educator*.;38(5):210-213.
18. Hung H-T. (2015). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning*;28(1):81-96.
19. Yeung K. (2014). Making 'the flip'work: Barriers to and implementation strategies for introducing flipped teaching methods into traditional higher education courses. *New Directions in the Teaching of Physical Sciences*. (10):59-63.
20. Bossaer JB, Panus P, Stewart DW, Hagemeyer NE, George J. (2016). Student performance in a pharmacotherapy oncology module before and after flipping the classroom. *American journal of pharmaceutical education*.;80(2):31.
21. McLaughlin JE, Griffin LM, Esserman DA, Davidson CA, Glatt DM, et al. (2013). Pharmacy student engagement, performance, and perception in a flipped satellite classroom. *American journal of pharmaceutical education*;77(9):196.
22. Strayer JF. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning environments research*.; 15:171-193.
23. Network FL. (2014). The four pillars of FLIP.
24. Network FL. Definition of flipped learning. 2014.
25. Goodwin B, Miller K. (2013). Research says/evidence on flipped classrooms is still coming in. *Educational leadership*.
26. Thai NTT, De Wever B, Valcke M. (2017). The impact of a flipped classroom design on learning performance in higher education: Looking for the best "blend" of lectures and guiding questions with feedback. *Computers & Education*.; 107:113-126.

27. Newman G, Kim J-H, Lee RJ, Brown BA, Huston S. (2016). The perceived effects of flipped teaching on knowledge acquisition. *Journal of Effective Teaching*.;16(1):52-71.
28. Afrilyasanti R, Cahyono BY, Astuti UP. (2016). Effect of flipped classroom model on Indonesian EFL students' writing ability across and individual differences in learning. *International Journal of English Language and Linguistics Research*.;4(5):65-81.
29. Nouri J. (2016). The flipped classroom: for active, effective and increased learning—especially for low achievers. *International Journal of Educational Technology in Higher Education*;13(1):1-10.
30. Khanova J, McLaughlin JE, Rhoney DH, Roth MT, Harris S. Student perceptions of a flipped pharmacotherapy course. *American journal of pharmaceutical education*. 2015;79(9):140.
31. Kenna DC. A study of the effect the flipped classroom model on student self-efficacy: North Dakota State University; 2014.
32. Aşıksoy G, Özdamlı F. (2016). Flipped classroom adapted to the ARCS model of motivation and applied to a physics course. *Eurasia Journal of Mathematics, Science and Technology Education*;12(6):1589-1603.
33. Adams AE, Garcia J, Traustadóttir T. (2016). A quasi experiment to determine the effectiveness of a “partially flipped” versus “fully flipped” undergraduate class in genetics and evolution. *CBE—Life Sciences Education*.;15(2):ar11.

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