



Effects of student-centered learning and formative assessment on first year students of a non-government college in Bangladesh

Md. Anisur Rahman*

Dhaka University,
BANGLADESH

Article Info

Article history:

Received: September 08, 2023

Revision: December 20, 2023

Accepted: December 27, 2023

Keywords:

Student centered learning;
Formative assessment; non-government college;
Professional development.

Abstract

Background: In the evolving landscape of education, student-centered learning approaches and formative assessments have gained prominence as key to enhancing the quality of higher education. This is particularly pertinent in Bangladesh, where traditional teaching methods are still prevalent, underscoring the significance of these strategies.

Aim: This research aims to explore the impact of implementing student-centered learning and formative assessment on first-year university students at a non-governmental university in Bangladesh, highlighting how these methods influence the learning process.

Method: Employing a qualitative approach, data was gathered through surveys conducted among fifteen first-year political science students at a non-governmental higher education institution in Bangladesh.

Results: The study revealed increased student engagement in understanding material and improved academic performance in classes that adopted student-centered approaches and formative assessments.

Conclusion: This research confirms that student-centered learning combined with formative assessment contributes positively to enhancing the quality of learning at the higher education level. It underscores the need for pedagogical improvements in Bangladesh to encourage broader implementation of these methods, which in turn could enrich the learning process and educational outcomes for students.

To quote this article: Rahman, Md. A. (2023). Effects of student-centered learning and formative assessment on first year students of a non-government college in Bangladesh. *Journal of Advanced Science and Mathematics Education*, 3 (2), 77 - 83.

INTRODUCTION

Non-governmental universities in Bangladesh have emerged in response to the expanding need for higher education (Ahmed, 2016). As a developing country with a large population, Bangladesh sees these non-governmental universities as a vital alternative to educational institutions. First-year university students face challenges as they transition from high school to a more independent academic environment (Cameron & Rideout, 2022; Duncheon, 2020). This shift involves adapting to higher academic expectations and expanding self-reliance in time management and learning (Ricks & Warren, 2021), necessitating a holistic approach that supports students not just academically, but also in personal and social development. Currently, Bangladesh's education system faces challenges in preparing the next generation. Several issues hinder the development of Bangladesh's education system. One of the most critical is the teaching and learning system (Mousumi & Kusakabe, 2021; Sarker et al., 2019; Shrestha et al., 2022). The teaching system tends to be teacher-oriented, where students passively receive information (Nawaz, 2019; Siddique, 2020), whereas global education systems are moving towards student-centered learning (Kaput, 2018; Wright, 2011). The Prime Minister of Bangladesh is also striving to develop the country's education system by adapting to dynamic changes in teaching and learning methods (Glennerster et al., 2011).

* Corresponding author:

Md. Anisur Rahman, Dhaka University, BANGLADESH.  anisrahmanfbsdu@gmail.com

The higher education level, the learning system needs transformation, as upon graduating, a student enters an increasingly competitive world. Student-centered learning is pivotal in maximizing their potential, enabling them to compete and succeed in the global era (Murray et al., 2011). This approach allows students to take an active role in their learning process. A key principle of this method is student autonomy, where they are free to explore topics based on their interests and initiate their learning journey (Hoidn & Reusser, 2020; Morel, 2021). It also emphasizes interaction, both between students and teachers and among peers. Students are given opportunities to apply what they learn in real-life situations, thereby deepening their understanding of the concepts taught (Doyle, 2023; Trinidad, 2020). Student-centered learning develops critical skills and encourages active student participation in the learning process (Partanen, 2020). This is crucial for building a sense of ownership and responsibility over their learning, ultimately enhancing student motivation.

In order to improve the teaching-learning process, instructors use formative assessment, a method to educational evaluation, to track students' learning progress and offer helpful feedback (Irons & Elkington, 2021). It entails providing regular feedback to students in order to help them comprehend their progress and highlight areas that require improvement. In order to improve student learning, formative assessment also helps teachers to modify their lesson plans in response to the needs and advancement of their students (Wiliam, 2010). Additionally, it promotes student engagement through active involvement in peer and self-assessments, strengthening their accountability for learning (Wylie & Lyon, 2019). Formative assessment facilitates students' learning needs related to student-centered learning and makes the learning environment active and responsive. Therefore, it can help students develop the abilities and skills that they need when entering the world of work.

Several studies that have been conducted related to student-centered learning and formative assessment show positive results. Student-centered learning involves the active participation of students in learning involvement so that it can improve student achievement (Benlahcene et al., 2020; Koehler & Meech, 2022), learning outcomes (Jaiswal & Al-Hattami, 2020), learning motivation (Dewi et al., 2019; Partanen, 2020), as well as critical thinking skills (Apriliana et al., 2019; Partanen, 2020). Meanwhile, formative assessment shows a positive impact on mathematics achievement (Kültür & Kutlu, 2021). According to Yalçın (2017), with formative assessment, there is an increase in student learning achievement. In addition, Boström & Palm (2023) research also underlines the importance of formative assessment in improving mathematics learning outcomes, showing the broad impact of this approach in education. Of the several studies that have been conducted, no research has been found that focuses on student-centered learning combined with formative assessment, where the results of previous research show positive results. Therefore, this study was conducted to fill this gap and investigate the impact of formative assessment and student-centered learning on first-year students at a non-government college in Bangladesh.

METHOD

This research used a qualitative research method with a survey collecting data from fifteen first-year students majoring in political science at a non-government college in Bangladesh who have twelve (12) academic years of knowledge. Surveys were used to collect information about their experiences and perceptions regarding the implementation of student-centered learning and formative assessment in the learning process. In the data collection process, the survey was aimed at finding out more widely how these two methods influence students' academic development, learning, and professional outcomes, especially in preparing them to become professional teachers in the future.

To guarantee the accuracy of the analysis, researchers conducted interviews with three selected respondents, which aimed to provide more concrete results about the survey data collected. In addition, this research also considers ethical aspects of research by maintaining the confidentiality of respondent information and ensuring that all research subjects are involved in the research voluntarily and with a clear understanding of the research objectives and process. Through this student-centered approach and formative assessment, the researcher seeks to provide comprehensive information about the impact that occurs on higher education in Bangladesh, especially non-government higher education.

RESULTS AND DISCUSSION

This research will review three aspects of learning, namely instruction, class presentations, and group work. The learning plan for the topics to be discussed is explained in Table 1. Table 1 shows the number of class activities, duties and responsibilities of teachers and students, educational theories used, and duration of learning time.

Table 1. Learning Approach and Structured Learning Plan

Topics	Activities in the class	Teachers' function	Learner's function	Ideas or the theories	Time Table
Formation of Bangladesh Government and proclamation of independence	Present a short concept of the assign topic by using the Project or.	I will Invite questions on the subject matter knowledge about Bangladesh map will be tested	The students will try to answer the raising questions	Constructivism	12 Minutes
Thr role of super powers and the muslim states in the liberation war of Bangladesh.	Short Speech	Give them information in details for the better understand	They should Concentrate with lecture energetically	Peer observation	8 Minutes
The anti liberation activities of the occupation army, the peace committee Al Badar Al Shams, Rajakars.	Group work	For each group, i will supply essential elements	Discussion the them within group embers in the class room, write the main point on colour for display in front of the class	Group work	10 Minutes
Contribution of India in the liberation war of Bangladesh	Lecture	Help to find out the problems	Try to understanding the task	Class Presentation	10 Minutes
Small query on the subject.	Examination	Suppliesome questions	The students will respon the questins or deliberation in the class.	Formative assessment	10 Minutes

Table 1 shows the approach used in the learning process. This includes discussions of constitutional material, various types of government, and the theory of separation of powers. The use of this method not only provides theoretical material but also encourages students to participate actively. For example, during discussions on constitutional material, students are given the opportunity to evaluate their knowledge by providing brief concepts clearly. In addition, they gain a better understanding of various forms of government and constitutions because students are invited to directly interact and speak through group work and presentations. This method also emphasizes the importance of tutors, peer observation, and constructivism in learning, namely when students learn from experience and interactions with each other.

During the learning process, lecturers help students and provide information. Lecturers not only provide knowledge resources and important assignments but also encourage students to speak to express opinions and think critically to better understand what they say. Students are also expected to actively take part in discussions, group work, and class presentations. The purpose of assignments, such as formative assessments, is to assess student understanding and provide constructive feedback. This learning method combines theory and practice, as well as the roles of lecturers and students in the learning process.

A student-centered learning approach is an important part of an effective teaching and learning process (Froyd & Simpson, 2008). For example, students are asked to participate actively in discussions related to "Formation of the Government of Bangladesh and the Proclamation of Independence." This shows that constructivist learning theory exists in learning, and this shows that learning theory is properly applied during the learning process so that it can increase their understanding, which is based on the experience and knowledge they have learned in class. It is very important for students to talk and exchange ideas with each other, especially in group work. This improves their social and cooperation skills, in addition to their understanding of the subject matter. In the material about "anti-liberation activities of the occupying army," students were asked to speak in groups, create a main topic, and then present it. This method emphasizes the importance of effective teamwork in communication. This method fits perfectly with the philosophy of student-centered learning, which involves students as active participants rather than mere recipients of information. This method gives students the opportunity to ask, explore, and criticize.

In the formative assessment aspect of Table 1 that has been presented, this lesson plan emphasizes the importance of continuous and interactive assessment as part of the learning process. Formative assessment, demonstrated by activities such as taking tests and asking "small questions about the topic," is essential for evaluating how well students understand the lessons they have been taught. Evaluate how students understand concepts and apply them in various contexts. For example, during the exam process, students are faced with various questions that are intended to encourage them to think critically and contribute more. This gives lecturers the opportunity to find out to what extent students absorb and understand the concepts being taught. Lecturers can also determine which subject matter may require more explanation or a different teaching approach. Formative assessments are used in this lesson plan to provide constructive feedback to students. This assessment is very important for student-centered learning as it helps in understanding their strengths and weaknesses as they take the necessary actions to improve academic performance. Formative assessment has evolved into more than just an interactive classroom assessment tool where students are asked to participate in discussions and group work. Formative assessment is considered an important component of the learning process because it helps students reflect on and improve their knowledge (Irons & Elkington, 2021).

Researchers interviewed three students as representatives to increase the accuracy of the analysis. Gaining a better understanding of students' experiences and perceptions of student-centered learning and formative assessment was the goal of these interviews.

Researcher: *"I would like to know about your experiences with implementing student-centered learning. Do you feel this method gives you more freedom and responsibility in the learning process?"*

Respondent 1: *"That's right. This method makes me more involved in learning. For example, when we worked on a group project previously, we were given the freedom to choose what we wanted to cover. This is very different from just listening to a lecture and taking notes."*

Researcher: *"How does this approach affect your motivation to learn?"*

Respondent 1: *"Learning becomes more relevant because I can relate the lessons to my own interests, which boosts my motivation."*

Researcher: *"How do you feel it impacts the way you learn?"*

Respondent 2: *"Formative assessment really changed how I view exams and assignments. Before, I usually just studied for tests. But with the continuous feedback from formative assessment, I'm now more focused on understanding the lessons rather than just memorizing the material."*

Researcher: *"Can you give a specific example where the feedback you received helped you improve a particular understanding or skill?"*

Respondent 2: *"For instance, our lecturer provided feedback on how we analyzed data after a group presentation. I gained insights on how to make stronger arguments with better data. This greatly helped me with subsequent assignments and also prepares me for future work."*

Researcher: *"Do you think this combination of student-centered learning and formative assessment helps you prepare to be a professional teacher in the future?"*

Respondent 3: *"Definitely. I feel more confident in my critical and creative thinking abilities. Also, I believe the skills of giving and receiving effective feedback will be invaluable in my future teaching career."*

As a result of the interviews conducted with students, it can be concluded that student-centered learning and formative assessment significantly impact the students' learning experiences. Students feel more engaged and motivated to learn, particularly because this method allows them to connect the lessons with their personal interests. Chanpet et al. (2020) implemented formative assessment in limited face-to-face learning environments and found that it increased student motivation. Additionally, Leighton's (2019) research underscores the importance of formative assessment in supporting students' needs and ongoing development. Furthermore, research by Zou et al. (2021) indicates that the secondary school assessment system in China has shifted towards a more comprehensive approach. This shows that formative assessment needs to be applied in learning. Overall, this research supports the idea that formative assessment and student-centered learning benefit student outcomes.

CONCLUSION

Through student-centered learning and formative assessment of first-year students at a non-government college in Bangladesh, it can be concluded that this approach has a positive impact based on the results of surveys and interviews that have been conducted. Students are allowed to participate actively in the learning process through discussions, group work, and interactive assignments. This method increases student engagement and improves their understanding of the subject matter. The results of this study indicate that the combination of these two methods is effective in improving the quality of learning and academic outcomes of first-year students in higher education.

This research opens up opportunities for further studies to look at the impact of student-centered learning and formative assessment in various contexts and disciplines. It also provides greater insight into methods to improve the higher education system, especially in Bangladesh, by incorporating these methods into the learning curriculum.

AUTHOR CONTRIBUTION STATEMENT

AHY fully participated in conceptualizing the main ideas, analyzing data obtained from surveys and interviews with students, playing an active role in writing the entire manuscript, carrying out revisions, and providing final approval of the manuscript.

REFERENCE

Ahmed, J. U. (2016). Massification to marketization of higher education: Private university education in Bangladesh. *Higher Education for the Future*, 3(1), 76–92. <https://doi.org/10.1177/2347631115610222>

Apriliana, L. P., Handayani, I., & Awalludin, S. A. (2019). The effect of a problem centered learning on student's mathematical critical thinking. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 4(2), 124–133. <https://doi.org/10.23917/jramathedu.v4i2.8386>

Benlahcene, A., Lashari, S. A., Lashari, T. A., Shehzad, M. W., & Deli, W. (2020). Exploring the Perception of Students Using Student-Centered Learning Approach in a Malaysian Public University. *International Journal of Higher Education*, 9(1), 204–217. <https://doi.org/10.5430/ijhe.v9n1p204>

Boström, E., & Palm, T. (2023, March). The effect of a formative assessment practice on student achievement in mathematics. In *Frontiers in Education* (Vol. 8, p. 1101192). Frontiers.

Cameron, R. B., & Rideout, C. A. (2022). It's been a challenge finding new ways to learn: First-year students' perceptions of adapting to learning in a university environment. *Studies in Higher Education*, 47(3), 668–682. <https://doi.org/10.1080/03075079.2020.1783525>

Chanpet, P., Chomsuwan, K., & Murphy, E. (2020). Online project-based learning and formative assessment. *Technology, Knowledge and Learning*, 25, 685-705. <https://doi.org/10.1007/s10758-018-9363-2>

Dewi, R. S., Ekaputri, F. K., Rachmah, D. N., & Tanau, M. U. (2019). Effectiveness of Student-Centered Learning to Increase Learning Motivation of Students in Inventory Assessment Class. *Researchers World*, 10(2), 14–18. <https://doi.org/10.18843/rwjqasc/v10i2/02>

Doyle, T. (2023). *Helping students learn in a learner-centered environment: A guide to facilitating learning in higher education*. Taylor & Francis. <https://doi.org/10.4324/9781003445067>

Duncheon, J. C. (2020). We are exposed to that college environment: Exploring the socialization of early college high school students. *Community College Review*, 48(2), 173–194. <https://doi.org/10.1177/0091552119898880>

Froyd, J., & Simpson, N. (2008). Student-centered learning addressing faculty questions about student centered learning. *Course, Curriculum, Labor, and Improvement Conference, Washington DC*, 30(11), 1–11.

Glennerster, R., Kremer, M., Mbiti, I., & Takavarasha, K. (2011). Access and quality in the Kenyan education system: A review of the progress, challenges and potential. *Office of the Prime Minister of Kenya*.

Hoidn, S., & Reusser, K. (2020). Foundations of student-centered learning and teaching. In *The Routledge international handbook of student-centered learning and teaching in higher education* (pp. 17–46). Routledge. <https://doi.org/10.4324/9780429259371-3>

Irons, A., & Elkington, S. (2021). *Enhancing learning through formative assessment and feedback*. Routledge. <https://doi.org/10.4324/9781138610514>

Jaiswal, P., & Al-Hattami, A. (2020). Enhancing learners' academic performances using student centered approaches. *International Journal of Emerging Technologies in Learning (IJET)*, 15(16), 4–16. <https://doi.org/10.3991/ijet.v15i16.14875>

Kaput, K. (2018). Evidence for Student-Centered Learning. *Education Evolving*.

Koehler, A. A., & Meech, S. (2022). Ungrading learner participation in a student-centered learning experience. *TechTrends*, 66(1), 78–89. <https://doi.org/10.1007/s11528-021-00682-w>

Kültür, Y. Z., & Kutlu, M. O. (2021). The effect of formative assessment on high school students' mathematics achievement and attitudes. *Journal of Pedagogical Research*, 5(4), 155–171. <https://doi.org/10.33902/JPR.2021474302>

Leighton, J. P. (2019). Students' interpretation of formative assessment feedback: Three claims for why we know so little about something so important. *Journal of Educational Measurement*, 56(4), 793–814. <https://doi.org/10.1111/jedm.12237>

Morel, G. M. (2021). Student-centered learning: context needed. *Educational Technology Research and Development*, 69, 91–92. <https://doi.org/10.1007/s11423-021-09951-0>

Mousumi, M. A., & Kusakabe, T. (2021). School education system in Bangladesh. In *Handbook of Education Systems in South Asia* (pp. 443–477). Springer. https://doi.org/10.1007/978-981-15-0032-9_11

Murray, T. A., Higgins, P., Minderhout, V., & Loertscher, J. (2011). Sustaining the development and implementation of student-centered teaching nationally: The importance of a community of practice. *Biochemistry and Molecular Biology Education*, 39(6), 405-411. <https://doi.org/10.1002/bmb.20537>

Nawaz, M. A. (2019). Teaching Literature Using Task Based Approach in Bangladeshi Tertiary EFL Classroom. *UIITS Journal*, 3(2), 13-19.

Partanen, L. (2020). How student-centred teaching in quantum chemistry affects students' experiences of learning and motivation—a self-determination theory perspective. *Chemistry Education Research and Practice*, 21(1), 79-94. <https://doi.org/10.1039/C9RP00036D>

Ricks, J. R., & Warren, J. M. (2021). Transitioning to College: Experiences of Successful First-Generation College Students. *Journal of Educational Research and Practice*, 11(1), 1-15. <https://doi.org/10.5590/JERAP.2021.11.1.01>

Sarker, M. F. H., Mahmud, R. Al, Islam, M. S., & Islam, M. K. (2019). Use of e-learning at higher educational institutions in Bangladesh: Opportunities and challenges. *Journal of Applied Research in Higher Education*, 11(2), 210-223. <https://doi.org/10.1108/JARHE-06-2018-0099>

Shrestha, S., Haque, S., Dawadi, S., & Giri, R. A. (2022). Preparations for and practices of online education during the Covid-19 pandemic: A study of Bangladesh and Nepal. *Education and Information Technologies*, 1-23. <https://doi.org/10.1007/s10639-021-10659-0>

Siddique, S. (2020). Implementation of Learner Autonomy on EFL Learners at Tertiary Level in Bangladesh. *Green University Review of Social Sciences*, 6(2), 91-108.

Trinidad, J. E. (2020). Understanding student-centred learning in higher education: students' and teachers' perceptions, challenges, and cognitive gaps. *Journal of Further and Higher Education*, 44(8), 1013-1023. <https://doi.org/10.1080/0309877X.2019.1636214>

Wiliam, D. (2010). The role of formative assessment in effective learning environments. *The Nature of Learning: Using Research to Inspire Practice*, 135-155. <https://doi.org/10.1787/9789264086487-8-en>

Wright, G. B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education*, 23(1), 92-97.

Wylie, E. C., & Lyon, C. J. (2019). The role of technology-enhanced self-and peer assessment in formative assessment. In *Classroom assessment and educational measurement*, 170-191. Routledge.

Yalçın, S. (2017). Teacher Behaviours Explaining Turkish and Dutch Students' Mathematic Achievements. *International Journal of Evaluation and Research in Education*, 6(2), 174-182.

Zou, M., Kong, D., & Lee, I. (2021). Teacher engagement with online formative assessment in EFL writing during COVID-19 pandemic: The case of China. *The Asia-Pacific Education Researcher*, 30(6), 487-498. <https://doi.org/10.1007/s40299-021-00593-7>