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Student-Centered Assessment: The Impact of Learner Involvement on Educational Outcomes

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ABSTRACT

Background: In recent years, there has been a growing recognition of the importance of Student-Centered Learning (SCL) approaches in education. Traditional assessment methods, often designed and implemented solely by educators, may not fully capture the diverse learning styles, strengths, and needs of students. **Objective:** This study aimed to develop a student-centered learning approach that prioritizes learners' needs, abilities, interests, and learning styles, with teachers serving as facilitators to enhance overall student learning. **Study Design:** Cross-sectional descriptive study. **Settings:** The study was conducted at the National University of Science and Technology, Suhar Campus, Oman, within the Department of Obstetrics and Gynecology. **Duration:** Data was collected for four months, from October 2019 to January 2020. **Methods:** Fifty final-year medical students were involved in the study. They were divided into three groups, A, B, and C, and were given autonomy to be innovative in constructing MCQs and OSCEs based on subject relevance and coming up with answers based on evidence researched by themselves. Their perception of the learning tool was assessed using a feedback questionnaire. **Results:** The results of the feedback demonstrated a positive outlook toward a student-centred curriculum. 76% of students felt empowered by their assessment and learning. Around 60% of students considered it an effective tool for adult learning as it made them more inquisitive and enhanced their problem-solving skills. The major barrier to this study was time constraints. **Conclusion:** A shift to SCL may be the future of medical education.

Keywords: *Student engagement, Teaching, Learning outcome.*

INTRODUCTION

There has been a significant shift from a teacher-centered didactic approach to student-centered learning (SCL) in the last few decades.[1]

Traditionally, educators have designed assessments, often without direct input from the learners. However, this conventional model may not always align with students' diverse needs, strengths, and learning styles. Educators can foster a more inclusive and personalized learning environment by actively engaging students in developing their assessments. This empowers students and enhances their engagement, motivation, and ownership of their educational journey. They are more likely to better understand the subject matter and the criteria for success.

SCL makes learners responsible for their learning goals, unlike teacher-centered learning.[2,3]

John Dewey believed that a classroom that encourages students to think critically is better prepared to solve problems in practice in the future.[4]

A learner-centered approach promotes a sense of ownership over their learning.[5] These include Problem-Based Learning (PBL), e-learning, peer learning, interactive lectures, skill labs, role-play, etc.

Self-directed learning is an effective tool that can be utilized in medical education [6]. Teachers continue to play an essential part in providing their expertise and creating an environment that fosters increased student involvement.[7]

Educators find out students' prior knowledge and understanding during and after the completion of a new learning experience.[8]

Giving the students autonomy for their assessment tool is anticipated to encourage Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation (Bloom's taxonomy).[9]

This article highlights students' perceptions of introducing SCL.

METHODS

Before the main study, a Pilot study was carried out randomly to identify potential problems, assess the feasibility of the study, and make necessary adjustments to improve the overall design and execution of the main study. Initially, we had a problem identifying and convincing students of this learning method as they were very teacher-dependent and didactic lectures.

This is a prospective pilot study conducted over four months, for a duration of six weeks each, between October and January 2019-2020. The Ethical and Biosafety Committee of the College of Medicine, National University of Science and Technology, Suhar, Oman, granted ethical approval for this study vide letter no. NU/COMHS/EBC0013/2021. Informed consent was taken from all the participants before starting the course. There were no restrictions as to who could participate in the study.

The study employed a convenience sampling method, involving fifty final-year medical students who were readily available and willing to participate during the study period from October 2019 to January 2020 in obstetrics and gynecology at the National University of Science and Technology (Suhar campus) in Oman. The participants were divided into three groups (A, B, and C), and were given autonomy to innovatively construct MCQs and OSCEs relevant to the subject matter, with answers based on self-directed, evidence-based research.

The sample size of fifty students was non-random and not statistically calculated but rather based on the number of students available within the academic cohort at the time of the study. Since there was no formal power calculation, the full cohort of final-year students was included to maximize participation and practical feasibility.

The study was conducted among all final-year medical students participating in a six-week clinical rotation. Approximately 95% of the participants were female, reflecting the overall gender distribution of the cohort, which had an approximate female-to-male ratio of 80:20. At the beginning of the rotation, students were informed about the introduction of a new student-centered teaching model. While many students actively engaged with the innovative approach, a subset showed reluctance. These students preferred traditional, teacher-led methods and were less inclined to participate in self-directed learning or assessment design. Some expressed anxiety about unfamiliar learning formats, perceiving them as requiring greater effort or uncertainty.

Most faculty members were supportive of the initiative and enthusiastic about its implementation. However, around 20% expressed reservations, primarily due to concerns that students might become overly familiar with assessment questions, potentially compromising the integrity of the evaluation. Despite these concerns, they remained interested in the outcomes of the approach and agreed to participate in the study.

Before the implementation of the student-centered learning model, participating teachers underwent a structured orientation and training session. These sessions focused on familiarizing them with the principles of student-centered learning (SCL), including the facilitation of self-directed learning, the co-construction of assessments (MCQs and OSCEs), and strategies for guiding students in evidence-based reasoning. Workshops were conducted to demonstrate best practices in mentoring students through the process of developing assessment tools while maintaining academic rigor. Teachers were also briefed on how to provide constructive feedback without overtly influencing student autonomy. Additionally, discussions were held to address any concerns, particularly regarding assessment integrity and learning outcomes, ensuring a shared understanding and consistent approach across all faculty involved in the study.

The students were divided into three groups—A, B, and C—each consisting of six to seven members. They were granted autonomy to take an innovative approach in constructing assessment materials that were relevant to the subject matter, using evidence gathered through independent research. Each group was assigned a different task to encourage diverse forms of learning and assessment creation. One group was responsible for preparing a presentation on a specific topic, drawing on multiple sources such as standard textbooks, NICE guidelines, and other credible references. The remaining groups were tasked with designing Objective Structured Clinical Examination (OSCE) stations, focusing on areas such as history-taking, clinical management, or counseling, based on their understanding and perception of clinical relevance. In addition, they were required to develop six multiple-choice questions (MCQs) and two short, structured essay questions. Students collaborated closely, with each member contributing equally to the assignments. They utilized various multimedia tools to enhance the quality of their presentations. A variety of

learning strategies, including case studies, simulations, role-plays, and interactive lectures, were incorporated to enrich the learning experience. This rotation-based format allowed each group to engage with the entire six-week syllabus through active and creative participation. The concept was to rotate the groups for the entire syllabus taught for six weeks.

To assess the study's effectiveness and analyze students' perceptions, a custom-designed feedback questionnaire was developed specifically for this study to gather student perceptions regarding the implementation of the student-centered learning (SCL) model. The questionnaire was created using Google Forms (Google, California, USA) and consisted of ten questions administered at the end of the students' final rotation exam.

The questionnaire was not based on an existing standardized tool but was developed in alignment with the study objectives, focusing on students' engagement, autonomy, perceived learning outcomes, and overall satisfaction with the innovative teaching approach.

To ensure clarity and relevance, the questionnaire underwent pilot testing with a small group of students (not included in the main study cohort). Feedback from the pilot was used to refine question wording and response options to improve validity and ease of understanding. (using Google Forms, Google, California, USA) containing ten questions was devised a (Table 1).

Table 1: Questions included in the feedback questionnaire

1.	How did you find the exercise of making the questions? (Useful or not)
2.	How did you like to make your own questionnaire for the assessment? (Useful or not)
3.	Do you think it has given you the ownership of your own learning? (Yes or no)
4.	How can you do better next time?
5.	Would you implement this model of learning in your own practice of teaching others? (Yes or no)
6.	Do you think it's a good way of adult learning? (Yes or no)
7.	Did you feel you learned more in the process? (Yes or no)
8.	What was the difficulty you faced? Time constraint, less understanding, not useful? (Tick any or all)
9.	Did you feel more motivated? (Yes or no)
10.	How did it make you feel? (Accountable, a better understanding of the subject, innovative, motivated, enhance teamwork, understand relevant information)

RESULTS

Around 62% of students found making their questions beneficial, as seen in (Figure 1). It helped them understand the thought process of asking the examiners questions according to the importance of the subject and kept them engaged.

76% of students felt empowered by their assessment and learning, as indicated in (Figure 2). They felt it allowed them to look for evidence, discuss, and work in a team with their peers. Thirty of the fifty respondents stated that they would like to adopt the student-centered teaching style as it developed their research and problem-solving skills and made them more inquisitive; this is demonstrated in (Figure 3). They considered it a very effective tool for adult learning.

Of the remaining 20 responses, nine students were not keen on adopting this learning model, while the remaining 11 felt they might benefit from it occasionally. When asked how taking part in this activity made them feel (Figure 4); 18% of the students felt more accountable for their learning, 27% gained a better understanding of the subject matter as they had done extensive research before presenting it to the class, 12% felt that the exercises increased their ability to be innovative and creative thinkers, 18% saw an improvement in how they deal with team-members, 15% students were able to pick up and retain relevant information and merely 9% of the total group felt motivated. The major barrier to this study was time constraints (Figure 5). Students struggled to balance their coursework in six weeks and collect information from numerous resources rather than their standard textbooks.

Figure 1: Pie-chart analyzing, how students felt about formulizing their on questions

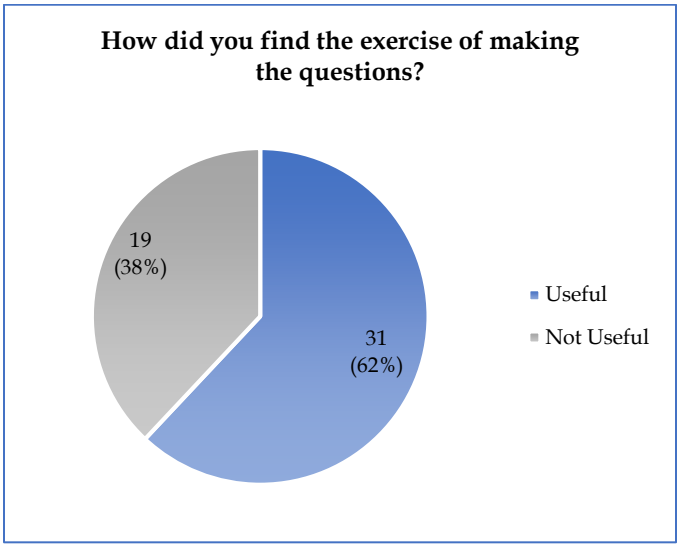


Figure 2: Student perception on if student centered learning gives them a sense of ownership

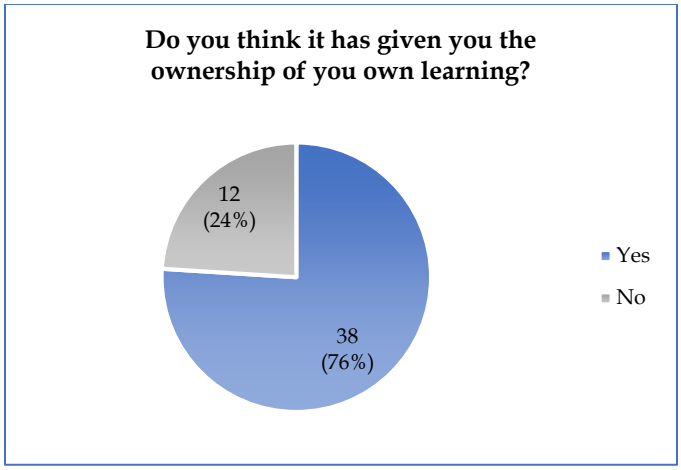


Figure 3: Student view of using the SCL method to teach others

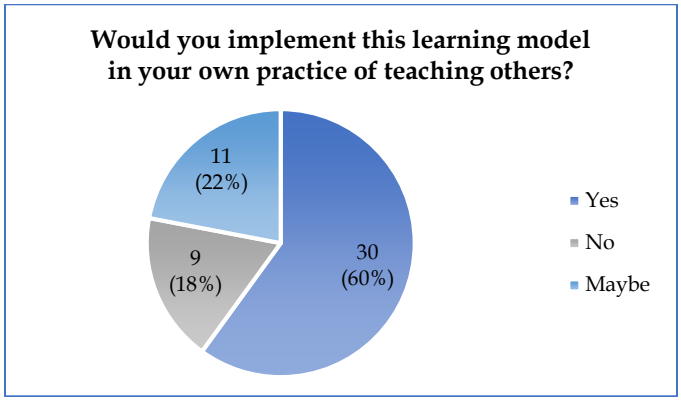


Figure 4: Students perception on the SCL approach

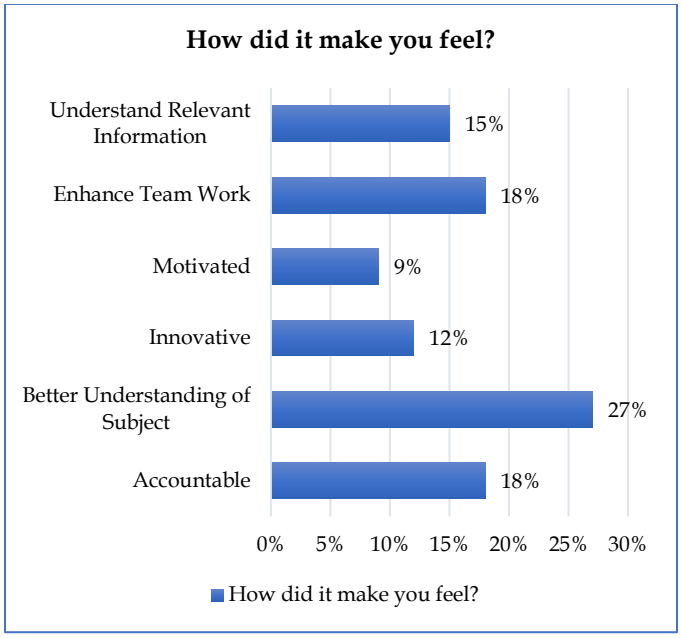
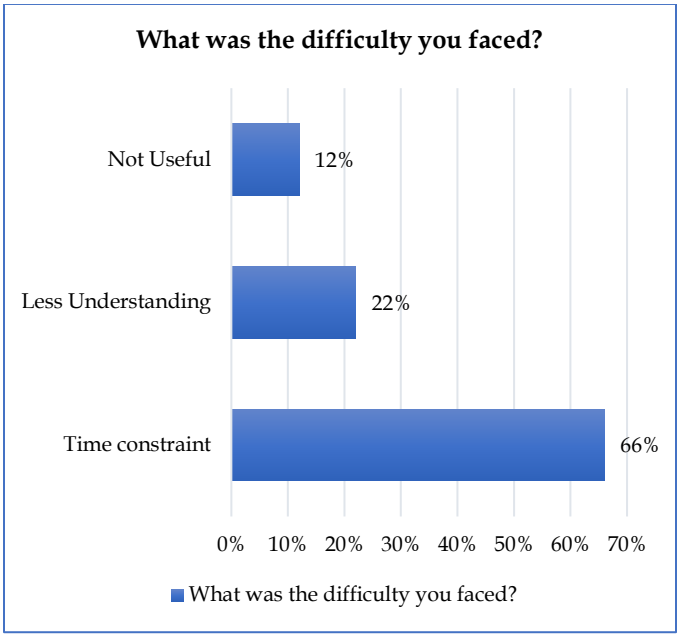


Figure 5: Obstacles encountered by students upon implementation of SCL teaching method



DISCUSSION

Overall, the findings of this study reflect a positive attitude toward student-cantered learning (SCL) and assessment, underscoring the importance of educators emphasizing its relevance to clinical practice.

Our results reinforce the view that SCL contributes to the holistic development of students by enhancing their analytical skills, improving group dynamics, encouraging self-reflection, and fostering creativity in overcoming challenges. It also supports the cultivation of lifelong learning habits.[10]

For the successful implementation of a student-centered curriculum, educators must consistently explore innovative strategies to maintain student motivation and use continuous assessment and feedback to evaluate the effectiveness of their teaching. Self-assessment enables learners to identify their strengths and weaknesses, set realistic goals, and strive for self-improvement.[11] It also encourages critical self-evaluation and constructive peer feedback—skills that are highly valuable in academic and professional settings.

Salinitri *et al.*[12] demonstrated in their study that the integration of Problem-Based Learning (PBL) and Objective Structured Clinical Examinations (OSCEs) led to a significant improvement in student performance.

Despite its benefits, this study also highlights certain limitations. Time constraints were identified as a major barrier, limiting students' ability to fully engage with the approach and achieve desired outcomes. These

constraints can disrupt regular academic schedules and exam preparation, leading to superficial learning as students rush to complete assignments, potentially compromising depth of understanding.

The introduction of new teaching models can also be met with resistance. Students may feel unprepared or lack confidence in their ability to adapt to a student-centered learning environment, which can hinder their educational progress.[13] In institutions where traditional teaching methods dominate, students may feel overwhelmed by the shift in expectations. Therefore, it is crucial to introduce SCL approaches earlier in medical education to facilitate smoother transitions and foster acceptance.

Sabah *et al*,[14] recommended that institutions proactively support and train faculty members to develop effective assessment strategies that align with student-centered pedagogies. Encouraging a research-driven and collaborative teaching environment can promote innovation and enhance student satisfaction.

Qi-Ming Zheng *et al*,[15] in a meta-analysis of nine studies, concluded that student-centered learning significantly improved clinical competence (SMD = 0.81, 95% CI: 0.12 – 1.49, P = 0.020) and student satisfaction (SMD = 2.13, 95% CI: 1.11 – 3.15, P < 0.0001), with statistically significant outcomes.

Similarly, Xie ZB *et al*[16] reviewed 33 studies and found that SCL enhanced academic performance and strengthened teamwork skills. Ren S *et al*,[17] in their systematic review and meta-analysis of 22 randomized controlled trials, reported that SCL significantly improved student knowledge, performance, and satisfaction compared to traditional lectures. In addition, thirteen meta-analyses and systematic reviews have provided robust evidence supporting the positive impact of SCL on critical thinking and clinical competencies across various medical disciplines.[18]

CONCLUSION

This study highlights a clear positive trend toward adopting a learner-centered approach in medical assessment. Around 62% of students found constructing their own questions beneficial, and 76% felt empowered through active participation. A majority appreciated the model for enhancing research, teamwork, and problem-solving skills. However, time constraints were a significant barrier, affecting deeper engagement. Despite this, most students favoured this approach for promoting accountability, creativity, and deeper understanding. The findings align with Bloom's taxonomy, supporting progression to higher-order thinking. When introduced early and supported by faculty, this model can produce adaptable, competent doctors. It encourages lifelong learning and improves academic satisfaction and performance.

LIMITATIONS

The limitations of this study include;

Time Constraints: A major limitation highlighted was the lack of sufficient time, which prevented students from effectively using the student-centered approach. The time pressure also affected their ability to balance assignments, preparation for exams, and the understanding of the subject matter.

Impact on Learning: Due to the time pressure, students may resort to cramming, which can reduce the depth of their understanding and hinder the quality of their learning.

Challenges with New Teaching Models: Students felt unprepared for a student-centered curriculum and believed they lacked the necessary skills to adapt. This unfamiliarity could negatively affect their learning experience.

Lack of Early Exposure: The teaching model was introduced at a later stage in medical education. If implemented earlier, students might find the approach less overwhelming and more beneficial, highlighting the importance of gradually integrating student-centered learning.

Institutional Practices: In institutions where student-centered learning is not the norm, students may feel overwhelmed, which could affect their ability to meet educational objectives.

SUGGESTIONS / RECOMMENDATIONS

These findings collectively suggest that integrating student-centered approaches early in medical education can produce more competent, confident, and competitive physicians equipped to meet future healthcare challenges.

CONFLICT OF INTEREST / DISCLOSURE

Nothing to declare.

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