Short Communication

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The Role of Short Videos in Medical Training: Student Feedback and an Experiential Learning Perspective

VELUSAMI DEEPIKA[1*], PhD; SHIVAYOGAPPA S TELI[1], MD; KRISHNAMURTHY SOUNDARIYA[1], MD; SENTHAMIL SELVI K[1], MSc; MANGANI MANGALAVALLI S[1], MD

[1]*Department of Physiology, Sri Manakula Vinayagar Medical College and Hospital, Madagadipet, Puducherry-605107, India*

Introduction: Medical education is shifting from traditional didactic lectures to student-centered interacting learning methodologies. Experiential learning, through the usage of multimedia tools, has proven effective in enhancing engagement and learning outcomes. Kolb's experiential learning theory was applied. The study explored the use of student-created videos as an experiential learning tool in first-year MBBS Physiology course. The aim of the study was to evaluate the experiential learning experience of the medical undergraduate students through their feedback.

Methods: The educational interventional study was conducted at Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India, from October 2021 to May 2022. All students of 2022 batch, that is, 150 first year MBBS students were divided into 30 small groups with 5 members in each group. Under the guidance of faculty members, the groups created short videos on the assigned physiological concepts, which were uploaded in Learning Management System (LMS) for peer and faculty review. A 15-day period was given for video preparation. A pre-designed 10 questions, Likert scale questionnaire, based on Kirkpatrick's Model (Level 1), was used to collect data about the students' learning experience. Open-ended questions were also administered. The questionnaire was validated by experts, with a Cronbach's alpha of 0.98, ensuring its reliability. Quantitative data were analyzed using OpenEpi version 7.0, measuring the consensus score, and manual content analysis was performed on open-ended responses.

Results: From 150 students, 30 videos were successfully submitted. The mean age of the participants was 18.23±0.87 years. Based on the consensus score for the feedback obtained by 138 students, it is reported that 84.22% of students felt more confident in their understanding of the physiological concepts they worked on, and 81.97% gave feedback that the video-making process allowed them to explore their topic deeply. The feedback highlighted the development of essential skills, including critical thinking, communication, and teamwork, with 79.82% recommending this method for future batches. Challenges included are the time-consuming nature of the task and a lack of technical knowledge about video editing software. The consensus analysis indicated strong agreement, reflecting positive reception. This study aligns with Kolb's experiential learning theory, as students were engaged in all stages of the learning cycle—concrete experience (video creation), reflective observation (peer and faculty feedback), abstract conceptualization (topic research and content structuring), and active experimentation (video sharing and refinement).

Conclusion: Student-created videos proved to be successful experiential learning strategy, enhancing both cognitive and practical skills. The activity promoted deeper engagement, critical thinking and facilitated deeper learning of the concepts. Despite few challenges, the method shows promise for wider adoption in medical curricula, supporting the ongoing transition to more interactive and student-centered learning approaches.

Keywords: Experiential learning; Medical students; Medical education

**Corresponding author:*
Velusami Deepika, PhD;
Department of Physiology,
Sri Manakula Vinayagra
Medical college nad Hospital,
Kallitherthalkuppam,
Madagadipet,
Pondicherry-605107, India
Tel: +91-9962279360
Email: deepy843@gmail.com

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Introduction

Medical education is undergoing a paradigm shift, from passive learning strategies to student engaging learning environment. Traditional didactic teaching approaches are considered as passive teaching methods and are unsuccessful to provide students with the interactive and hands-on experience needed to prepare them for the complexity of modern healthcare. Medical curriculum is refined by the increased usage of experiential learning strategies, which place an emphasis on active engagement, reflection, and the practical application of knowledge. Usage of multimedia tools is proved as an effective way to improve the learning outcomes (1) and student- made short videos can be considered as a creative method.

As per Kolb's experiential learning theory (2), learning happens when students actively participate in the process, passing through a cycle of tangible experience, reflective observation, abstract conceptualization, and active experimentation. Students' production of short medical videos synchronizes with this model as it forces them to interact closely with the content, arrange their knowledge logically, and communicate it in a way that is both instructive and understandable. The concepts of adult learning as outlined by Knowles (3) are also covered in student-generated videos, such as the learner should be aware of his needs; be self-directed; be able to solve problems and have internal motivation to learn.

This approach develops communication skills, teamwork, creativity, and critical thinking, all of which are vital abilities for aspiring medical professionals (4, 5). Studies have reported the use of multimedia resources like films in medical education, emphasizing the benefits to students' happiness, engagement, and retention. Evidence shows that as students become more adept with emerging technologies, they increasingly engage in self-video teaching and learning to enhance their clinical skill development (6).

In this context, a new learning initiative was implemented, where students made short videos for the physiology course for first-year MBBS students. The primary objective of this study was to assess the educational value of student-created videos in enhancing learning outcomes and evaluate student perceptions and experiences.

Methods

Study settings

The program was organized by Department of Physiology, Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India.

Study design

Educational interventional study.

Sample size

All 150 first-year MBBS students attending physiology classes were included as the study participants.

Methodology

The study was approved by the Institutional Ethics Committee and conducted from October 2021 to May 2022. All 150 students of the batch 2021 were divided into a group of 30 with 5 members in each group. Topics were allotted to each group with defined objectives. A physiology faculty was allotted to each group who acted as a guide for the students in preparing the videos. The students were given a total duration of 15 days for preparing the videos. They were provided with proper instructions regarding the video preparation, such as duration ranging from 5-10 minutes, short and concise concepts, available applications and other platforms that can be used, and the last date for submission. Students were required to give the developed e-content for the Department of Physiology, which was posted in the Learning Management System (LMS) with the technical support from the computer department.

On the last day, the students submitted the developed videos to their respective faculty. All the videos were then posted in the LMS that were later viewed by other faculty. The videos could be later used as the resource material for fore coming batches.

All the faculty in the department acted as judges and evaluated the videos. A scoring guide was developed with scores ranging from 0 to 10 based on the following criteria: Introduction to the topic (1 point), Content organization and delivery (2 points), Audio clarity (2 points), Video clarity (2 points), Special effects/graphics usage (2 points), and Conclusion (1 point). Based on the consensus scores obtained by all the faculty, the students were appreciated, awarded, and motivated. The internal consistency of the questionnaire as measured using Cronbach's α was found to be 0.8.

Data collection procedure

Feedback and learning experiences were collected through a pre-designed and pre-defined 8-point Likert scale type questionnaire, Kirkpatrick model 1, (5-Strongly agree; 4-Agree; 3-Neutral; 2 Disagree; 1-Strongly disagree) and three open ended questions. To avoid social desirability and ensure anonymity, we did not collect details like name and roll numbers.

Analysis Plan

Open Epi info version 7.0 was used to analyse the quantitative data. For every topic, a consensus measure was determined and expressed as a percentage. More "agreement" was indicated by values at the top end of the range than by numbers at the lower end. Greater agreement indicates less dispersion around the weighted mean value when the value is closer to 1.0 or 100%. High dispersion around the mean value indicates low consensus values. Good consensus was represented by values between 85 and 75 percent, while poor consensus was represented by values below 75 percent (7). The comments were sorted and tallied, and a manual content analysis was performed on the student replies to the open-ended questions.

Ethical Consideration

Since the feedback was obtained as a part of the feedback, waiver of consent was obtained from the Institutional Ethics Committee (Ethical Clearance Number: SMVMCH IEC no-24/2020).

Results

Out of 150 first-year MBBS students attending the Physiology course, 30 videos were successfully prepared and submitted within the allotted time duration. The mean age of the study participants was 18.23±0.87 years. Feedback was obtained from 138 participants, of whom 58% (n=80) were females and 42% (n=58) were males. The analysis of the questionnaire with their mean and consensus scores is represented in Table 1. The consensus values ranged from 67.51% to 84.22%.

Based on the consensus score, it is found that 84.22% of the students felt confident in their understanding of the physiological concepts they had chosen for their videos. Additionally, 81.97% of the students reported that this learning method encouraged them to explore the topics in greater depth, utilizing resources such as the Internet and textbooks to enhance their knowledge. 73.93% of the students strongly agreed that this activity enhanced their skills in collaboration and team work.

Table 2 reports the perceived advantages and disadvantages of the activity. The majority of students recognized the benefits of this approach, as enhanced concept retention, better understanding and development of creative and technical skills. The disadvantages included time consuming activity and lack of technical software knowledge.

Based on the manual content analysis of the perception collected from students, it is reported that major skills obtained by the students were classified into cognitive, psychomotor and affective domains, as shown in Table 3.

This study aligns with Kolb's experiential learning theory as students were engaged in all stages of the learning cycle—concrete experience (video creation), reflective observation (peer and faculty feedback), abstract conceptualization (topic research and content structuring), and active experimentation (video sharing and refinement).

Table 1: Student perception on "short video event" preparation

Domains	SA n (%)	A n (%)	NAND n (%)	D n (%)	SD n (%)	Consensus (Mean)
I understood the chosen physiological concept.	44 (86)	3(5)	4(7)	0 (0)	0(0)	84.56 % (1.22)
This method of learning gave me an opportunity to explore/ refer the topic in detail (internet/books etc.).	38(75)	11(22)	2(3)	0(0)	0(0)	82.60% (1.29)
The time given for video preparation was sufficient.	35(69)	13(25)	3(6)	0(0)	0(0)	79.61% (1.37)
The instruction given for the video preparation was satisfactory.	39(76)	10(20)	2(3)	0(0)	0(0)	83.30% (1.27)
Would you like to suggest this method of learning for future batches?	40(78)	6(11)	5(9)	0(0)	0(0)	79.82% (1.31)

Table 2: Advantages and areas for improvement

Advantages	Areas for Improvement
Increased my conceptual learning	Technical support and knowledge were lacking
Enhances deep learning	Time consuming activity
Improved my confidence levels	Giving audio for the prepared video was difficult
New experience	One topic (like CVS or RS) can be given instead of giving all topics in Physiology
Refer more books and internet	Example of some videos could have been shared
Improves presentation skills	More time could be given for preparing videos
Easy understanding of the topic	Scoring guide could be given to students

Table 3: Skills gained by students during the learning process

Cognitive domain	Psychomotor domain	Affective domain
Better understanding of the topic	Active uses of senses for preparing	Time management skills
Enhanced Recall abilities	Technical software skills like e-content	Collaboration skills
Referral habits	creation and video editing	Communication skills
	Rehearsal before final preparation	Self-reflection

Discussion

The integration of student-created short videos aligns with the ongoing transformation in medical education towards more interactive and student-centred learning approaches. The findings of this study confirm the literature evidence supporting the efficacy of experiential learning, particularly through the creation of student-generated content, in enhancing educational outcomes in medical education (8).

Kolb's cycle of learning involves four key stages that learners experience: engaging in concrete experiences, reflecting on those experiences, forming abstract concepts, and applying them through active experimentation (2). For the purpose of this study, the students were forced to interact directly with the physiological ideas through the production of brief videos, which gave them a tangible experience. Reflective observation and abstract conceptualization were made easier by researching, scripting, and editing processes involved in making the videos, which required students to assess their comprehension and delivery of the subject matter. The final step, active experimentation, was realized as students shared their videos with peers and faculty, received feedback, and observed the impact of their educational tools on others' learning.

This method encouraged the development of numerous important soft skills in addition to reiterating the students' comprehension of physiological principles. The large percentage (84.56%) of students who reported having a better knowledge of the subjects they worked on is indicative of a notably strengthened cognitive domain. This aligns with the results from earlier studies, which have shown the advantages of active learning techniques for cognitive development. Liu, et al. in 2022, in a scoping review have reported with video production becoming more accessible to students, health profession educators are increasingly incorporating it into their teaching methods (9).

The results of this study support the use of multimedia and student-generated content in medical education. Several studies have highlighted the benefits. The active learning and technology-based video lecture production activity enhanced the learning outcomes of a randomly selected group of students compared to a control group that participated in traditional instructor-led lectures (10). In a study on dental students, it was revealed that the student-generated video activity created a positive experience and enabled them to learn effectively (11).

The psychomotor skills developed through this process are also noteworthy. In the digital age, the students' knowledge of using a variety of multimedia tools and applications is becoming more and more important. The capacity to develop clear and compelling educational content is a critical talent for future healthcare practitioners, who will likely need to explain complex medical knowledge to patients, peers, and the public. This is consistent with the research conducted by Campanozzi in 2023, which shows that multimedia and digital literacy are becoming more and more important in medical education, especially when it comes to distance learning and telemedicine (12).

Furthermore, this practice greatly improved the affective domain, which includes attitudes, values, and feelings. Because the students had to collaborate closely with their peers and faculty mentors, the collaborative aspect of the video creation process encouraged collaboration and communication skills among the students. It reflects the interprofessional teamwork necessary in clinical settings, giving students a chance to hone these crucial abilities in a safe learning environment. It is corroborated by a study by Umesh in 2023, which shows that collaborative learning exercises greatly enhance the students' capacity for successful teamwork and communication in medical education (13).

The use of a Likert scale questionnaire based on the Kirkpatrick model provided valuable insights into the students' perceptions of the short video preparation activity. The positive feedback received from the students indicated that they not only enjoyed the activity (reaction) but also believed it enhanced their understanding and skills (learning). However, to completely evaluate the impact of this learning methodology, further long-term studies to analyse the student behaviour and academic performance, as well as the potential for these skills to be applied in clinical practice are required.

The utilization of student-generated content has practical implications in addition to its

instructional benefits. The student-produced videos are an invaluable resource for upcoming classes, building a library of scholarly material that can be utilized to enhance conventional teaching techniques. This strategy fosters a collaborative and sustainable learning environment in addition to improving the educational experience for the present students. This is consistent with the findings of Hains et al., in 2012, which show that using student-generated content to create a dynamic curriculum that changes and adapts to the needs and interests of students can be a useful strategy (14).

Apart from the various advantages, many drawbacks were mentioned, most notably the lengthy process of producing videos and the technological issues that certain students encountered. These difficulties, though, can be viewed as a necessary component of the learning process as they make the students stronger in resilience and problem-solving techniques. These difficulties also show how important it is to provide students with sufficient guidance and assistance in multimedia skills, which might be included in the curriculum to better prepare them for these kinds of assignments. The capacity to use multimedia technologies effectively will become more and more crucial in medical education and practice as technology develops (15).

Conclusion

In summary, the incorporation of short videos produced by students into the Physiology course for first-year MBBS program students has been shown to be a successful teaching approach, improving students' cognitive comprehension as well as the development of critical psychomotor and affective abilities. The results of this study lend credence to the larger trends in medical education toward more interactive, student-centered teaching strategies that make use of multimedia resources to enhance learning outcomes in terms of retention and engagement.

Authors' Contribution

All authors contributed to the discussion, read and approved the manuscript, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of interest

The authors declare that they have no conflicts of interest.

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