

# The potential use of YouTube in teaching and learning Oral Biology and Pathology among BDS students of BPKIHS, Nepal

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## ABSTRACT

**Introduction:** Today, many students from various backgrounds turn to YouTube and other online learning platforms for supplementary information. In this research, we assessed the student's opinions on the efficacy of YouTube for providing a high-quality education in the field of oral biology and oral pathology. **Methods:** In this study, the principal investigator conducted a classroom lecture on two selected topics for students from BDS 2nd and 3rd year and provided a YouTube video link of the same topic to the participants. The YouTube video on the topic was selected by the experts on the subject. Following this, the principal investigator collected the data from the students using a validated semi-structured questionnaire. **Results:** Total 49(59%) participants strongly agreed that YouTube can be used effectively for understanding various oral biology and oral pathology topics, and 52(62.7%) of participants strongly agreed that YouTube is beneficial in teaching and learning various oral biology and oral pathology topics. However, 34(41%) of participants strongly agreed that YouTube is not the main learning tool but a support tool for providing information on various oral biology and oral pathology topics. **Conclusions:** It can be concluded from the results that teaching and learning oral biology and oral pathology is more efficient if coupled with YouTube applications.

**Keywords:** Curriculum, students, YouTube.

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## INTRODUCTION

The COVID-19 outbreak substantially impacted higher education, and many institutions are turning to the internet for learning. Education has been provided remotely via internet platforms, for example, Zoom, Google Classroom, and YouTube. The leading platform for sharing and disseminating health information is YouTube, where two billion videos are watched each day, and it has the potential to become an important source.<sup>1</sup>

YouTube is the most widely used and largest video portal in the world, serving as a source of information across all domains. Also one of the most popular online platforms in the world, with millions of people viewing video content for both recreational and educational purposes.<sup>2</sup>

In the wake of the COVID-19 pandemic, the popularity of educational videos on YouTube has increased significantly, including dentistry. Therefore, in this study, we examined the potential of YouTube as a teaching tool in dentistry among BDS 2nd and 3rd-year students, taking current trends in collaboration and social media in education.

## METHODS

This study was a descriptive cross-sectional study that aimed to examine perceptions towards the use of YouTube in the outlook

of students from the BDS 2nd and 3rd year. The study sample was selected using a convenient (total census) method. Ethical clearance was obtained from the IRC (Ref. No. IRC/2117/021), BPKIHS, before conducting the study. Written consent was obtained before data collection, ensuring that all participants were informed about the study's objectives and confidentiality protocols.

To begin, the principal investigator delivered a classroom lecture on two selected topics to the participants from each academic year. Additionally, a YouTube video link on the same topic was provided to the participants. The selection of the YouTube video was made by subject matter experts.

Afterwards, the principal investigator collected data from the students in the oral pathology department. The objective of the study was thoroughly explained to the participants, and written consent was obtained. A validated questionnaire, which was prepared using existing literature<sup>2</sup> and expert advice, was distributed and collected on the same day. The filled questionnaires were carefully checked, and the confidentiality of the participants was strictly maintained.

Finally, the data was coded and entered MS Excel 2010 for analysis.

**RESULTS**

The mean age of the participants was 21.6 ±1.4 years. Most of the participants were female. (Table 1)

**Table 1:** Distribution of the participation according to sex (N=83)

Sex	Frequency	Percentage (%)
Male	40	48.2
Female	43	51.8
Total	83	100.0

Total 49(59%) participants strongly agreed that YouTube can effectively be used to understand various topics related to oral biology and oral pathology. On the other hand, 41(49.4%) of participants strongly agreed that YouTube is not the primary learning tool but rather a supplementary tool for providing information on these topics. Additionally, 52(62.7%) of participants strongly agreed that YouTube is beneficial for teaching and learning about oral biology and oral pathology. (Table 2)

**Table 2:** Benefits of the use of YouTube as a tool for teaching and learning oral biology and oral pathology (N=83)

Questions	Answers n(%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
YouTube can be used effectively for understanding various oral biology and oral pathology topics.	49(59%)	33(39.8%)	1(1.2%)	0	0
YouTube is not the main learning tool but a support tool for providing information on various oral biology and oral pathology topics.	34(41%)	41(49.4%)	3(3.6%)	5(6.0%)	0
YouTube is beneficial in teaching and learning various oral biology and oral pathology topics.	52(62.7%)	26(31.3%)	3(3.6%)	2(2.4%)	0
The use of video in teaching and learning sessions is more effective compared to YouTube.	22(26.5%)	22(26.5%)	32(38.6%)	7(8.4%)	0
YouTube is not suitable to be used as an instructional aid.	5(6%)	5(6%)	22(26.5%)	39(47%)	12(14.5%)

Total 50(60.2%) participants strongly agreed that teaching and learning oral biology and oral pathology are more efficient if coupled with YouTube applications. About 28(33.7%) participants agreed that the effectiveness in terms of student achievement cannot be measured using YouTube applications while 31(37.3%) participants strongly agreed that face-to-face teaching methods were more relevant compared to using YouTube for instruction. (Table 3)

**Table 3:** Can students' interest and achievement be maintained in learning oral biology and oral pathology using YouTube? (N=83)

Questions	Answers n(%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Face-to-face teaching methods are more relevant compared to using YouTube for instruction.	31(37.3%)	28(33.7%)	21(25.3%)	3(3.6%)	0
Visual elements are displayed through YouTube to attract the attention and interest of students.	28(33.7%)	47(56.6%)	7(8.4%)	1(1.2%)	0
Teaching and learning oral biology and oral pathology are more efficient if coupled with YouTube applications.	50(60.2%)	28(33.7%)	3(3.6%)	2(2.4%)	0
Effectiveness in terms of student achievement cannot be measured using YouTube applications.	14(16.9%)	28(33.7%)	25(30.1%)	16(19.3%)	0
The use of YouTube in teaching and learning can create two-way communication between lecturers and students.	13(15.7%)	17(20.5%)	26(31.3%)	24(28.9%)	3(3.6%)

About 25(30.1%) participants agreed that detailed accuracy of subject matter cannot be acquired in detail in the presentation using YouTube. Similarly, 41(49.4%) of participants agreed that YouTube can be used only for theoretical topics, for future reference. Furthermore, 31(37.3%) of participants agreed that negative issues such as misleading videos affect teaching and learning using YouTube. (Table 4)

**Table 4:** Implications of YouTube in learning oral biology and oral pathology (N=83)

Questions	Answers n (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Detailed accuracy of subject matter cannot be acquired in detail in the presentation through the use of YouTube.	12(14.5%)	25(30.1%)	23(27.7%)	21(25.3%)	2(2.4%)
YouTube can be used only for theoretical topics, for future reference.	11(13.3%)	41(49.4%)	16(19.3%)	15(18.1%)	0
Language is a key constraint in learning the subject of oral biology and oral pathology using YouTube.	14(16.9%)	31(37.3%)	23(27.7%)	12(14.5%)	3(3.6%)
YouTube is not at all worthy of the oral biology and oral pathology topics compared to live demonstrations.	8(9.6%)	17(20.5%)	13(15.7%)	38(45.8%)	7(8.4%)
Negative issues such as misleading videos affect teaching and learning using YouTube.	19(22.9%)	31(37.3%)	21(25.3%)	9(10.8%)	3(3.6%)

**DISCUSSION**

The effects of the COVID-19 pandemic have opened a new realm of online education. Students are better able to recall and comprehend information when they are seeing, hearing, and doing. During instruction, a student’s level of comprehension is 75% higher than when they are only seeing and hearing (20%) and 40% when they are seeing and hearing. Multimedia elements such as videos have been demonstrated to be effective in facilitating learning activities.<sup>3</sup> In our institution, Doodle has been adopted as the primary online platform for dental education.

According to Pappas, distance education can be traced back to 1892, when the University of Wisconsin-Madison published a brochure.<sup>4</sup> In the United States, correspondence learning dates back even further to 1728, when Caleb Phillips advertised a paper-based study in Boston.<sup>5</sup> During the 1800s, distance was a major obstacle to higher education, and it wasn’t until 1892 that Pennsylvania State University started its correspondence study program.<sup>6,7</sup>

The “Flipped Classroom,” has been the matter of discussion owing to the use of videos for out-of-class instruction with in-class training conducted by the instructor. While the use of YouTube in education has not been extensively studied, some research has been done on its use in academic disciplines like medicine and architecture.<sup>8,9</sup>

In supposition, these findings highlight the positive impact of YouTube in understanding oral biology and oral pathology topics. While it may not be the sole learning tool, it serves as a valuable support tool. The visual elements and efficiency it offers make it an attractive option for both teachers and students. However, it is important to consider the limitations of YouTube and acknowledge the relevance of face-to-face teaching methods.

Further results state that 28.9% of participants disagreed with the conception that YouTube can facilitate two-way communication between lecturers and students in the context of teaching and learning. On the other hand, 30.1% of participants agreed that YouTube presentations lack the necessary level of detail to accurately convey subject matter. Additionally, 49.4% of participants believed that YouTube is only suitable for theoretical topics and future reference. Furthermore, 37.3% of participants acknowledged that language poses a significant barrier when using YouTube to learn about oral biology and oral pathology. Conversely, 45.8% of participants disagreed with the idea that YouTube is completely inadequate for these topics compared to live demonstrations. Lastly, 37.3% of participants agreed that negative issues, such as misleading videos, have a detrimental impact on teaching and learning through YouTube.

Many participants expressed concerns about the negative effects of misleading videos on the educational value of YouTube. This sentiment may stem from the fact that the quality and scientific accuracy of medical information shared on the internet can vary greatly. Since there is no quality control mechanism in place, the responsibility for ensuring the accuracy of the information lies solely with the uploader.<sup>10</sup> Consequently, there is a significant amount of information pollution alongside valuable content. Taking these factors into consideration, most students believe that YouTube cannot effectively serve as an instructional aid. Moreover, many students hold the view that YouTube is not suitable for studying oral biology and oral pathology when compared to live demonstrations.

Conventional methods of teaching and learning must be re-evaluated to keep pace with the rapid advancements

in technology in the 21<sup>st</sup> century. The role of the teacher is to ensure that the teaching methods and resources have the greatest impact on student learning. Learning occurs when students' skills, knowledge, and attitudes change after receiving instruction.<sup>10</sup> These statements support our findings, which indicate that most students believe YouTube can be effectively used to understand various oral biology and oral pathology topics.

YouTube proves to be beneficial in teaching and learning various oral biology and oral pathology topics. The use of video in teaching and learning sessions is more effective compared to YouTube alone. YouTube provides visual elements that attract students' attention and interest. Teaching and learning oral biology and oral pathology are more efficient when combined with YouTube applications. The use of YouTube in teaching and learning fosters two-way communication between lecturers and students.

However, students have raised concerns about language barriers when using YouTube to learn oral biology and oral pathology. Many videos are not posted in English or the students' regional language, which can pose a problem. Additionally, students feel that YouTube is not particularly useful for assessments, as it does not allow for measuring student achievement effectively. Furthermore, the detailed accuracy of subject matter cannot be acquired through YouTube presentations. YouTube is primarily suitable for theoretical topics and future reference. Face-to-face teaching methods remain more relevant compared to using YouTube for instruction. Therefore, YouTube should be seen as a supplementary tool rather than the main learning tool for providing information on various oral biology and oral pathology topics.

This study has limitations as it solely includes participants from a single institution. It would be intriguing to explore whether similar opinions are held in other institutions. Furthermore, it would be advantageous to investigate whether there is a correlation between professionals' age and their attitude towards the use of technology in performing dentistry. By expanding the participant pool and considering age as a factor, we can gain a more comprehensive understanding of the topic.

## CONCLUSIONS

With the findings of the study, it can be concluded that YouTube can be effectively utilized as a supplementary resource to comprehend various topics related to oral biology and oral pathology. However, incorporating videos into teaching and learning sessions is more effective than

relying solely on YouTube. Face-to-face instruction remains more relevant compared to YouTube-based instruction. In conclusion, combining YouTube applications with traditional teaching methods enhances the efficiency of teaching and learning oral biology and oral pathology. Furthermore, it would be beneficial to explore the use of this tool in specialized areas of dentistry. Replicating this study could determine if YouTube's utilization can be extended to other subject areas. Additionally, it would be valuable to assess the effectiveness of YouTube in education's priority areas, identifying its strengths and weaknesses.

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NJ did study designing, data collection, data interpretation, manuscript writing, manuscript editing. SK did data interpretation and manuscript editing, TR did data collection, NA and VS did manuscript editing.

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