



American Journal of Education and Technology (AJET)

ISSN: 2832-9481 (ONLINE)

VOLUME 4 ISSUE 4 (2025)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

The Role of Pre-recorded Lecture Length and Captioning in Shaping Business Students' Learning and Engagement

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Article Information

Received: July 07, 2025

Accepted: August 11, 2025

Published: September 24, 2025

Keywords

Captioning, Covid-19 Pandemic, Learning Effectiveness, Online Learning, Pre-Recorded Lectures, Student Preferences

ABSTRACT

Online education has seen substantial growth over the last few years, particularly in the context of the COVID-19 pandemic. The objective of this study was to investigate the impact of pre-recorded lecture duration and the availability of captioning on student engagement and learning effectiveness during the pandemic. Data was collected through a survey of both undergraduate and postgraduate business students at a British university's partnership campus in Qatar. The results show that students prefer shorter recordings and perceive them as more useful for their learning. Furthermore, students indicated that captions are a very useful addition to pre-recorded video lectures, and that they use both video and captions together to enhance their learning experience. The findings offer valuable insights into the preferences and experiences of students within the context of an online learning environment. Pre-recorded short lectures with captions offer an advantageous learning environment for students, which educators can consider adopting in post-pandemic teaching practices as a more permanent feature.

INTRODUCTION

The global COVID-19 pandemic compelled a swift transition to remote education on a global scale (Asgari *et al.*, 2021). Initially, universities utilised video conferencing tools like Zoom and Skype but later adopted more extensive platforms like Blackboard Collaborate and Microsoft Teams. The platforms offered a range of features that improved the effectiveness of online education, including interactive whiteboards, chat capabilities, and breakout rooms specifically designed for group discussions (Hamdan *et al.*, 2020). However, given the extended duration of the pandemic, educators progressively acknowledged the importance of integrating pre-recorded lectures to enhance the educational and scholarly environment.

The utilisation of pre-recorded lectures benefits both students and instructors alike (Yatigammana & Wijayarathna, 2021), and provides a flexible learning environment, allowing students to conveniently access course materials and advance at their preferred pace. Djidu *et al.* (2021) demonstrate the benefits of asynchronous online classes for students facing challenges in engaging with synchronous sessions due to factors such as variations in time zones, limited internet connectivity, or personal commitments. Additionally, incorporating pre-recorded lectures enables students to engage in an iterative examination of the course material, thereby facilitating a deeper understanding of the fundamental principles.

In this context, two aspects of pre-recorded lectures have emerged as significant factors in determining their success as a learning tool. First, the length of the recordings must be considered (Wang *et al.*, 2022), with ensuring a delicate balance between delivering comprehensive content

and sustaining student engagement being a paramount concern (Kayyali, 2024). While extended video content has the potential to overwhelm students, leading to reduced attention and information retention, shorter recorded lectures considerably improve concentration, thereby aiding students in effectively absorbing crucial information. Second, the incorporation of captions within pre-recorded lectures has also been identified as a significant aspect (Robson *et al.*, 2022). Captions confer advantages not solely to students with auditory impairments, but also to all individuals engaged in the learning process. Ranchal (2013) demonstrates that captions enhance the accessibility of content, leading to improved comprehension and engagement among students. Furthermore, captions also serve to intensify the understanding of the lecture content for students with a limited command of the non-native language or those who prefer engaging with textual information rather than relying solely on auditory reception.

Numerous studies have investigated the impact of the sudden shift to online learning and the ensuing changes in teaching and learning resulting from the COVID-19 pandemic. Areas examined range from the implementation of online teaching during the pandemic (Febrianto *et al.*, 2020) and the challenges faced by universities (Amini *et al.*, 2021), to the students' perspective (Adnan & Anwar, 2020) and the educators' experience (Nambiar, 2020). However, there is little evidence regarding students' perceptions of pre-recorded lectures and the use of captions in higher education during the COVID-19 pandemic. However, this is an important question, as pre-recorded lectures could serve as a viable complement to traditional on-campus instruction, especially when combined with captions, on a more permanent basis. This

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suggestion draws on two theories. First, Cognitive Load Theory (Kirschner, 2002) argues that, since individuals' working memory is limited, learners are more inclined to comprehend and retain information when it is presented in smaller, more manageable segments (Kirschner, 2002). Hence, shorter sessions would be beneficial. Second, the Cognitive Theory of Multimedia Learning (Mayer, 2005, 2017) posits that individuals process visual and verbal information through different channels, and that each has a limited memory capacity. As a consequence, lectures with captions will provide a combined visual and verbal processing of both channels, complementing each other and thereby enhancing learning. This goes for both live and pre-recorded sessions.

Given the importance of those two aspects of pre-recorded lectures for learning success, our study provides deeper insights into the effectiveness of integrating captions and the impact of the length of pre-recorded lectures for business school degree programs. Our primary aim is to investigate the impact of different durations of pre-recorded videos and the presence of captions on the effectiveness of learning outcomes. Specifically, unlike previous studies that considered these two aspects separately, we combine them in a single investigation to provide a more comprehensive picture within a single dataset. The objective of this study is threefold: first, to gain insight into the participants' preferences and perceptions about the length of pre-recorded lectures; second, to assess the impact of captions on the learning experience; and third, to assess the potential benefits associated with using pre-recorded videos that can be used as a complement to conventional classroom teaching practice.

While we do so within the realm of online education amidst the COVID-19 pandemic, which offers a suitable framework, we do so with a view to the benefit of the approach in general, as pre-recordings and captions can be a valuable addition to teaching and learning going forward. A survey was sent to both undergraduate and postgraduate students enrolled in business programmes at a highly ranked British university's overseas business school campus in Qatar. The questions sought to elucidate students' views on the effectiveness and usefulness of both pre-recorded lectures and lecture captions for their learning.

Based on a sample of 122 students, the results indicate that pre-recorded, shorter lectures enable students to understand complex topics better and are therefore preferred. The results also show that students generally find captions very useful and use them in conjunction with the recording. Together, they can then improve student learning. Our findings not only provide additional evidence on the effectiveness of variation of length of pre-recorded lectures and the benefits of including captions within the lecture, but also offer meaningful insight for educators, suggesting that short, captioned, recorded lectures can serve as effective supplementary material to enhance on-campus classroom teaching in business school degree programs.

The study's findings make a significant contribution to

understanding effective online pedagogy, highlighting the importance of considering student preferences and integrating instructional approaches that enhance learning. Furthermore, these findings have significant implications for the future of teaching and learning. In particular, they raise the question of whether pre-recorded lectures, together with captions, could serve as a viable complement to traditional on-campus instruction, particularly in the context of business education.

LITERATURE REVIEW

Online Teaching – Challenges and New Pedagogic Strategies

While online education and teaching have potential advantages, such as enhanced flexibility, improved accessibility, and the prospect of tailored learning experiences, they also present challenges. For example, it requires pedagogical adjustments and the implementation of novel pedagogical approaches to ensure continued online educational facilities and enhance student engagement (Stevanović *et al.*, 2021; Gupta, 2021). Turnbull (2021) has identified five core challenges for higher education institutions transitioning to online teaching: integrating synchronous and asynchronous learning tools, access to technology, faculty and student online competence, addressing academic dishonesty, and ensuring privacy and confidentiality. Studies, therefore, examined a broad variety of aspects of how teaching can be adjusted to suit online education, as well as how to improve and enhance the online educational experience. While primarily conducted in the context of COVID-19 and the transition to online education, their findings can be instructive in a broader sense. For instance, Lapitan *et al.* (2021) investigated the integration of synchronous and asynchronous learning activities using a blended learning method to enhance student engagement and facilitate active learning in chemical engineering at a University in the Philippines. The asynchronous aspect of the teaching was facilitated by broadcasting pre-recorded lecture videos on YouTube, enabling students to learn and progress at their own pace. Video conferencing platforms, such as Zoom or Google Meet, were used to facilitate the synchronous segment. The findings highlight the significance of effective communication, thoughtfully crafted educational resources, and engaging digital platforms.

Some studies explicitly focused on the student perspective and perception of online education. Investigating students' perspectives on online learning and their overall satisfaction with this mode of education, Adnan and Anwar (2020) examined various factors, including internet connectivity, digital literacy, engagement, and their impact on mental health. The results emphasised the necessity of implementing support systems, fostering more significant interaction, promoting clear communication, and employing effective pedagogical strategies to improve the quality of the online learning experience for students. Ali (2020) highlighted the importance of proficient instructional design, robust technological infrastructure,

and comprehensive faculty development in ensuring high-quality online learning experiences, emphasising the need for adaptability, student engagement, and support mechanisms within remote learning.

Chen *et al.* (2020) examined dental students' viewpoints on arranging online symposia with dental educators from different countries, focusing on students' preferences regarding instructional approaches and specifically comparing synchronous and asynchronous learning methods. Exploring several factors, including engagement, interaction, time management, and the efficacy of diverse instructional strategies, the results underscore the significance of employing student-centered methodologies, fostering effective communication, and providing avenues for active learning within the online setting. Similarly, Simamora (2020) investigated performing arts students and reported various concerns, including the restricted availability of specialised facilities, diminished prospects for hands-on training and performances, and the consequences for artistic expression and collaborative endeavours.

Academic achievement and overall performance of students in online learning environments versus traditional face-to-face instructional settings were factors explored by Chisadza *et al.* (2021). The results indicate that online learning demonstrated efficacy in facilitating the continuation of learning, but in-person interactions were deemed essential to achieve superior academic outcomes. The research also emphasises the significance of employing blended methodologies that integrate both online and in-person teaching methods to maximise educational achievements. A study by Chung *et al.* (2020) among Malaysian students, however, has raised concerns regarding their capacity for self-regulated learning and their attitudes towards online education, which may not be beneficial for online success.

Evaluating student satisfaction with online education and improving it are also concerns for educators. Faize and Nawaz (2020) examined the various factors that impact student satisfaction, encompassing elements such as course design, instructor support, opportunities for interaction, and technological infrastructure. The results underscore the significance of incorporating active learning strategies, providing timely feedback, and fostering effective communication to augment student satisfaction.

Hamdan *et al.* (2020) analysed the challenges and experiences of both students and educators regarding the difficulties encountered during the transition to online learning and the strategies implemented to address these difficulties. The results shed light on various concerns, including challenges related to technology, limited opportunities for in-person communication, and the importance of well-designed instructional strategies. In this context, several studies (Simamora *et al.*, 2020; Pokhrel & Chhetri, 2021) have examined the key factors that educators need to implement to make online teaching successful, highlighting the importance of enhancing pedagogical approaches, continuous professional development, technological assistance, and collaborative

efforts.

Pre-Recorded Lectures

In line with the objective of our study, several studies have examined various aspects of pre-recorded lectures. The pre-recorded lecture was introduced in the pre-pandemic era, in addition to traditional on-campus teaching (O'Callaghan *et al.*, 2023). Recorded lectures have the key trait of separating the lecture from the physical classroom in terms of space and time, significantly changing the dynamics of interaction between students and instructors and potentially influencing students' overall experience of higher education (Weidman *et al.*, 2001). A study by Cilesiz (2015) describes the adoption of recorded lectures by students as an acculturation process with four stages: ignorance, disillusionment, crisis, and coping, within the institutional context. While the question was raised about how this pedagogical approach can be equally beneficial in different disciplines (Dona *et al.*, 2017), this was not a significant concern during the pre-pandemic period, as on-campus teaching predominantly covered academic teaching functions. The COVID-19 pandemic triggered a rapid switch to online learning in higher education (Oyedotun, 2020; Hassan, 2021). As education is primarily based on students, teachers, content, and interactions among these elements (Bernard *et al.*, 2009; Garrison, 1989), online platforms were the only method of maintaining academic functionality and ensuring interaction between these core elements during the pandemic. For example, pre-recorded lectures were used in parallel with live online lectures to continue an uninterrupted academic timetable (Adebesin *et al.*, 2021). Research to date on the effectiveness and value of pre-recorded sessions remains limited, particularly in determining the optimal recording length. Despite previous concerns about the comparative efficiency of pre-recorded and live online lectures in terms of students' academic performance (Le, 2022), research evidence suggests that pre-recorded lectures can be a valuable tool for learning. For example, Syynimaa (2019) found that pre-recorded video lectures can be equally effective as face-to-face lectures in terms of knowledge acquisition and retention, and can have positive effects on students' grades. Islam *et al.* (2020) conducted a comparative analysis of the effectiveness of pre-recorded vs live Zoom lectures in business management courses, examining student perceptions and learning outcomes. The results indicate that students preferred pre-recorded video lectures due to their flexible nature and convenient accessibility. At the same time, live Zoom lectures were highly regarded by students for their ability to facilitate real-time interaction (Islam *et al.*, 2020). Brown (2022) provided contrary evidence, finding that pre-recorded lectures have little impact on course pass rate due to a lack of engagement in learning.

Lecture Captions

To date, there is minimal research into captions and their role in learning. For example, Ranchal (2013) demonstrates that captions enhance the accessibility

of content, leading to improved comprehension and engagement among students. Furthermore, captions also serve to intensify the understanding of the lecture content for students with a limited command of the non-native language or those who prefer engaging with textual information rather than relying solely on auditory reception. Robson *et al.* (2022) surveyed academics from a large group of UK universities about their views on the future of lectures post-pandemic. Their results highlight that staff clearly saw the need for captioning of lecture recordings. The reasons cited were that captions make learning more inclusive and accessible to students.

Summary

From the review, it is evident that a gap exists in the existing literature regarding whether the length of pre-recorded (asynchronous) lectures with embedded captions effectively supports pedagogical narratives in higher education. In this paper, we add to the expanding body of literature in this field by presenting a case study that explores students' reflections on the varying lengths of pre-recorded lectures with captions at a British university's overseas business school campus in Qatar.

MATERIALS AND METHODS

Overall Approach

This section outlines the data collection procedure, the questionnaire used, and the precautions taken to safeguard data confidentiality and anonymity. We employed a case study approach to collecting data from undergraduate and postgraduate business students enrolled at the partnership campus of a highly ranked British University in Qatar.

To gather the data, a survey was disseminated to participants via email over a 10-week period during the second semester of the 2021-22 academic year (January to March 2022). The survey instrument was developed utilising Google Forms, with the survey link incorporated within the electronic communication dispatched to the student cohort. This methodology facilitated a convenient and efficient data collection process, allowing respondents to complete the questionnaire at their preferred time (Simamora *et al.*, 2020).

Questionnaire Design

The questionnaire was developed as a mix of various question formats to address the research objectives. These include Likert-scale rankings and multiple-choice questions. The survey contained a total of 17 questions, and the instrument was designed in a structured format to collect demographic data, including variables such as the educational attainment level being pursued, current employment status, area of academic focus, and study arrangement (either full-time or part-time) (Adedoyin & Soykan, 2023). Furthermore, the survey encompassed inquiries about the preferences and perceptions of the participants regarding the duration of pre-recorded lectures, the efficacy of both short and long pre-recorded

lectures, the influence of captions on the learning process, viewpoints on the length and format of videos, and the potential advantages of pre-recorded lectures (Simamora *et al.*, 2020). The questionnaire can be found in the Appendix.

Data Protection

Several measures were implemented to safeguard the confidentiality and anonymity of the participants. The introductory section of the questionnaire indicated that participation was optional and that individuals' identities would remain confidential. Participation was voluntary. Students gave written informed consent and were told that they could withdraw at any time. The participants were guaranteed that their responses would be handled confidentially and that only summarised statistical findings would be disclosed (Ali, 2020). The questionnaire and data analysis process did not involve collecting or storing personally identifiable information (Adedoyin & Soykan, 2023).

RESULTS AND DISCUSSION

Results

Demographic Information

A total of 122 students participated in the survey, comprising a heterogeneous cohort of students pursuing different levels of education and specialising in various academic disciplines. Tables 1 and 2 present a detailed breakdown.

We can see from Table 1 that 76.2% of participants were undergraduate students, and 23.8% were postgraduate students. The majority of students at both levels are enrolled in one key business management course (48.4%

Table 1: Total Participants

Cohort	Programme	Participants
Undergraduate students (76.2%)	Accounting and Finance	37 (39.8%)
	Business Management	45 (48.4%)
	Business Management and Information Systems	06 (6.5%)
	Business Management and International Relations	05 (5.4%)
Postgraduate students (23.8%)	MBA	11 (37.9%)
	International Business Management (MSc)	13 (44.8%)
	International Human Resource Management (MSc)	02 (6.9%)
	LLM	03 (10.3%)
Total		122 (100%)

and 44.8%, respectively), followed by another very popular course, so that overall, two courses make up the bulk of students both at UG level (88.2%) and at PG level (82.7%).

Table 2 shows that the majority of undergraduate students are in their third year (40.9%) or final year (30.1%) of study. Given their greater exposure to learning and teaching experiences, this indicates that the sample is appropriate for our study.

Student View of Pre-Recorded Lectures

The results revealed that a notable percentage of

Table 2: Undergraduate Students, Year of Study

Year of Study: Undergraduate Students	Participants
Year 1	05 (5.4%)
Year 2	22 (23.7%)
Year 3	38 (40.9%)
Year 4	28 (30.1%)
Total	93 (100%)

participants (51.6%) preferred pre-recorded lectures over live lectures, given the limitations imposed by the COVID-19 pandemic (Table 3). When split by UG vs PG level of studies, the vast majority of UG students (76%) preferred pre-recorded lectures, compared to 59% of PG students. A slightly lower preference among PG students might be because they tend to be older, often returning to higher education after a few years into their careers. That means their initial higher education may have been in the traditional, on-campus format, so they are accustomed to that. However, taken together, across levels of study, there is a clear preference for pre-recordings. This preference can be attributed to the flexibility and convenience it offers, allowing students to access the material at their desired pace and with ease (Adnan & Anwar, 2020). The findings align with the broader trend observed in the field of education amidst the pandemic, where educational institutions worldwide expeditiously adopted online learning platforms to ensure the uninterrupted progression of academic pursuits.

The following two sections present the analysis of the survey responses, split by our two key variables of interest.

Table 3: Preferences of Lecture Delivery

Students' Preferences for Lecture Delivery	Online live lectures	28.7%
	Pre-recorded lectures	51.6%
	Recorded live lectures	19.7%

First, the results regarding the length of pre-recordings are presented. Second, the results for lecture captions.

Impact of Length of Recording on Effectiveness

Our first key question concerns the impact of recording length. The results indicate that participants held the perception that shorter pre-recorded lectures, spanning from 5 to 12 minutes, were preferred, as shown in Table 4. This discovery is consistent with previous research that suggests shorter video segments benefit learner engagement and retention (Syynimaa, 2019). Shorter

lectures have the advantage of allowing for a focused delivery of content and reducing the cognitive load on students, leading to improved comprehension and retention of information. Conversely, it has been observed that lectures of longer duration, typically lasting between 1 – 2 hours, may offer diminished benefits (Table 4). This could be attributed to the challenges posed by individuals' limited attention spans and the substantial volume of information encountered during extended video sessions. We can also see from Table 5 that overall, 71.4% of students highly rated the short recordings as useful

Table 4: Students' Response to the Usefulness of the Length of Pre-recorded Video Lectures

	Students' Preference on the length of the lecture
Several short videos (5 – 12 minutes) to cover a whole lecture	77%
A long video (1 to 2 hours) to cover the lecture	23%

(ranked as 7-10). More specifically, 65% of PG and 83% of UG students consider this format highly useful.

When looking at the qualitative comments from the survey, a similar picture emerges. For example, a

Table 5: Usefulness of Short Video Length

Ranking (1 – 10)	1 – 2	2 – 4	5 – 6	7 – 8	9 – 10
Percentage	4%	4.9%	19.7%	30.3%	41.1%

participant commented on an hour-long recorded lecture, "I would not be motivated to watch it as there will be a lot of information, and it should be watched multiple times to understand".

Similarly, participants from the undergraduate cohort commented positively on short, pre-recorded lectures, e.g.: "That is a good way to learning as it does not overwhelm the student", or views such as "Slightly better than long lecture videos, slightly more effective in understanding the material", or

"This has been seen as an effective method, as students focus on particular topics and the focus towards the material is high. It gives students a break to restart. It builds a sense of accomplishment too, by which students can cover more topics".

Impact of Captions on Learning Effectiveness

Our second key question is about the impact of lecture captions on the effectiveness of the learning process. Captions serve as an additional resource that aids in understanding educational materials, particularly benefiting students who experience hearing impairments or encounter language-related challenges (Ali, 2020). Moreover, as suggested by the Cognitive Theory of Multimedia Learning, an individual processes verbal information separately from visual information; thus, it

complements and aids the learning process (Mayer, 2005, 2017). Our results show that a considerable percentage of participants (87.7%) indicated that captions had a positive impact on their learning experience, rating them as “Useful” (32%) or “Very Useful” (55.7%) for learning (Table 6). Here again, a UG vs UG split appears: While the majority of PG students (58.6%) rated it as “Useful” or “Highly Useful”, the favorability among UG students is much higher, with 95.7%, thus nearly all the students in the sample. The incorporation of captions in videos has the potential to

enhance comprehension by providing visual reinforcement to the auditory material. This, in turn, can lead to improved retention and increased accessibility for a broader range of learners (Adnan & Anwar, 2020). The positive perception of captions aligns with the principles of universal learning design, emphasising the importance of inclusive educational strategies (Brown, 2022), and the suggestions by the Cognitive Theory of Multimedia Learning. Further evidence for the usefulness of both visual and verbal communication in a single video, as well as their

Table 6: Usefulness of Video Captions

Very useful	Useful	Neutral	Not useful	Not at all useful
55.7%	32%	10.7%	1.6%	0%

complementary nature, is evident. It highlights that the majority of students (82.8%) use both channels together in their learning. This strongly suggests that combining both in pre-recordings is beneficial for the students. Particularly, in light of our results above, short videos and captions improve learning effectiveness.

The Benefits of Short Pre-Recorded Lectures and Captions

As the results presented above show, the participants expressed a favourable inclination towards employing a collection of concise videos, varying in length from 5 to 12 minutes, to tackle the topic for the designated week. The results in Table 7 (below) clearly demonstrate the perceived benefit of short videos for learning, as overwhelmingly (86.1%) students

stated that this format helps them understand the topic. Applying this specific format facilitates the conveyance of concentrated and comprehensible content, thereby augmenting comprehension and information retention (Tang *et al.*, 2021). The pedagogical approach of dividing the subject matter into smaller segments allows students to engage with the material incrementally, thereby enhancing their understanding gradually (Turnbull *et al.*, 2021). This finding presents empirical support for the notion that the effectiveness of learning is enhanced when information is partitioned into smaller, more easily digestible units, aligning with the fundamental tenets of cognitive load theory and multimedia learning.

Taken together, our results provide quantitative evidence in support of the notion that shorter lectures and the

Table 7: Do the short lectures help understand the topic

Students’ response on how recorded short lectures help understand the lecture topics	Yes	86.1%
	No	6.5%
	Not Sure	7.4%

integration of captions contribute to enhanced learning outcomes. The findings indicate a strong positive effect of shorter duration of pre-recorded lectures on the perceived effectiveness of learning, as well as the presence of captions on the perceived effectiveness of learning. In a broader context, these findings highlight the importance and benefits of this shorter length format for students, indicating a potential shift in pedagogical strategies beyond the existing pandemic context (Robson

et al., 2022). Succinct, pre-recorded lectures can be a beneficial way to enhance student learning success. The rising prevalence of hybrid and online learning models within the educational sphere has led to an increasing recognition of the advantages of pre-recorded lectures, as well as their enhanced flexibility and convenience for students. Our findings are presented in Table 8 below. The findings also reveal that short, pre-recorded lectures can be a valuable addition to courses in general,

Table 8: Potential Benefits of Pre-recorded Lectures

Potential benefits of pre-recorded video lectures	Feedback
I can watch them during my own time.	94.3%
I can watch them from any device – mobile, laptop or desktop.	59.8%
I can watch them many times to understand the lecture clearly.	76.2%
They are useful for revision before exams.	42.6%
Helpful to understand the complex calculation of accounting and finance.	28.7%
Helpful to understand the conceptual theories of business management.	38.5%

beyond the specific period studied, which necessitated their use. The perceived benefits and usefulness to students are clearly reflected in student answers to the question of whether short, pre-recorded lectures should be made a permanent feature of their studies.

Overall, 93.4% of students in the survey suggested that they should be used even after the COVID-19 pandemic (Figure 1).

Discussion

Our study makes a significant contribution to

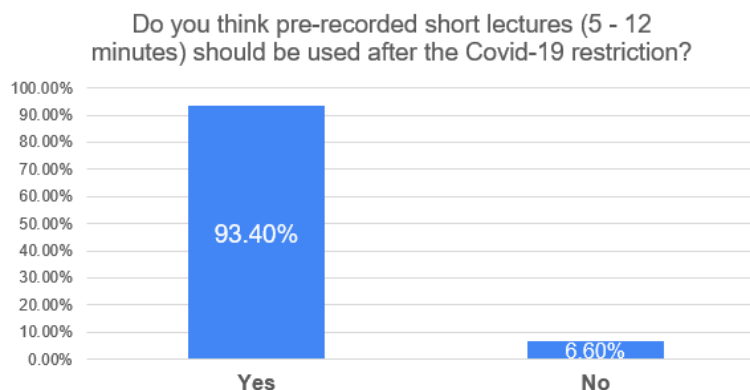


Figure 1: Use of Short Pre-recordings After COVID-19 Pandemic

understanding student preferences and perceived experiences regarding pre-recorded lectures and captioning during the COVID-19 pandemic, particularly since the results have important implications for future teaching practices beyond the period considered. This section will interpret the findings and explore their implications for online teaching practices (Sepulveda-Escobar & Morrison, 2020). Specifically, it will emphasise the advantages of utilising shorter pre-recorded lectures and incorporating captions.

First, we find that students prefer lectures to be broken into smaller, shorter sessions rather than long, traditional-style lectures, as participants reported perceiving pre-recorded lectures of 5-12 minutes as more valuable. These results align with prior research, which suggests that dividing educational material into shorter segments has advantages (Ali, 2020). The favourable perception of shorter lectures can be attributed to enhanced engagement and attention span, as well as the ease of revisiting specific lecture segments (Chisadza *et al.*, 2021). Segmenting the topic into shorter units facilitates gradual learning and enhanced student engagement with the subject matter, thereby promoting improved comprehension and retention (Stevanović *et al.*, 2021). Shorter lecture sections facilitate the concentrated dissemination of knowledge and alleviate the cognitive burden, thereby enhancing students' capacity to comprehend and internalise information with greater efficacy.

The recognition that shorter video durations are perceived as more effective and valuable emphasises the importance of segmenting content for online educational purposes. Lectures of shorter duration offer a more focused and concise approach to delivering information, resulting in a reduced cognitive load and increased student engagement (Susilowati, 2020). By employing a methodical approach to breaking down complex topics into smaller, more comprehensible elements, students can effectively

augment their ability to absorb and comprehend the subject matter (Sepulveda-Escobar & Morrison, 2020). Adopting shorter video durations also enables more straightforward navigation and review, allowing students to revisit specific concepts or sections requiring further clarification (Tang *et al.*, 2021).

Our results are therefore consistent with Cognitive Load Theory and multimedia learning principles, which posit that learners are more inclined to comprehend and retain information when presented in smaller, more manageable segments (Kirschner, 2002). Furthermore, they emphasise the importance of effectively managing cognitive resources and optimising instructional design to achieve favourable learning outcomes (Lapitan, 2021). At the same time, the participants ascribed a lower perceived utility to lengthier pre-recorded lectures, which spanned a duration of 1 to 2 hours. This aligns with the difficulties associated with extended video sessions, including a diminished attention span, fatigue, and information overload (Simamora *et al.*, 2020). Extended lectures can potentially overwhelm students, impeding their capacity to process and retain information adequately (Syynimaa, 2019). To enhance the effectiveness of learning experiences, educators should consider the potential benefits of dividing lengthier lectures into shorter segments, thereby facilitating regular intervals for rest and opportunities for reflection.

Second, our results provide clear evidence that students find captions useful and use them widely. Participants expressed a positive perception of incorporating captions in pre-recorded lectures, with most ratings falling into the categories of either "useful" or "highly useful." This aligns with prior arguments that incorporating captions in pre-recorded lectures improves accessibility and facilitates comprehension for a broader spectrum of learners (Islam *et al.*, 2020). Additionally, the notion that shorter video durations and the incorporation of captions are perceived

as more efficacious and valuable is supported (Ali, 2020). Captions serve as a means of visual reinforcement for the auditory content presented in the video, thereby guaranteeing accessibility of the material also to students with hearing impairments, and can benefit students who face language-related difficulties or prefer visual learning (Islam *et al.*, 2020; Simamora *et al.*, 2020). Our results further emphasise the significance of captions as an inclusive instructional strategy, reflecting the principles of universal learning design (Hamdan *et al.*, 2020). The integration of captions in educational settings enables educators to create a more inclusive learning environment, accommodating the diverse needs of learners and ensuring equitable access to educational materials.

The favourable perception of captions is consistent with the principles of universal learning design, which prioritise the significance of inclusive educational approaches (Lapitan, 2021). The inclusion of captions by educators can effectively broaden the accessibility of learning materials, thereby enhancing the overall learning experience for a broader range of learners. This is also consistent with the Cognitive Theory of Multimedia Learning (Mayer, 2005; 2017) and the idea that, since individuals process visual and verbal information in different channels with limited memory capacity, lectures with captions will provide visual and verbal processing of both channels together, complementing each other and thereby enhancing learning.

On a more general level, the results that students prefer pre-recorded lectures over live lectures is in line with the growing acceptance of online learning platforms globally. Pre-recorded lectures offer students enhanced flexibility and convenience, allowing them to access educational content at their preferred pace and convenience (Faize & Nawaz, 2020). This preference indicates that students value the opportunity to review and revisit lectures, which facilitates enhanced comprehension and retention of knowledge (Syynimaa, 2019). Furthermore, pre-recorded lectures cater to various learning styles and individual timetables, promoting a more customised and personalised educational encounter.

Our results may also be indicative of a potential shift in pedagogical methods. The growing prevalence of online and hybrid learning models has led to the acknowledgement of several benefits associated with shorter lectures, including increased flexibility, enhanced accessibility, and the promotion of personalised learning experiences (Li, 2022). Educators have the potential to leverage the advantages of succinct pre-recorded lectures by integrating them into blended learning approaches, which combine asynchronous content delivery and synchronous interactive sessions (Prastuti, 2021). Implementing this hybrid methodology can effectively integrate the benefits of both approaches, allowing individuals to acquire knowledge at their preferred pace while fostering active engagement and collaboration. The adaptability of online learning proves advantageous for students who must balance various obligations, such

as employment or familial responsibilities, as it allows them to integrate their educational pursuits into their demanding schedules.

Our findings, therefore, also have important implications for educational practice. Educators ought to contemplate the integration of concise pre-recorded lectures into their instructional design, guaranteeing that the content is delivered in easily digestible portions (Djidu *et al.*, 2021), which enables students to enhance their comprehension and cognitive processing of the subject matter, resulting in enhanced educational achievements (Hamdan *et al.*, 2020). Furthermore, the inclusion of captions as a means to improve accessibility and facilitate understanding is important (Ali, 2020). Educators can effectively address the varied learning needs of students by incorporating captions, thereby ensuring the accessibility and comprehensibility of instructional material for all learners.

The findings of this study additionally underscore the significance of instructional flexibility and adaptability. With the increasing prevalence of online and hybrid learning models, educators should be open towards integrating diverse instructional strategies and formats. The inclination towards shorter pre-recorded lectures and utilising multiple brief videos suggests that students value diversity and interactive pedagogical approaches. Technology can be used to create immersive learning environments by integrating the delivery of asynchronous content with synchronous interactive sessions. By effectively integrating pre-recorded lectures and live interactions, educators have the ability to cultivate a dynamic and interactive learning environment that promotes active student participation and collaborative efforts.

CONCLUSION

This study examined the impact of pre-recorded lecture duration and captioning availability on learning effectiveness during the COVID-19 pandemic, when higher education institutions abruptly transitioned to online delivery. It aimed to assess whether shorter pre-recorded lectures were more effective than longer ones and to evaluate the role of captions in enhancing comprehension. Data were collected via a questionnaire distributed to undergraduate and postgraduate business students (N = 122) at a British university's partnership campus in Qatar.

The findings revealed significant positive correlations between shorter lecture durations and perceived learning effectiveness, as well as between the inclusion of captions and improved comprehension—aligning with prior research. Both factors were shown to enhance learning quality, underscoring their importance in online instructional design. Additionally, students reported actively utilising captions alongside video lectures to reinforce understanding. Notably, nearly all participants expressed a preference for retaining pre-recorded lectures as a permanent feature due to their perceived academic value. While the study focused on student preferences during the pandemic, its implications extend to the broader

realm of online education. The results advance the understanding of effective digital pedagogy, emphasising the need to align teaching methods with learner needs. They offer actionable insights for optimising online instruction, advocating for concise, captioned lectures to improve engagement and outcomes in both fully online and hybrid models.

However, limitations include the single-campus scope, restricting generalizability, and reliance on self-reported data, which may introduce bias. Furthermore, the study examined only lecture length and captioning, leaving other potential influencing factors unexplored. Future research could expand into non-business disciplines, diverse educational contexts, and mixed-method approaches, such as interviews or observational studies, to deepen insights.

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