

TEACH^R

Implementation strategies to pervade lecture capturing technologies using Panopto in Moodle: An exploratory case study in Singapore Bible College

Jason Chen

Singapore Bible College, Singapore

jasonc@sbc.edu.sg

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Abstract

Singapore Bible College (SBC) recognises that the mere purchasing of any education technology tools is not sufficient to pervade its use. Implementation strategies based on sound principles of barriers to technology integration were formulated, implemented and measured to gauge its effectiveness. Its final goal is, that the use of Panopto technology is fully leveraged to benefit the teaching and learning community within SBC.

Introduction

It is well known that recorded lectures used in asynchronous learning can provide valuable revision materials, particularly for students who may find it difficult to comprehend a lecture fully at the time of delivery (Luke, 2022; Bišćan, Milanović, Petrović, & Pale, 2021). In addition, recorded lectures can provide the full context of a lecture, such as placing of emphasis in explaining an important point (Banerjee, 2021) as compared to note-taking. The digital nature of the recorded videos enables online delivery on web-based platforms such as a Learning Management System (LMS), that expands on the affordances of accessibility to allow creative use of recorded lectures not only in lesson delivery but assessment as well. For example, students can create their own recordings of their presentations and submit for assessment, without gathering synchronously onsite or online. Moreover, the on-demand access to appropriate digital materials to review for assessment tasks, allow modification of assessment objectives to a higher order (Limniou, Varga-Atkins, Hands & Elshamama, 2021; Faize

& Nawaz, 2020). Lecture capturing technologies such as Panopto, allows all the above to be realised seamlessly in seminaries, namely by simplifying the process of video recording and editing with effective management of marking and feedback. This was especially important so during the worldwide COVID-19 pandemic, when the lockdowns and social distancing imposed by governments to control the epidemic, resulted in a suspension of traditional face-to-face classes in educational institutions worldwide (Bišćan, Milanović, Petrović, & Pale, 2021; Wong, Li, Chan & Cheung, 2022). In response, videos capturing lectures has been popularly adopted in the widely adopted hybrid learning and teaching, and flipped learning context—as a substitute teaching pedagogy to cope with the COVID-19 impact (Li, Wong, Kwan, Chan, Wu & Cheung, 2023).

Panopto: Lecture capturing technology

Panopto is a video recording, organising, and sharing tool that's designed specifically for education purposes. It is built to integrate with LMS systems such as Moodle, as well as video conferencing tools, making it possible to integrate this with your current setup. Panopto allows better communication of ideas through recording presentations and webcasts using multiple cameras and making digital notes. This makes it a useful way to offer students packaged content but also to flip the classroom for a learning experience both onsite and online. On top of that, Panopto uses smart algorithms to package video content so it can be accessed even from slower internet connections, making it widely accessible. Panopto enables multiple camera angles and feeds in the one video, allowing for a slides presentation or quiz to be integrated into a lesson. Educators and teaching staff can record and share safely, confident in the

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knowledge that any content will only be viewed by those it is supposed to be shared with.

Panopto allows creation of a library of videos for public or private viewing. Once the lectures are captured, viewers can access video in the library via computers and mobile devices, and logins and video views can be integrated with different learning management systems and Active Directory-compatible portals. On-demand and live videos can also be made available for general web viewing on computers, though notably, mobile devices can't view live webcasts at this time. Not only it simplifies video recording and editing, it also allows students to take notes while watching the video recordings. In addition, students were able to skip through the recordings to relevant portions, either by using the Smart Chaptering feature or clicking through the video. The inbuilt ASR feature within Panopto, allows easy captioning of the videos and this is particularly helpful for students who may not be native speakers and required additional visual subtitles to aid in understanding the video lectures. Lastly, the Panopto video file could be easily added to Moodle, which is the primary Learning Management System used by Singapore Bible College.

Adoption of technology in teaching

In using the Panopto lecture capturing technology, particularly in Singapore Bible College, there was resistance exhibited by Faculty and Adjunct teaching staff. This does not come as surprising as many research works have documented it. Cuban (2001) questioned the contemporary premise that equipping schools with technology would invariably result in high technology usage in classroom teaching and learning. In a quantitative study that used data from interviews with teaching staff, students, and administrators, classroom observations, a review of school documents and surveys of teachers and students in two high schools, he found that, contrary to belief, access to equipment and software seldom led to widespread teacher and student use (Cuban, Kirkpatrick, & Peck, 2001). In the two schools studied, the main reasons for the lack of technology use in lessons were teaching staff having no time to find and evaluate software and secondly, that the training was inadequate. In other words, the training was offered at inconvenient times and/or too generic in general computer skills rather than applied to the teacher's specific classroom needs. Furthermore, Vrasidas (2015) enumerated more practical barriers to technology integration for teaching staff: teaching staff lack of time to learn new software and technology in order to

devise lesson materials; lack of ongoing support; lack of technology infrastructure; lack of specific technologies that address specific needs of teaching staff and students; lack of the use of ICT in teacher preparation programs and the lack of policy curriculum and assessment support.

Moreover, they identified that teachers were resistant to changing their traditional approaches, and there was an incompatibility between their traditional, didactic teaching methods and constructivist frameworks fostered by ICT. Gkrimpizi et al. (2023) asserted that the teachers' pedagogy beliefs and particularly, their adaption to online pedagogies were major factors influencing the successful integration of technology in the classroom. Considering ICT's affordances that support constructivist approaches and student centred pedagogies, the teachers least successful in implementing such ICT in the teaching were those who persevered with more teacher-led didactic styles. In addition, Sugar et al. (2004) also found that teachers' beliefs that equated technology with entertainment rather than education were least inclined to adopt technology.

Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur and Sendurur (2012) defined two types of barriers to technology integration, first order (external) and second order (internal). They claimed that the external barriers were resources (both hardware and software), training, and support. The second order barriers, internal, were the teachers' beliefs about how students learned, and the perceived value of technology to their teaching and learning process. Tondeur et al (2017) revisited the question of alignment between pedagogical belief and practice, where they found that teachers having student-centred beliefs tended to enact student centred curricula despite technological, administrative or assessment barriers. Therefore, teachers' own beliefs and attitudes about the relevance of technology to students' learning appeared to have the biggest impact on successful integration and use (Ertmer, et al., 2012). In summary, the literature has identified a series of factors that can inhibit (or encourage) the sustained use of technology in teaching and learning. Hence, deliberate and calculated change management strategies need to be formulated and implemented within a certain time horizon, to shift teachers' beliefs to one that is favourable to the adoption of online technologies.

Case study in Singapore Bible College

The Singapore Bible College (SBC) is redesigning itself to enter into the online learning space through five different Course Models. The Models are

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differentiated primarily by Location and Modality. A programme may consist of courses using only one consistent Model or a combination of Models. (Singapore Bible College EduTech Team, 2021)

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1. Face-to-Face: This course is conducted Onsite and has mainly Synchronous Instructional Input. While the Modality is through Onsite classroom technology, some Online technology also can be used in the classroom (blended learning).
2. Hybrid: The Synchronous session of this course is conducted Online and/or Onsite, as scheduled by the Course Developer. When Onsite, the class will be conducted in a Smart Classroom. The Modality will always include the internet. The Synchronous sessions can include students who cannot attend class onsite (not by choice).
3. Hyflex: This Model is similar to the Hybrid Model except that students can attend the course either Online or Onsite by their choice. The Synchronous session of the course is usually conducted Onsite in a Smart Classroom (unless no student chooses to be onsite). The Modality will always include the internet.
4. Fully Online: The Synchronous session of this course is conducted fully online, as scheduled by the course developer. There is no Onsite Instructional Input. This model can have a mix of Synchronous or Asynchronous Instructional Input or a fully Synchronous Instructional Input.
5. Asynchronous Online: All Instructional and Learning Inputs are offered Asynchronously online, and are self-paced.

Across all of these five course models, Panopto plays an important role, both in the asynchronous and synchronous instructional inputs. Captioned video recordings of lectures, and classroom interactions, embedded with formative assessments in the Moodle LMS, enable the course models to be implemented across all five schools in Singapore Bible College. Therefore, we formulated strategies to encourage the adoption of Panopto lecture capturing technologies among our teaching staff (Faculty and Adjunct staff), based on the barriers to technology integration enumerated by Vrasidas (2015) above.

To address the teaching staff's challenge of lack of time to learn Panopto, we have developed a course based predominantly on asynchronous video lectures on relevant features of Panopto on our Learning Management System for initial

training. This was at first a pre-planned response to normal loads and being 'time poor', but the need was exacerbated by the impending potential impact of the COVID-19 pandemic including possible isolation of faculty from both their workplace and from students, as experienced to a lesser extent in the SARS epidemic. Actually COVID-19 "lockdowns" lasted about 8 weeks from April 7, 2020, to June 1, 2020" (Tan & Chua, 2024, p. 197) and 9 days in May, 2021 (p. 198). Perdana and Chu (2023) assert Higher education institutions (HEI's) faced "many challenges in changing their pedagogy and maintaining students' learning during the pandemic" (para. 3). The Singapore Bible College was not exempt.

The videos were structured in a logical manner of increasing difficulty levels. We also intentionally captured these video lectures using Panopto so that teaching staff experienced the features of Panopto first hand e.g. captions, smart chaptering, video quality, quiz features. The affordances of asynchronous bite-size videos allowed teaching staff to access them anytime, anywhere, within a stipulated period configured on Moodle. Bite-size content of less than 20 mins chunks, were deliberately designed so that busy teaching staff would feel motivated to complete the video. The smart chaptering capability, together with video speed allowed the teaching staff to exercise ownership of their own learning as well as being able to review certain segments if necessary. According to the Diffusion of Innovation Theory (DOI) (Rogers, 2003), teaching staff have varied cognitive learning paces and different motivational levels in picking up a technology tool. This was seen in SBC as well.

Using Figure 1 nomenclature, to cater to the late majority, a considerable number (34% predicted), we have arranged additional synchronous online class sessions of less than 1 hour, to address any questions about Panopto. The questions addressed were collected beforehand by Instructional Designers, in order to customise the sessions. Moreover, these sessions addressed any motivational gaps as well through real-time interactions. The shared reactions and responses from experienced teaching staff who used Panopto, were also included in this training program, to illustrate the practicality of Panopto use in SBC. Again, the availability online provided flexibility of location for busy teaching staff to attend and they could also join in and exit anytime, once their questions were answered.

The entire Panopto initial training programme forms one module in our initial onboarding training programme for our teaching staff. This improved

training addresses the second challenge of lack of use of ICT in onboarding programmes within the two schools studied.

Subsequent training segments and updates for Panopto, were provided on Google Space, where we pushed out bite-size learning objects such as infographics and short training videos that included staff sharing about their use of Panopto. We found that such unstructured bite-size training design, allowed Just-In-Time (JIT) training for teaching staff, with minimal disruption to their busy work schedule.

The initial training on Panopto earlier on,

provided the necessary prior knowledge and schema for teaching staff to learn this JIT content easily.

In addition, SBC's subscription to the full Panopto, Google Education Suite and Moodle plans provided the necessary technology infrastructure to integrate Panopto seamlessly and easily across these technological platforms. For example, teaching staff could easily add a Panopto video into any Moodle page, by clicking on the Panopto icon. Similarly, teaching staff can do a Single Sign on (SSO) using their Google work credentials to

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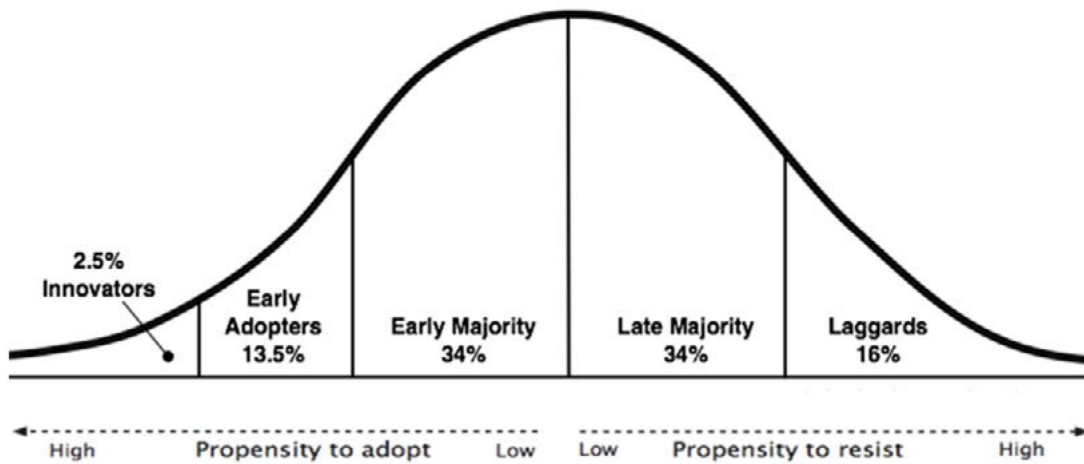


Figure 1: Diffusion of Innovation (DOI Theory Curve)

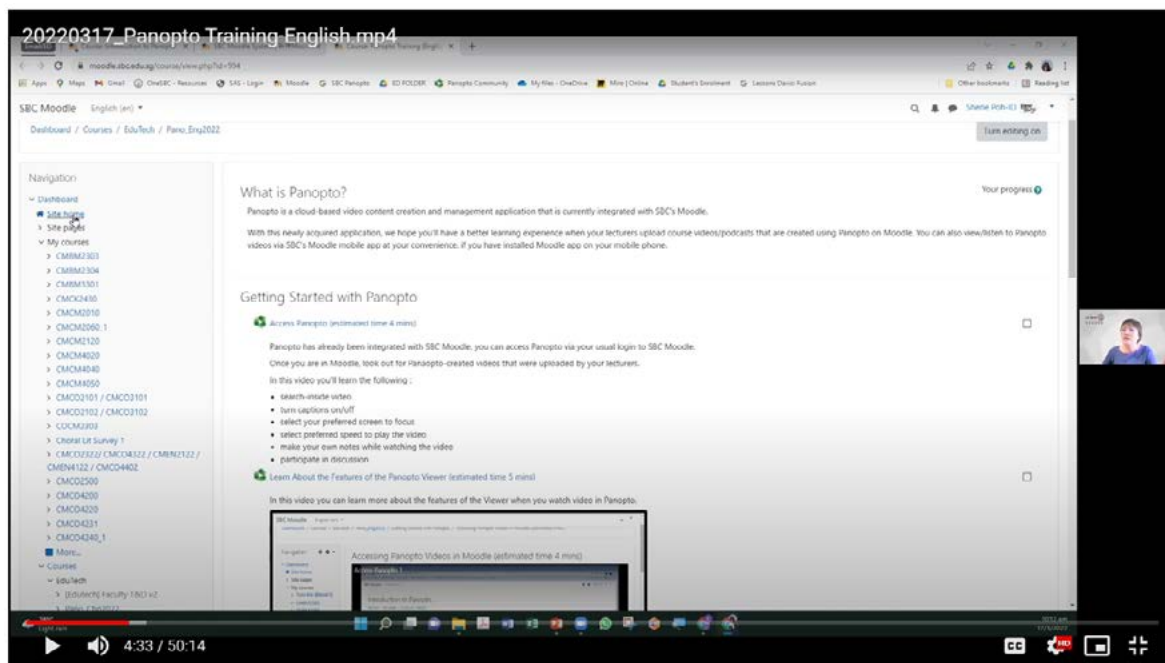


Figure 2: An online synchronous Panopto training conducted by a member of SBC CTL (Centre for Teaching and Learning) team

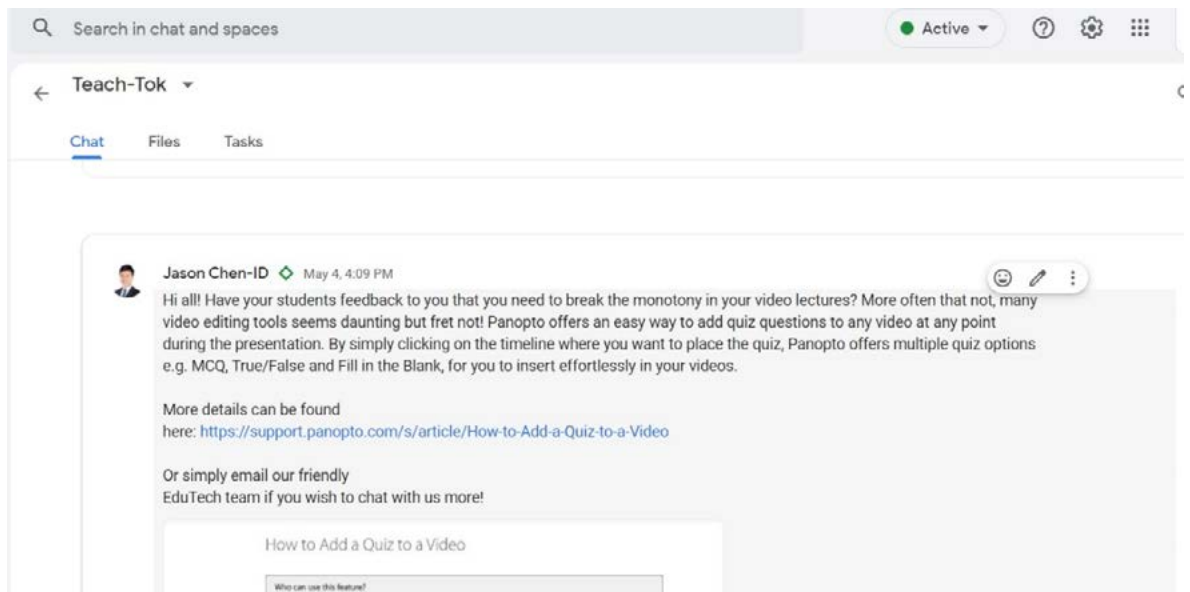


Figure 3: Unstructured bite-size training delivered on Google Space

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access Panopto and allow the addition of Panopto videos into Google applications. In addition, three to four Faculty representatives from respective schools have been chosen to work with the Instructional Designers in the semester to produce high quality online courses.

This strategy was adopted to build a group of “champions” to spearhead the adoption of Panopto technologies among the teaching community. These produced online courses set the ‘gold standards’ on how the Panopto technologies could be effectively leveraged to produce good quality video lectures and the crafting of formative assessments for students. Hence, this contributed as part of the seminary’s support for teaching staff to adopt the technology in their courses from the bottom up. Moreover, practical incentives such as performance appraisal, were created to encourage adoption of Panopto technologies as well as a show of support from top management.

Lastly, students were encouraged to use Panopto in their assignments both through training sessions and publicity. Panopto with Moodle, now makes it feasible for lecturers to expect their students to create and submit their own recordings for assessment, whilst the platform makes management of marking and feedback simple and effective. Students can normally see only what they have uploaded and can upload multiple times. There are no practical limits on file size. All recordings are date-stamped and identified by the user’s authenticated ID. Lecturers can easily view all the recordings for the course and give feedback viewable only by the student. Depending

on settings, students can extend the visibility of recordings to other users for peer assessment or group access. Similarly, lecturers can extend the visibility of individual recordings to other lecturers for moderation and to external examiners and others for quality assurance.

Students now have the tools for easily creating screencasts - to record a demonstration of a system they have built, to produce a critical evaluation of a website or to present their ideas or the results of their research. Video recordings, using Panopto on mobile devices, of presentations, interviews or performances is also possible. Adding video to a screencast may help ensure the authenticity of assessment, particularly if all students have previously recorded a short personal introduction (as part of induction to the institution) that may provide comparison. Assessment can be either formative or summative, with easy facilities for lecturers to give context-specific feedback.

This platform gives many advantages to students over alternative assessment methods. The skills they gain enable them to produce video CVs or online demonstrations for prospective employers. Viewing their own recordings is an excellent opportunity to reflect on their own skills and to try out new ideas. The process of recording is simple and uploading can be automated. There are no issues with file sizes and students can manage their own uploads by renaming or deleting them or making them available to others for review or sharing.

We designed Panopto training for students as well, both through asynchronous training as well as

synchronous training, to cater to the wide-ranging students' demographics. The training offered to teaching staff and students, ensured coherency and alignment on how the affordances of Panopto can be leveraged effectively for learning and teaching, as well as provide a platform for bidirectional feedback between teaching staff and students. We find this an effective way of supporting both teaching staff and students.

Future plans

As we are slightly over a year into adopting Panopto, and are in the midst of monitoring the use of Panopto by teaching staff. We plan to administer data collection instruments e.g. surveys and interviews at the end of the semester to find out what teaching staff and students think about Panopto and if the strategies that were described above were adequate and effective.

These components are part of strategic plans aligned with the Ministry of Education (MOE) intentions (Tan & Chu, 2024):

to make education:

1. **self-directed**, by developing pedagogies, tools, and structures that develop intrinsic motivation and self-ownership
2. **personalised**, by creating learning experiences catered to each student's needs
3. **connected**, by developing collaborative learning experiences
4. **human-centered**, by leveraging data-driven understanding of students' interests, attitudes, and motivations

Strategies include using artificial intelligence (AI) to enhance personalisation, digital making to connect students in collaborative networks, and using technology for learner-centered assessments. (p. 205)

Conclusion

It is without a doubt necessary that deliberate change management strategies need to be formulated and implemented to encourage the adoption of Panopto technology among teaching staff and students. Singapore Bible College (SBC) has adopted Vrasidas' (2015) five barriers to technology integration, as guiding principles in the analysis, designing, developing and implementation of contextualised strategies and processes in the hope of pervading the use of Panopto technology within the seminary. This has provided a systematic and coherent structure and created a synergy between and within teaching and learning fraternities. The strategy implements the MOE (2023) "Key enabler 3: EdTech ecosystem" item which advises:

Establish [a] network of partnerships and facilitate crowdsourcing of resources and solutions from teaching fraternity

- Establish local and global network of EdTech partnerships, with other government agencies, industry and research centres.
- Facilitate school-level creation and sharing of teacher resources, and partnership with teacher-developers to amplify ground-up innovation.

Singapore Bible College shares this organisational development experience to encourage other institutions in the Christian education community to consider this organisational approach to "bearing one another's burdens" Galatians 6:2. **TEACH**

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Author information

F.H. (Jason) Chen serves as Director/ Lead Instructional Designer with the Centre of Teaching and Learning and Adjunct Faculty with various schools at the Singapore Bible College (SBC). He holds several postgraduate credentials in Education (M.Ed, PhD and Diploma in Adult Continuing Education), Engineering (B.Eng and M.Eng) and Theology (MCS and M.Div). He is currently completing his Master of Theology programme with AGST Alliance. His current research interests lies in teachers' use of technology in the classroom and use of AI tools in theological education. is Director/Lead Instructional Designer, within the Centre for Teaching and Learning at Singapore Bible College.

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