

The Effect of Short Supplementary Instructional Videos on Course Engagement and Satisfaction

SCHOLARSHIP OF TEACHING AND LEARNING INQUIRY

A controlled study of two versions of an asynchronous online graduate course, comparing text-only instruction against instruction with short videos.

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Inquiry Brief Template**Name: Yana Rulinsky****Inquiry Title:****The Effect of Short Supplementary Instructional Videos on Online Asynchronous Higher Education Students' Course Engagement and Satisfaction****Inquiry Description**

The work of an Instructional Design (ID) professional can be ambiguous, full of uncertainty, and full of competing project priorities and design choices. As an instructional designer, every day I am met with finding answers to many instructional design questions such as, “How important is it for an instructional designer to include scaffolding supports in an online graduate course?” or “How and in what ways does the presence of accessible instructional materials affect undergraduate students’ learning outcomes?” As an instructional designer, my job and primary goal is to create effective, engaging, and enjoyable learning experiences, and the everyday instructional decisions I make regarding the learning strategies and instructional materials I utilize in my designs can and do impact my learners in a myriad of ways and either enhance or impede their learning.

With a fast-paced advancement of educational technology applications, strategies, and interventions in the last three decades, it is next to impossible for an instructional designer or a higher education decision-maker to choose a specific instructional design element or an educational technology intervention to prioritize in their learning environment. Focusing one’s attention on major educational technology trends and popular technologies is one way to proceed. In my research on the topic of future instructional design and development tools, I came across this quote by Faith Gurcan, the author of an article analyzing forty years of educational technology trends, “The integration of multimedia or digital media into educational technology is experiencing a notable rise due to its capacity to provide students with enhanced opportunities

for active engagement in the learning process” (Gurcan, 2024) Based on this and other notable research articles, it appears to me that multimedia, specifically video-based instructional materials, can and does increase students’ engagement and satisfaction levels in an online course, and, as part of my SOTL inquiry, I would like to discover if that is indeed true.

In this Scholarship of Teaching and Learning (SOTL) Inquiry, I aim to explore the impact of short supplementary videos on higher education students’ engagement and satisfaction with an asynchronous online course. I hope that the findings of this inquiry will help me and other instructional design professionals in choosing whether to include short instructional videos in asynchronous e-learning settings to promote student engagement and course satisfaction. The findings of this inquiry will also help me understand the added value of short supplementary instructional videos in online asynchronous higher education courses.

Context (Weeks 1 and 2)

This Scholarship of Teaching and Learning (SOTL) Inquiry will take place in a fully online asynchronous graduate setting. The participants in this study will be recruited from a large public university and diverse Pennsylvania higher education, online, asynchronous, graduate settings. This inquiry project will take place during the spring academic semester and will conclude at the end of that semester.

Although at this time the exact demographic statistics of this study participants are unknown and will only be available at a later stage of this inquiry project, I expect the participants’ demographic and other statistics to mimic the National Center for Educational Statistics below.

According to the National Center for Education Statistics, “In fall 2021, some 3.2 million students were enrolled at the postbaccalaureate level¹ in degree-granting institutions in the United States.”² (National Center for Education Statistics, 2023) The exact number of

participants taking part in this SOTL Inquiry is currently unknown, but will consist of graduate students at a large public university and other graduate students in the state of Pennsylvania enrolled in an asynchronous online graduate-level course or program at a higher education institution.

As per additional National Center for Education Statistics,

“In fall 2021, female students made up 61 percent of total postbaccalaureate enrollment (2.0 million students) and male students made up 39 percent (1.2 million students).

Between 2010 and 2021, female enrollment increased by 14 percent (from 1.7 million to 2.0 million students), whereas male enrollment increased by 3 percent (approximately 1.2 million students in both years).⁴ Between 2021 and 2031, female and male enrollments are projected to increase by 6 percent each (to 2.1 million and 1.3 million students, respectively). (National Center for Education Statistics, 2023)

Furthermore, as per the same NCES statistics report,

In fall 2021, at least two-thirds of full-time graduate students at public and private nonprofit degree-granting institutions were under age 30. In contrast, over two-thirds of full-time graduate students at for-profit institutions were aged 30 and over. Specifically, of full-time graduate students

- at public institutions, 74 percent were under age 30 (including 39 percent under age 25).
- at private nonprofit institutions, 68 percent were under age 30 (including 33 percent under age 25); and
- at private for-profit institutions, 69 percent were aged 30 and over (including 37 percent age 40 and over).

Among part-time graduate students, 78 percent were age 30 and over at private for-profit institutions, as were 63 percent at private nonprofit institutions and 59 percent at public institutions.

Thus, given the national statistics above and the non-profit public university status of that institution, I expect that the participants in this SOTL inquiry study will be predominately female and thirty years of age or younger. To ensure transferability of this inquiry's findings and assessment of equity, I will collect additional detailed participant data during the participant recruitment stage of this project.

My current role within the context of this project is that of a freelance Instructional Designer (ID) looking to better and advance my professional higher education setting e-learning instructional design skills. I am currently not employed by a higher education institution but hold a profound interest in the advancement of the Instructional Design field and overall improvement of the instructional design practices. As an owner and initiator of this inquiry project, I will plan, organize, supervise, and administer all tasks related to this project. As an instructional designer and singular owner of this inquiry, I have multiple points of influence such as design authority, data control, and reporting authority. I will need to remain mindful of these points of influence during all phases of my inquiry project. Additionally, although I approach this inquiry project with a commitment to improve students' learning experience through instructional design choices, I recognize that my personal regard for multimedia learning solutions could bias my expectation of findings. Thus, I will make my role, assumptions, and interests in multimedia known to the study participants and inquiry readers and will plan to put in place appropriate safeguards to minimize bias such as an external review. Some other safeguards against bias that I plan to put in place include using validated research instruments, anonymizing data at the earliest

possible point, using independent coder(s) for qualitative data, seeking peer review from an independent educator or colleague, and other suitable safeguards. These measures will help reduce the likelihood that my positionality will influence the integrity of my SOTL inquiry procedures or reporting.

The main purpose of this SOTL inquiry is for me, and other instructional designers like me, to gain a better understanding of the impact that short supplemental instructional videos can have on online graduate students' engagement and course satisfaction. By conducting this inquiry, I hope that the inquiry findings will help me and other IDs prioritize our future instructional design tasks and support us in designing engaging and enjoyable e-learning experiences.

My initial orienting context findings indicate that the potential student participants are excited to take part in this SOTL inquiry study. These students are especially excited to possibly experience an increase in their engagement and satisfaction with asynchronous online graduate courses.

The instructional context of this inquiry is as follows: I, the instructional designer will create two knowledge-centered, short (two-to-three module), asynchronous, online courses using Articulate Studio authoring software. Both e-learning asynchronous short courses will contain identical text-based instructional materials, but one of the courses will also contain short supplementary instructional videos. At the inquiry onset, the recruited student participants will be separated into two student cohorts where one cohort will complete a text-only "Networking Basics for Graduate Students" course, and the other student cohort will complete and identical "Networking Basics for Graduate Students" online course, except with additional short supplementary videos included in the course. Both student cohorts will complete their assigned course version (with or without short instructional videos) in their own at-home individual

asynchronous learning environment. Following the completion of the “Networking Basics for Graduate Students” short course, I will collect qualitative and quantitative data regarding students’ engagement and satisfaction with each course via participant surveys, semi-structured interviews, and/or other research instruments. (It is important to note that the scope of this project will not include the students’ learning outcomes but will be confined to students’ level of engagement and course satisfaction.) Next, I will compare data between the two cohorts and analyze it with the help of Learning Analytics software to determine any noticeable engagement and course satisfaction effects of including short supplemental videos in asynchronous online courses.

The student participants will complete the “Networking Basics for Graduate Students” course on their personal computer or their personal internet-enabled device. Prior to the start of the inquiry, I will provide the study participants with the information explaining their participation in the inquiry, the technical requirements of the course, the appropriate learning environment in which to complete the course, and, as this inquiry is concerned with individual opinions and feelings of participants, I will encourage participants to complete their assigned course independently. This inquiry will adhere to and comply with all university departmental rules and guidelines. As a project owner and researcher, I will follow all appropriate consent, participant anonymity, and other ethical rules, regulations, and procedures during the participant recruitment process and data collection, analysis, and inquiry publication and dissemination process.

Problem (Weeks 1 and 2)

Now let me briefly consider student engagement levels in online learning environments. Is student engagement in online settings even a problem? The authors of Hollister et al. (2022) share these research study findings,

Another survey of 3,089 North American higher education students had similar results with 78% of respondents saying online experiences were not engaging and 75% saying they missed face-to-face interactions with instructors and peers (Read, 2020). Lastly, of the 97 university presidents surveyed in the United States by Inside Higher Ed, 81% claimed that maintaining student engagement would be challenging when moving classes online due to COVID-19 (Inside Higher Ed, 2020). (p. 1-2)

Yes, student engagement in online settings is a present problem, and thus finding ways to improve student engagement in higher education asynchronous online settings via different instructional strategies and interventions is a meaningful objective.

In this SOTL inquiry, I will explore whether providing online graduate students with short supplemental instructional videos in an asynchronous online course affects students' levels of engagement and satisfaction with the course. As I previously mentioned in the "Context" section of this paper, to answer my SOTL inquiry questions, I will create two short asynchronous online courses that are identical in their purpose and content, but one of the courses will also contain short supplementary instructional videos. To ensure quality, I will design and develop the two courses in accordance with the established, research-based instructional design guidelines and frameworks. To ensure an accurate comparison of the two courses, I will design and create supplemental videos according to the research-based multimedia standards as outlined in Mayer (2008), Mayer and Moreno (2003), Mayer et al. (2020), and other relevant research publications.

To further explain the need for this inquiry, in my prior and current experience as a student enrolled in fully online, asynchronous graduate course, I observed that my personal engagement and satisfaction with each course sharply increased when, in addition to text-based instructional materials, the course also contained short supplemental instructional videos that reinforced the

concepts presented in each course module. This personal observation led me to wonder about the value of short supplementary videos as additional instructional materials in asynchronous online courses.

Furthermore, the knowledge I acquired in my previous classes at the graduate Educational Technology program informed me that learning designs that include multimedia make excellent use of existing human cognitive architecture by delivering learning through visual and aural channels, as opposed to other instructional materials such as textbooks and podcasts that only utilize one cognitive channel. (Mayer, 2008)

Moreover, after conducting initial research on this topic, I discovered several research studies, such as Draus et al. (2014), Noetel et al. (2021), and Zhu et al. (2022) that seem to support my personal conclusions regarding the presence of supplementary instructional video materials and increased student engagement, satisfaction, and improved learning outcomes in an online class.

As per the Draus et al. (2014) research study quote, “Findings from this study indicate that instructor-generated video content can have a positive and moderate influence on student satisfaction with and engagement in asynchronous online courses. On most metrics evaluated, especially student surveys, the perceived values were matched by measurable outcomes. (p.250)

Lastly, systematic research conducted by Noetel et al. (2021) indicates that, “Adding video to existing teaching led to strong learning benefits ($g = 0.80$). Although results may be subject to some experimental and publication biases, they suggest that videos are unlikely to be detrimental and usually improve student learning.” (p.204)

Therefore, based on my personal experience as a fully online graduate student in an asynchronous learning environment and based on existing academic research suggesting that presence of short instructional videos can influence students’ engagement, course satisfaction,

and learning outcomes, I believe that my SOTL inquiry is a worthwhile exploration of the added value of multimedia elements in e-learning settings.

Question(s) (Weeks 1 and 2)

The goal of my two Scholarship of Teaching and Learning (SOTL) questions is to observe the effect of adding short supplementary instructional videos to a text-only asynchronous online higher education to determine the effect of these videos on students' engagement and satisfaction with the course.

SOTL Questions:

1. In an asynchronous online higher education graduate course, how does adding short supplementary instructional videos to a course containing text-only instructional materials affect students' engagement in the course?
2. In an asynchronous online higher education graduate course, how does adding short supplementary instructional videos to a course containing text-only instructional materials affect students' satisfaction with the course?

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Annotated Bibliography in Practice (Weeks 3 & 4)

After a thorough review and analysis of academic, peer-reviewed research journal articles and other publications, I gained valuable knowledge of inquiry research methods, data collection and analysis methods, research instruments, and research organization and planning methods that I will use during my SOTL Inquiry. Specifically, I will use the many observations about short supplemental instructional videos and their effect on students' engagement and satisfaction listed in Noetel et al. (2021) and Choe et al. (2019) to help ground my inquiry project in established prior research, to help further organize my SOTL Inquiry project, and to help me develop data collection instruments such as student surveys, questionnaires, and/or interviews. Additionally, after reviewing Draus et al. (2014) investigative study about the influence of video materials on student satisfaction and engagement in asynchronous online courses – a study that is similar to mine - I will include elements of this study such as its research study plan and data collection methods in my SOTL Inquiry project. Furthermore, I will adapt and use the Online Student Engagement (OSE) self-report data collection instrument validated and described in detail in Bolliger & Halupa (2018) and Dixon (2015) to collect self-reported online asynchronous student engagement data for my inquiry. To determine students' overall levels of satisfaction with my online course, I will adapt and use the two data collection instruments (eLSS and SO) described in Ritzhaupt (2019) and Bolliger and Halupa (2018). Lastly, since having well-made, engaging instructional videos is essential to the successful completion of my SOTL Inquiry, I will use the fourteen multimedia design principles listed in Mayer (2021), the key educational video design factors listed in Nagy (2018), the detailed instructional video design processes and

video “best practices” described in Choe et al. (2019), and the video length recommendations made by Zhu (2022) to design my short instructional videos and help ensure my student participants’ interaction and ultimate use of the supplementary educational videos included in the asynchronous online course.

References:

*As per the assignment instructions, the citations for the articles mentioned in the “Annotated Bibliography in Practice” section can be found in my SOTL Inquiry Annotated Bibliography.

Data Collection (Weeks 5 & 6)

Purpose Statement

The main purpose of this inquiry and data collection is to determine whether adding short supplemental instructional videos to a four-module, asynchronous, independent graduate course affects students overall course engagement and satisfaction. The secondary objective of this inquiry is to examine whether behavioral engagement indicators (accuracy and time spent on assessments) align with participants’ self-report data and to further explore students’ experiences via semi-structured interviews.

Participant Recruitment and Consent

The participants in this study will include fifteen female graduate students (N=15) of varying ages who are currently enrolled in a graduate seminar in educational media, are 18 years of age and older, and have consented to participate in this SOTL study. Prospective study participants will receive an email with a link to a study description listing time commitment, risks and benefits, confidentiality, other key details, and an online consent form. The consent form will outline voluntary participation, list the participants study ID and checkboxes for survey participation, ask for permission to link Type Form quizzes to the study ID, and optional

interview contact permission. The participants' consent will be obtained before any data is collected.

Ethical Considerations

To ensure that this SOTL Inquiry is conducted in an ethical manner, the inquiry participants will receive a clear informed consent form that explains their voluntary participation, that their participation is separate from the course grading, that they have an option to withdraw their participation and data prior to analysis, as well as a transparent description of their data (i.e. quiz timestamps, quiz and final exam scores) that will be collected via Type Form application. All participant content forms will be completed prior to data collection.

Participant Assignment Design

After consent is obtained, the SOTL Inquiry participants will be randomly assigned to two conditions: Control (text-only n=7 or 8); Treatment (text video n = 7 or 8.) The randomized assignment will be recorded in a Master Excel spreadsheet. The study participants assigned to the Control group will complete a text-only four-module website-hosted Articulate Rise course, while the participants assigned to the Treatment group will complete the online course with an identical text content, however, their course will also include several short supplementary instructional videos.

Data Collection Methods and Instruments

The mixed-method data collection strategies for this SOTL will include field notes, two adapted survey instruments (the OSE engagement instrument and the eLSS instrument), student behavioral engagement data (average time spent on module quizzes, average quiz accuracy, and final exam score) captured via Type Form application, and a semi-structured interview. All this data, including the engagement and satisfaction survey data, data describing students' behavioral

engagement with the quizzes and final exam, and the qualitative description of students' experience in the course will help me answer my two SOTL questions about the impact of short supplementary videos on students' engagement and satisfaction with an online course.

Field Notes. Throughout the implementation phase of this project, I will collect descriptive and reflective field notes. During my SOTL inquiry, I will periodically reflect on my project implementation, my individual experiences, feelings, ideas, problems, and future inquiry directions. While conducting the semi-structured interviews, I will also record descriptive observations of participants' experiences and behavior, and their statements about the online course and the short supplementary video interventions. In the end, my Field Notes will help explain my inquiry findings as well as deepen my analysis of the quantitative and qualitative data.

Student Behavioral Engagement Data. To ensure methodological triangulation in this inquiry, I will use different data collection methods to study the same phenomenon. Each of the two "Networking Basics for Graduate Students" four-module-course will include several module quizzes and a final exam to measure the students' behavioral engagement during the course. I will use Type Form survey and quiz application to collect and display the participants quiz and final exam data. I will collect the participants' behavioral engagement data, specifically the time each participant takes to complete each quiz, the average quiz accuracy, and the final exam score of each participant.

OSE Engagement Survey Instrument. All data collected during this inquiry will be linked to a participant via a Study ID. The survey data will be collected via a Type Forms application and will be stored on the Type Forms website. The survey equipment will include an Adapted OSE Engagement Scale and Adapted eLSS Satisfaction Scale.

Bollinger & Halupa (2018) in their research study define student engagement as student's effort directed towards learning and mastering of knowledge. The authors also state and identify the three domains for student's engagement: cognitive, emotional, and behavioral as well as refer to the Online Student Engagement (OSE) scale developed by Dr. Dixon as having an instrument that follows this definition and has four closely related factors: skills, emotions, participation, and performance. (Dixon, 2019) (Bollinger & Halupa, 2018, pp. 3-4) After consulting these two articles, I chose to define student engagement in the same manner and to use the OSE instrument developed by Dr. Dixon for my SOTL Inquiry engagement data collection. In the Bollinger & Halupa (2018) article, the researchers provide a detailed description of the ways in which they display and analyze data gathered by the OSE Instrument, specifically the calculation of the mean score of the survey items and comparison of the mean scores to identify the survey items of importance to the researcher. I will use the same OSE data analysis methods in my SOTL Inquiry. Draus et al. (2014) authors use data collection, data analysis, and qualitative open-ended question survey methods similar to Bollinger & Halupa (2018) and report the mean, standard deviation, statistical significance of engagement survey items, as well the qualitative thematic analysis findings.

The original OSE instrument measures behavioral, cognitive, and participation-based indicators of engagement in online courses and includes nineteen items. (Dixon, 2019) As my SOTL study examines student engagement in an independent, fully asynchronous short course with no instructor and peer presence or interaction, I have removed the scale items referencing small group interaction, discussion participation, helping classmates, and raising one's hand. I also removed items that talked about objective quiz performance, as the quiz performance is included in the behavioral engagement indicators measured via the Type Form application. This

scale adaptation preserves behavioral, cognitive, and emotional dimensions of engagement listed in the original OSE instrument while excluding social participation indicators that are not relevant to independent asynchronous learning environments. I retained or restated the remaining twelve items to reflect my specific course format. I will use the original 5-point characteristic scale to collect the responses. I will calculate internal consistency reliability (Cronbach's α) for this adapted instrument in the Data Analysis project stage. The Adapted OSE Engagement Scale is included in Appendix A at the end of this document for your review.

eLSS Satisfaction Survey Instrument. Since measuring students' overall satisfaction within an asynchronous, online learning environment that does not have an instructor present is often difficult, I researched many instruments that would allow me to measure students' satisfaction within such a specific learning environment. Luckily, Dr. Ritzhaupt's Electronic Learner Satisfaction Scale (eLSS) can be easily adapted to measure students' overall satisfaction with an online course in my SOTL inquiry. Dr. Ritzhaupt's satisfaction instrument has been previously validated and utilized and many research studies seeking to measure students' satisfaction levels. (Ritzhaupt, 2019)

To adapt the eLSS instrument to my specific study, I converted the original semantic items into 5-point Likert statements. This conversion will help ensure consistency with the OSE engagement instrument and should simplify my data analysis. I removed items that measure platform reliability and technical smoothness because my SOTL Inquiry does not focus on system performance but specifically focuses on instructional design. I also removed the engagement-related satisfaction item that overlaps with the Online Student Engagement Scale (OSE). The adapted 10-item instrument preserves the self-paced satisfaction construct of the original instrument and measures instructional effectiveness and student satisfaction with the

course. I will calculate the reliability (Cronbach's α) of the adapted scale during the Data Analysis phase of this project. The Adapted eLSS Satisfaction Scale is included in Appendix A at the end of this document for your review.

Semi-Structured Interviews. The Choe et al. (2019) article, in addition to quantitative analysis of data collected via a survey instrument, also includes a thematic analysis of open-ended questions to assess students' level of satisfaction with instructional videos. The students' responses led the study authors to be able to offer additional advice regarding instructional video design. (Choe et al. 2019) This action by the researchers has inspired me to add semi-structured interviews to my inquiry as well.

To ensure ethical compliance and usefulness of the semi-structured interviews, I will begin my interview project phase by selecting several participants (5-8) that have previously consented to participate in the SOTL interview process. I will choose several participants who displayed high levels of engagement, several who displayed moderate levels of engagement, and several who displayed low levels of engagement. Prior to the start of the interview, I will establish rapport with each participant and ensure their understanding of the purpose of the SOTL inquiry, their ability to stop the interview or withdraw their interview data at any time and will inform them about the storage and confidentiality of their data. I will conduct each interview via ZOOM for approximately twenty to thirty minutes and will record it with consent. I will store interviews on an encrypted cloud account. After the completion of the interviews, I will transcribe the data, analyze the data via thematic analysis, synthesize the findings, and report the results. The proposed Interview Protocol can be found in Appendix A below for your review.

Data Analysis (Weeks 5 & 6)

Upon completion of the data collection project phase, I will merge the Type Form assessment records, the self-reported survey data, and the interview data into a single CSV file. After merging and verifying data linkage, I will remove the participants' names and will keep only the Study ID identification field. I will house the mapping key in which the names of the participants are linked with a Study ID in a separate encrypted file available only to me. I will store all the participant data on a password-protected, encrypted cloud drive with singular access. I will retain the de-identified data for six months after the completion of this SOTL Inquiry and will destroy the mapping key after the completion of this project.

Quality Assurance and Missing Data Policy

Prior to the beginning of the Data Collection project phase, I will personally test all course materials and survey/form links. If a participant fails to complete either survey, I will exclude them from the survey analysis. If less than one item is missing per scale, I will compute the mean of the remaining items. If more than one item is missing per scale, I will exclude this participant from the scale computation. If a participant skipped a quiz or an assessment, I will compute the averages of completed quizzes and note the missing data in the limitations section of the SOTL inquiry report.

Data Preparation and Cleaning

The merged CSV master file I created at the beginning of this project phase will contain the data linked by Student ID field from two surveys, Type Form quiz records and final exam scores, and interviews. As part of data cleaning, I will confirm completion of each survey and assessment logs by each participant, perform the necessary timestamp conversions, and examine extreme data outliers.

Scale Reliability Measurement

Because I am using two adapted survey instruments (OSE and eLSS) to measure participants' engagement and satisfaction, I will compute Cronbach's Alpha for both surveys using Microsoft and/or Altair RapidMiner software. If the Alpha value is less than .60, I will report it and will examine the item-total correlations.

Data Analysis by Instrument

Field Notes. The field notes data analysis will generally follow the six-step thematic analysis methodology described in Naeem et al., (2023). These analysis steps include transcription of data, selection of keywords, coding, theme development, interpretation, and the development of a conceptual model. During the first step, I will familiarize myself with my inquiry notes and select important quotes. During the keyword selection phase, I will closely examine the data and identify recurring patterns or terms and designate them as keywords. In the third step, I will use the keywords as my foundation and will assign codes to segments of the data to capture its' main theme. If possible, I will also define relevant concepts that have emerged from the data. Lastly, I will summarize and communicate all the findings that I derived from this qualitative data analysis of my notes. The Field Notes analysis will add exploratory depth to my SOTL Inquiry and will contribute necessary qualitative findings to help me answer my two SOTL questions.

Student Behavioral Engagement Data. I will use Descriptive and Inferential Data Analysis methods to analyze my student behavioral engagement data. For each of the Control and Treatment inquiry groups, I will use Microsoft Excel and/or Altair RapidMiner to compute and report Pearson's correlations, number of datapoints (N), the mean, and the Standard Deviation (SD) for the average time spent on quizzes, average quiz accuracy, and final exam score.

Additionally, I will use a t-test statistical method to compare the means for the Control and Treatment groups to determine whether there is a significant difference between them. By running the five different t-tests (OSE, eLSS, quiz accuracy, quiz time, and final exam), I should be able to determine whether the difference between two participant groups is due to a random chance. The computation and subsequent comparison of mean scores for the three types of student behavioral engagement metrics will help show whether there is an observable quantifiable difference between the Control and Treatment group scores and in turn help me determine whether the video intervention influenced students' engagement and course satisfaction levels.

OSE and eLSS Adapted Survey Instruments. I will use Descriptive and Inferential Data Analysis methods to analyze my student self-reported course engagement and satisfaction levels. For each of the Control and Treatment inquiry groups, I will use Microsoft Excel and/or Altair RapidMiner to compute and report Pearson's correlations, number of datapoints (N), the mean, and the Standard Deviation (SD) for the items on the OSE and eLSS surveys. Additionally, I will use a t-test statistical method to compare the means for the Control and Treatment groups to determine whether there is a significant difference between them. By running the five different t-tests (OSE, eLSS, quiz accuracy, quiz time, and final exam), I should be able to determine whether the difference between two participant groups is due to a random chance. The computation and subsequent comparison of mean scores for the OSE and eLSS survey items will help show whether there is an observable quantifiable difference between the Control and Treatment group scores and in turn help me determine whether the video intervention influenced students' engagement and course satisfaction levels.

Semi-Structured Interviews. The semi-structured interview data analysis will generally follow the six-step thematic analysis methodology described in Naeem et al., (2023). These steps include the transcription of data, selection of keywords, coding, theme development, interpretation, and the development of a conceptual model. During the first step, I will transcribe the interview data, familiarize myself with the participant responses, and select important quotes. During the keyword selection phase, I will closely examine the data and identify recurring patterns or terms and designate them as keywords. In the third step, I will use the keywords as my foundation and will assign codes to segments of the data to capture its' message or main theme. In the "Theme Development" stage, I will organize my codes into groups and will note down any relationships or patterns in the data. In the fifth stage of the interview data analysis, I will define relevant concepts that align with my inquiry that have emerged from the data. Lastly, I will summarize and communicate all the findings that I derived from this qualitative data analysis. The semi-structured interviews will add exploratory depth to my SOTL Inquiry and will contribute necessary qualitative data to help me answer my two SOTL questions.

Timeline (Weeks 5 & 6)

SOTL Phase Description	Inquiry Project Dates	SOTL Inquiry Tasks
Data Instruments & Online Course Development	February 22 nd – March 1 st	• Develop both Rise courses (text-only and text + video) • Create engagement survey, satisfaction survey, and consent forms in Type Form • Create quizzes and final exam in Type Form • Prepare interview protocol and procedures.
Data Collection (Participant recruitment, collect engagement, satisfaction, and Type Form data)	March 1 st – March 8 th	• Recruit inquiry participants from two class cohorts and

		randomly assign to Control and Treatment groups. • Participants complete course modules, Type Form quizzes and exam, and the engagement and satisfaction surveys. • Send invitations and schedule semi-structured follow-up interviews
Qualitative Interviews and Data Analysis	March 8 th – March 15 th	• Conduct and transcribe interviews with high/low participants. • Clean, merge data, and prepare the master dataset. • Conduct qualitative and quantitative data analysis.
Final SOTL Report and Findings	March 15 th – March 22 nd	• Draft SOTL Inquiry Report that includes study results, findings, conclusion, and implications. • Create and submit SOTL Inquiry presentation slides
Inquiry Presentation: Final Presentation	March 22 nd – April 5 th	• Create and submit SOTL Inquiry final presentation file
Peer Review of Inquiry Presentations	April 5 th – April 12 th	• Complete peer review of classmates' inquiry presentations and collect material for final course reflection.
Inquiry Project Reflection	April 12 th – April 19 th	• Write and submit course reflection.

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Appendix A

Adapted Survey Instruments and Semi-Structured Interview Protocol

Adapted Online Student Engagement (OSE) Scale

1. Staying up on the module readings
2. Reviewing module notes or summaries
3. Putting forth effort in this course
4. Being organized in my approach to this course
5. Taking good notes of readings and course materials
6. Reading course materials carefully
7. Finding ways to make the course interesting to me
8. Applying course material to my life
9. Finding ways to make the course relevant to my life
10. Thinking about the course between study sessions
11. Really desiring to learn the material
12. Enjoying the learning experience in this course

Response scale:

- 1 = Not at all characteristic of me
- 2 = Not very characteristic of me
- 3 = Moderately characteristic of me
- 4 = Very characteristic of me
- 5 = Highly characteristic of me

Adapted Electronic Learner Satisfaction Scale (eLSS)

Response scale:

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly agree

Items:

1. The course was easy to use and navigate.
2. The course materials were clear and understandable.
3. The course materials were well organized.

4. Working through this course was a satisfying experience.
5. The course was effective in helping me learn the material.
6. The instructional materials were helpful for my learning.
7. The course was interesting to work through.
8. The overall quality of this course was high.
9. The length of the course was appropriate.
10. The self-paced format allowed me to learn at a flexible pace.

Semi-structured Interview Protocol

All Participants:

1. What do you think about the course content? What do you think about the instructional materials (readings, activities)? (Instructional Elements) (Probe: Give one example from this course)
2. What instructional materials do you feel contribute the most to your focus or interest in an online course? Why? (Instructional Elements) (Probe: Give one example from this course.)
3. Tell me about a time during the course when you felt especially engaged or disengaged. What happened? (Engagement) (Probe: texts, quizzes, videos, examples, pacing).
4. What specific course elements helped you stay engaged during this course? (Engagement) (Probe: clarity, pacing, usefulness, accessibility)
5. Tell me about a time during the course when you felt especially satisfied or dissatisfied with this course. What happened? (Satisfaction)
6. What specific course elements helped you feel satisfied or dissatisfied with this course?
7. What single change in this course would have improved your engagement or satisfaction the most? (Change Suggestion)

Video Treatment Group Only:

8. Tell me about how and when you used the videos in this course. (Video) (Probe: parts of video, capture frequency, location, and rewatching.)
9. Were there times when the videos were not helpful? Why? (Video) (Probe: elicit specific causes such as length, pace, or technical problems)
10. How did the videos in this course affect your learning experience or study behaviors? (Video) (Probe: elicit changes in study behaviors such as skipped reading, faster understanding)
11. How did the videos affect your engagement in this course? How did the videos affect your satisfaction with this course? (Video)

Extra probing questions for short or vague answers:

- “Can you give an example?”
- “When you say X, what do you mean?”
- “How often did that happen?”
- “Did that make you study differently?”

- “Was that different for videos vs. text?”
- “Was that a one-time thing or repeated?”

Appendix B

Generative AI Use Disclosure Statement and Output

During the implementation phase of my SOTL project, I used OpenAI ChatGPT generative AI product to assist me in designing the short supplementary videos for my e-course, to create my SOTL Participant Consent Form, to generate multiple-choice questions for the four quizzes and the final exam in my e-course, and to generate an Inferential Statistics table based on my SOTL Inquiry data. All AI-generated content was reviewed, verified, and appropriately cited below to ensure accuracy and alignment with graduate academic standards.

1. I used Generative AI to generate an instructional design summary checklist of recommended video design practices based on five academic research articles.

When prompted with “I want to create short instructional videos I will use for the "Treatment" group of my SOTL Inquiry fully online course on the topic of graduate networking. The videos will be a narrated short slideshow (no instructor appearing in the video) summarizing the text-based content of each of the four modules in my course. Look through these 5 articles and provide a summary of design features that my short supplementary videos need to have (i.e. duration, embedded questions, etc.) or rules that they will need to strictly adhere to as per these articles. Provide a short checklist of these rules. 1 Choe, R. C., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., Toma, S. P., Shapiro, C., Levis-Fitzgerald, M., Barnes, G., & Crosbie, R. H. (2019). Student satisfaction and learning outcomes in asynchronous online lecture videos. *CBE—Life Sciences Education*, 18(4), ar55. <https://doi.org/10.1187/cbe.18-08-0171> 2. Nagy, J. T. (2018). Evaluation of online video usage and learning satisfaction: an extension of the Technology acceptance model. *The International Review of Research in Open and Distributed Learning*, 19(1). <https://doi.org/10.19173/irrodl.v19i1.2886> 3. Mayer, R. E. (2021). Evidence-based principles for how to design effective instructional videos. *Journal of Applied Research in Memory and Cognition*, 10(2), 229–240. <https://doi.org/10.1016/j.jarmac.2021.03.007> 4. Zhu, J., Yuan, H., Zhang, Q., Huang, P., Wang, Y., Duan, S., Lei, M., Lim, E. G., & Song, P. (2022). The impact of short videos on student performance in an online-flipped college engineering course. *Humanities and Social Sciences Communications*, 9(1), 327. <https://doi.org/10.1057/s41599-022-01355-6>, the Chat-GPT responded with the following checklist:

Each supplementary video:

- ☐ 3–6 minutes long (≤ 8 minutes max)
 - ☐ One summary video per module
 - ☐ One main idea per slide
 - ☐ Narration summarizes—not reads—text
 - ☐ Visual signaling highlights key ideas
 - ☐ 1–2 embedded reflection questions inside the video
 - ☐ Clear audio, conversational tone
 - ☐ Accurate captions enabled
 - ☐ Identical design structure across all four videos (OpenAI, 2026)
2. I used Generative AI to create video slide presentations and scripted narration for the four instructional videos used in the course using the recommended video design practices cited in the research articles above.

When presented with the following prompt “I attached a document with learning objectives and text content of each online course module. Using the video design rules that you derived from the five research articles above, I need you to: a. Create a slideshow outline and its' contents b.) Create a narration for each video summarizing the contents of each module c.) Create 1-2 embedded questions per each video.”, the Chat-GPT replied with a list of slide bullet points and exact video narration summarizing the contents of each of the modules.

Full OpenAI Output Google Doc Link is available upon request.

3. I used AI to create the SOTL Inquiry Consent Form to ensure I captured all the important ethical elements that the SOTL Consent Form should have for an ethically minded research study.

When prompted with, “Use the attached detailed description of my SOTL Inquiry Study to generate and IRB-ready Consent Form for my participants to sign prior to the study. Make sure to address all ethical considerations appropriate for a SOTL study.”, the Chat-GPT replied with a ready, copy-paste Participant Consent Form.

Full OpenAI Output Google Doc Link is available upon request.

4. I used AI to generate multiple-choice questions for each of the four modules and the final exam questions based on the text-only course content.

When presented with the following prompt, “Based on the attached document containing learner objectives and text for each course module, generate 10 multiple-choice questions per each content module and the final exam module.”, Chat-GPT replied with a list of 10 multiple-choice questions for each module, plus the 10 questions for the final exam module.

Full OpenAI Output Google Doc Link is available upon request.

5. I used AI to run and collect Inferential Statistics (Welch t-tests, p-value, and Cohen's d value) and present these calculations in a table output for the following study outcomes/variables: eLSS Satisfaction, OSE Engagement, Quiz Accuracy, Final Exam Quiz Time.

When presented with the following prompt, “Based on the two attached Excel spreadsheets containing research study quiz, final exam, and data from the eLSS and OSE Engagement surveys, run a Welch t-test and report the t value, p-value, and the Cohen's d value in a table for the following variables: OSE Engagement, eLSS Satisfaction, Quiz Accuracy, Quiz Time, and Final Exam. Provide an interpretation column in the table for the Treatment and Control participant groups.”, the Chat-GPT produced the following Inferential Statistics table:

Outcome	Test	t	p-value	Cohen's d	Interpretation 
eLSS Satisfaction	Welch t-test	-3.70	0.011	2.19	Treatment higher
OSE Engagement	Welch t-test	-1.73	0.151	1.25	Not significant
Quiz Accuracy	Welch t-test	4.34	0.0035	-3.09	Control higher
Final Exam	Welch t-test	-0.94	0.37	0.63	No difference
Quiz Time	Welch t-test	0.58	0.57	-0.36	No difference

(OpenAI, 2026)

Reference

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