(For Office Use Only)

Date received: [redacted]

Date sent for review: [redacted]

Cover Sheet for EXEMPT IRB Application

Principal Investigator Name: [redacted]

Project Title: **Students' Engagement and Academic Outcomes in Online Learning**

Remember that exempt refers to the IRB process requiring fewer reviewers. It does not mean the research does not need a review. [See IRB webpage on Exempt and Expedited Reviews for full description of category].

1. The nature of the study involves Exempt research categories:

   - ☒ Simple survey procedure
   - ☐ Interview procedure (face to face or telephone)
   - ☐ Educational strategies or tests
   - ☐ Observation of public behavior
   - ☐ Review of existing data
   - ☐ Other, please describe:

2. The research involves less than minimal risk, i.e. there is no risk for civil or criminal liability, employability, damage to subject's financial standing, or reputation.

   ☒ Yes ☐ No

3. The research involves a protected population, i.e. minors, pregnant women, fetuses, prisoners, mentally handicapped persons. *If YES, this research is not for exempt review*.

   ☐ Yes ☒ No

4. The research involves deception or may intentionally provide misleading information to participants. *If YES, this research may not be appropriate for exempt review.*

   ☐ Yes ☒ No

(For Office Use Only)
Date logged [redacted] _____ Init. _____
IRB application number [redacted] _____

Clarke UNIVERSITY

INSTITUTIONAL REVIEW BOARD ON HUMAN PARTICIPANTS
Application for IRB Review and Approval Guidelines

General Instructions

Application must be typewritten, completed in its entirety, and saved as:

Lastname_Firstinitial_Keyword_IRB_version#.pdf (e.g., Mai_J_Balance_IRB_v1.pdf).

This Application and supporting documents should be sent as one PDF file to irb@clarke.edu.

Complete applications will include the documents listed below. These documents should be scanned into a single PDF **in the order listed**.

- ☒ Exempt, expedited, or full review cover sheet
- ☒ This form with faculty signature if PI is a student
- ☒ Proposal abstract
- ☒ Appropriate CITI Training Certificate
- ☒ Informed consent forms (if required)
  Note: An IRB number will be assigned when final approval is given. This IRB number must be added to the consent form.
- ☒ Research tool(s) (e.g., questionnaire, survey, interview questions, test questions)
- ☒ Recruitment materials (including but not limited to copies of script for face to face recruitment, a copy of recruitment e-mail, social media post, recruitment flyers/posters)
- ☐ Permission statement from research location(s) if research is to be conducted outside of Clarke University

- All required materials must initially be submitted to irb@clarke.edu.
- Incomplete applications will be returned un-reviewed.
- Revised Applications must be submitted as a complete Application and sent directly to the reviewer who reviewed the first version. When saved and submitted, please do so with a new version number (e.g., Mai_J_Balance_IRB_v2.pdf).
- Exempt and expedited applications may take up to four weeks to review per submission. Full IRB reviews may take longer.

NOTE: When completing this form, the text boxes in which to insert content do not display spell check or grammar check notifications (i.e., no red squiggly lines). Applicants may want to compose some answers in a separate MSWord file before pasting into the Application.

TIP: Tab from text box to text box or from check box to check box instead of using a mouse. Boxes can be checked using the space bar.

IRB Application

I. Project Title: **Students' Engagement and Academic Outcomes in Online Learning**

Principal Investigator (PI) Information		
(Name) [redacted]	(Department) **Health, Wellness, and Behavioral Sciences**	
(E-mail) [redacted]	(Phone)	(CITI Certificate #) [redacted]

Faculty Research Advisor Information		
(Name) [redacted]	(Department) **Health, Wellness, and Behavioral Sciences**	
(E-mail) [redacted]	(Phone) [redacted]	(CITI Certificate #) [redacted]

Additional Investigator(s) Information		
(Name)	(Department)	
(E-mail)	(Phone)	(CITI Certificate #)
(Name)	(Department)	
(E-mail)	(Phone)	(CITI Certificate #)
(Name)	(Department)	
(E-mail)	(Phone)	(CITI Certificate #)

**If more "Additional Investigators" are required, please include them in the Appendix

II. Is this project funded by an outside agency?

☐ Yes; Sponsor's name is

☒ No

III. If research is being conducted to meet course or graduation requirements, please check all of the following that apply:

☒ A major goal of the project is to practice skills related to conducting research (e.g., administering a previously created tool to learn data collection and analysis procedures).

☐ A major goal of the project is to apply previously researched principles to a specific population (are hand washing procedures being followed by clinic staff and what are the related infection rates at clinic *X* OR does reading skill improve when applying this previously studied technique to my students at school *Y*).

☐ A major goal is to conduct original research, but there may be limitations in the study (e.g., participant pool is too small to make generalizations, the need to use my colleagues as participants means that I will not be able to ask personal questions).

☐ None of these apply. Continue to Question IV

A. Explain any limitations to the research project that might relate to the statements above:

The sample is a convenience sample.

IV. What are the anticipated start and end dates?
** Recruitment for research cannot start until IRB approval has been obtained. Please allow four weeks for the IRB review process.

Desired date to begin recruitment for the study	[redacted]
Anticipated date for completion of data collection	[redacted]
Anticipated date to submit Completion Form	[redacted]
For Student Researchers only: Final Presentation (estimated date)	[redacted]

** Research is considered complete once data collection is completed. Once completed, researcher(s) must submit a Completion of an Approved Researech Project Form to irb@clarke.edu.

V. IRB must consider the research design in order to assess the risks and benefits of this study. This includes recruitment of participants, data collection, data analysis, and dissemination of the results. Please respond to the questions and statements below so that IRB can complete this evaluation.

A. Rationale: Using ordinary, non-specialized terms, provide background and rationale for the project.

Over the past two decades, online learning is becoming more and more popular. However, a number of people have negative impressions about online learning. One of the major concerns regarding online learning is students' engagement and academic outcomes. During the COVID-19 pandemic, this issue raises the question of whether online learning brings the same academic benefits to students as the traditional format. Studying this type of learning is necessary not only to broaden people's understanding of online learning, but also to address how it might affect educational strategies in the future. Online learning might not replace the traditional format, face-to-face; nevertheless, studying and knowing more about online learning is necessary. Despite its disadvantages, its benefits cannot be ignored. Evaluating students' experiences of online learning, particularly the relationship between their class engagement and academic outcomes would help both instructors and students in teaching and learning effectively. In this way, the negative side of online learning would be limited and its advantages enhanced.

B. Research Questions: List all research questions that will be asked. Questions must be approved by a research advisor if the PI is a student.

Is engagement in online classes correlated with academic performance?
Is motivation in online classes correlated with academic performance?
Does engagment explain the relationship between motivation and academic performance?
Are there any differences from students' performance overall between synchronous and asynchronous classes?

C. Participants:

1. Participants (Please estimate maximum numbers)

Adult volunteers (patients are not to be included in this number)	**100**
Students within a classroom setting	
Minors (under 18)	
Patients as experimental participants	
Patients as controls	
Persons whose first language is not English	
Pregnant women or fetuses	
Adults with cognitive disabilities	
Prisoners, incarcerated	
Other (please specify):	
Total anticipated participants (maximum)	**100**

2. Will participants be able to participate in a language in which they are fluent? (Check all that apply) It is not acceptable to include participants who are not able to fully understand the consent materials or the tool being used.

   ☒ Yes, all participants will participate in a language in which they are fluent.

   ☐ Yes, translations will be offered. Provide evidence that an appropriate translator is being used to create forms and/or to conduct interviews.

   ☐ No, participants are not used in study.

3. What inclusion and exclusion criteria will be used to determine eligibility to participate?

Eligible student participants are required to have had experience in at least two online classes in Fall 2020 semester before taking the survey. They must also be 18 years old or older.

4. If using a specific sampling method, indicate which sampling method(s) will be used.

☐ Simple Random Sampling	☐ Multistage Sampling
☐ Stratified Sampling	☒ Convenience Sampling
☐ Cluster Sampling	☐ Volunteer Sampling
☐ Systematic Sampling	☐ Network Sampling

☐ Snowball Sampling ☐ Quota Sampling
☐ Purposive Sampling ☐ Other:

D. Recruitment

1. Recruitment Location (Check all that apply)

   ☒ Clarke University

   ☐ Public areas not located at Clarke. Please list specific areas:

   ☐ Social media (e.g., Facebook, Instagram, Twitter, etc.). Please list sites & groups:

   ** Applicant must secure and include documentation of approval to recruit from non-public virtual communities or interest groups (e.g., moderator of a closed Facebook group).

   ☐ Other location(s) (e.g., businesses, other institutions, agencies, etc.). Please list:

   ** Applicant must secure and include documentation of approval to recruit at these location(s). Please include copies of permissions in the Appendix.

2. Will these other locations require this project to be approved by their own IRB?

   ☐ Yes, the following other locations will require this project to be approved by their own IRB:

   ** Note: If Applicant is able, please include the project's IRB approval notification(s) from these other location(s) in this application.

   ☐ No, these other locations will rely on the Clarke University IRB approval process.

3. How will potential participants be contacted in order to recruit them? Please include a copy of the e-mail, script, flyer, or advertisement to be used to recruit potential participants. Refer to IRB website for policy on incentives.

The survey will be sent to instructors who will email the survey to classes or posted on Moodle. It will briefly describe requirements, purpose and procedure of the study. Paticipants are completely free to choose whether or not they would like to participate.

4. Is informed consent required? (Research using previously recorded data may not require informed consent.)

   ☒ Yes

   ☐ No

5. How will consent be obtained? Check all that apply. (Include with the application)

   ☐ Informed Consent Form with Cover Letter
   ☐ Parent/Guardian Informed Consent Form with Cover Letter
   ☐ Parental Notification Letter (for Action Research only)

☐ Assent Form
☐ Verbal Consent (with Script)
☒ Participation Consent (for Web and Phone Surveys)

6. If it is not possible to obtain written consent, describe how an understandable explanation will be given to the participants and consent will be acknowledged.

Participants will be provided an electronic informed consent before taking the survey. The bottom of the electronic consent form will inform participants that clicking continue implies consent to participate in the study.

E. Data Collection and Analysis

1. Data Collection and Analysis Location (Check all that apply)

☒ Clarke University

☐ Public areas not located at Clarke. Please list specific areas:

☐ Social media (e.g., Facebook, Instagram, Twitter, etc.). Please list:

** Applicant must secure and include documentation of approval to collect data from non-public virtual communities or interest groups (e.g., moderator of a closed Facebook group).

☐ Other location(s) (e.g., businesses, other institutions, agencies, etc.) Please list:

** Applicant must secure and include documentation of approval to collect data at these location(s). Please include copies of permissions in the Appendix.

2. If applicable, will these other locations require their IRB to approve of the project?

☐ Yes, the other location's IRB approval is attached.

☐ Yes, but the other location has yet to provide notification of IRB approval.

☐ No, the other location will be using the Clarke University IRB approval.

3. Indicate which of the collection tools will be used during research and attach all relevant documents. (Check all that apply)

☒ Survey, questionnaire(s) created by researcher: Attach tool(s)
☐ Survey, questionnaire(s) routinely collected by the site: Attach tool(s)
☒ Survey, questionnaire(s) created by other researcher: Attach tool(s) and permission or documentation that the survey is in the public domain
☐ Interview: phone/in-person: Attach interview tool(s) or questions being used
☐ Focus group: Attach questions being used
☐ Analysis of student test scores or routine assignments: Attach sample test(s) and assignment(s)
☐ Analysis of existing public records or documents
☐ Analysis of medical or other private records

- ☐ Direct observation of people in school, workplace, or other non-public location: Attach tool(s) if relevant
- ☐ Direct observation of people in public places: Attach tool(s) if relevant
- ☐ Collection of physical specimens (e.g., blood, saliva, etc.)
- ☐ Collection of data or physical specimen through non-invasive means (e.g., weight)
- ☐ Other(s) (please specify):

4. How will participants complete the study (e.g., email, phone, mail, face to face)? Include the web address, email, script, survey, or other relevant information.

Participants will complete the survey online through Moodle or email. The survey will be created in SurveyGizmo.

5. How often will participants be expected to meet with researcher(s) and for how long (e.g., two one-hour meetings, two weeks apart; 10-minute survey)?

Participants will complete one online survey. The survey is estimated to take about ten minutes.

6. Explain <u>in detail</u> the total experience of participants during the research. Be sure to include scripts, forms, surveys, and other documents related to the study.

Participants will be given a link to an online survey that will take approximately ten minutes. The survey will contain an electronic consent form, all research questions, and a final page thanking them for participating.

7. How will the accuracy of the data collection be ensured (e.g., pilot testing, interrater reliability, single or double blind)? IRB may request raw data in order to assess accuracy.

The study will use validated measures. I'm pilot testing to make sure the survey is easy to understand.

8. Will data be anonymous or confidential? *Anonymous data are data collected with no identifiers available to the researcher. Confidential data include one or more identifiers which is available to the researcher.*

   - ☒ Anonymous
   - ☐ Confidential

9. How will data be *collected* in order to protect the confidentiality and privacy of participants?

No identifying information will be collected. The survey will only ask about online classes in general and will not ask for specific course names so that participants can't be identified by the courses they took. Only the PI and the faculty advisor of this study will have access to the participants' responses. Confidentiality will be maintained.

10. How will data be *stored* in order to protect confidentiality and privacy of participants (e.g., locked file in a particular room, password protected file on a specific computer)? Be specific.

The data will be stored in researchers' password protected laptop. Only the PI and the faculty advisor of this study will have access to the data.

11. How and when will data be destroyed? The federal government requires data to be retained for at least three years.

Data will be retained for at least 3 years per federal government guidelines. Only the approved researchers will have access to the data. However, once analyses are conducted and results have been reported, data files will be deleted permanently from laptops and from SurveyGizmo.

12. Describe the specific quantitative or qualitative analysis that will be used to answer the research questions.

Correlation analysis will be conducted to look at the relationship between engagement, motivation, and academic performance. Regression analysis will be conducted to test the mediating effect of engagement on the relationship between motivation and performance. Dependent t-tests will be conducted compare grades for synchronous and asynchronous classes.

VI. The researcher is responsible for considering any potential risk that a research participant might experience. Risk to participants may be tolerable in research as long as it is necessary to gather the information and as long as the researcher has provided appropriate ways to minimize the risk. Carefully estimate risk level for participants of this study. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.

A. Psychological stress greater than daily life (e.g., potential to perceive topic or materials as threatening, offensive, or degrading)	Level of risk ☐ Not Applicable ☒ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	**Thinking of online learning experience might cause psychological discomfort for participants if they did not do well in their classes or because of personal reasons. However, participants can stop participating in the study anytime if they wish to. Any complaints will be brought to the faculty advisor's attention and handled according to IRB guidelines.**
B. Social or economic stress greater than daily life (e.g., perception of experience as potentially damaging to financial standing, employability, job retention, or reputation)	Level of risk ☒ Not Applicable ☐ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize	

the risk to participant(s) and how participant complaints will be handled.	
C. Physical or medical risk greater than daily life (e.g., potential for physical injury or negative impact on health)	Level of risk ☒ Not Applicable ☐ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	
D. Unintended disclosure of confidential information (e.g., school or medical records)	Level of risk ☒ Not Applicable ☐ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	
E. Perceived coercion to participate because of existing or potential relationship between researcher and participant (e.g., friend-friend, teacher–student, employer–employee)	Level of risk ☐ Not Applicable ☒ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	**Participants might feel like they should participate because they know the researcher. They will be told they don't have to participate if they don't want to and can stop participating at anytime; complaints will be handled by the faculty advisor.**
F. Confusion resulting from experimental deception (e.g., use of placebo)	Level of risk ☒ Not Applicable ☐ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	
G. List any other risk that may apply:	Level of risk ☒ Not Applicable ☐ Minimal risk ☐ Substantial risk
Describe circumstances that could lead to risk if applicable. Explain plans to minimize the risk to participant(s) and how participant complaints will be handled.	

VII. Conflicts of Interest (COI)

A. Financial COI: Do any of the researcher(s) (or their spouse(s), domestic partner(s), significant other(s), and/or dependent children) have financial interests related to this study?

☐ Yes

☒ No

1. If Yes, please disclose this financial COI:

2. If Yes, please explain how relevant researcher(s) will manage the influence of this financial COI to avoid any actual or seeming compromised judgement related to the collection, analysis or reporting of this research project. Note: Any COI should be disclosed in publications or presentations.

B. Other COI: Do any of the researcher(s) (or their spouse(s), domestic partner(s), significant other(s), and/or dependent children) have any other personal considerations that may compromise—or have the appearance of compromising—an investigator's professional judgment in conducting or reporting research for this project?

☐ Yes

☒ No

1. If Yes, please disclose this other COI:

2. If Yes, please explain how relevant researcher(s) will manage the influence of this personal COI to avoid any actual or seeming compromised judgement related to the collection, analysis or reporting of this research project. Note: Any COI should be disclosed in publications or presentations.

VIII. Describe the potential benefits of this research to individual participants or to society.

Participants will get to experience in survey research procedures. Also, this is an opportunity to provide information about participants' experiences, which can then be used to improve future online learning experiences for students. The research will benefit society by providing a better understanding of student motivation, engagement and performance online.

IX. Assurance Statements

I understand and agree to follow all of Clarke University's IRB policies and requirements.

[redacted] [redacted] ___

Date Principal Investigator's Signature

If the PI is a student, then the Faculty Advisor must agree to the following:

I reviewed this application and approve of the protocols. I worked with this student to ensure that all ethical and procedural concerns have been addressed. I support this research project and attest to the ability of the researcher to conduct this study.

[redacted] _____ [redacted] _____

Date Faculty Advisor's Signature (if applicable)

If the Student PI is unable to obtain a Faculty signature (e.g., Faculty Advisor is out of town), then student must CC the faculty member when submitting the Application and any revisions. The Faculty Advisor must then "Reply All" confirming approval before the Application or Revision will be considered for review or approval. This alternative signature process is only for exceptional circumstances. Please indicate why this alternative process was necessary.

Over the past two decades, online learning is becoming more and more popular. However, a number of people have negative impressions about online learning. One of the major concerns regarding online learning is students' engagement and academic outcomes. The current research predicts that there is a relationship between motivation and engagement with academic performance. Participants will be approximately 100 eligible students who will complete the survey online through Moodle or email. The survey will be created in SurveyGizmo. Participants will be given a link to an online survey that will take approximately ten minutes. The survey will contain validated measures of motivation (Pintrich & De Groot, 1990) and engagement (Dixson, 2015). The survey will also ask about academic outcomes for online classes from Fall 2020. Correlation analysis will be conducted in order to see the relationship between motivation, engagement and academic performance. Regression analysis will be included to test the mediating effect of engagement on the relationship between motivation and performance. For exploratory purposes, dependent t-tests will be conducted compare grades for synchronous and asynchronous classes.

CITI PROGRAM

Completion Date [redacted]
Expiration Date [redacted]
Record ID [redacted]

This is to certify that:

[redacted]

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Has completed the following CITI Program course:

Social & Behavioral Research - Basic/Refresher (Curriculum Group)
Social & Behavioral Research (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Clarke University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/[redacted]

CITI PROGRAM

Completion Date [redacted]
Expiration Date [redacted]
Record ID [redacted]

This is to certify that:

[redacted]

Has completed the following CITI Program course:

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Social & Behavioral Research - Basic/Refresher (Curriculum Group)
Social & Behavioral Research (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Clarke University

CITI
Collaborative Institutional Training Initiative

[redacted]

Verify at www.citiprogram.org/verify/[redacted]

Students' Engagement and Academic Outcomes in Online Learning
Electronic Informed Consent

KEY INFORMATION
You are being asked to consent to participate in an online research study. The purpose of this study is to assess students' engagement and academic outcomes in online learning. Participation is voluntary. There is no penalty if you decide not to participate or withdraw from the study. Your relationship with [redacted] the Psychology Program, the Health, Wellness, and Behavioral Sciences Department, and Clarke University will not be affected by this decision. The estimated time of participation is 10 minutes. You will be expected to answer questions about your experience of completing online courses. Potential benefit for participating includes experience in survey research procedures. Also, this is an opportunity to provide information about your own experiences, which can then be used to improve future online learning experiences for students. The research will benefit society by providing a better understanding of student motivation, engagement and performance online. Potential risks of participating might include psychological discomfort while answering questions regarding your personal experiences.

QUALIFICATIONS TO PARTICIPATE
You are being asked to participate because you are a Clarke student. Unfortunately, there are some reasons why you may not be able to participate. To be eligible to participate, you are required to have had experience in at least two online classes before taking the survey. You must also be at least 18 years old.

PROCEDURES
If you agree to participate in this study, you will be asked to complete a 10-minute survey online. The survey will contain demographic questions, such as age and gender, major(s), questions about your academic performance, and questions about your motivation and engagement in online classes.

PARTICIPANT CONFIDENTIALITY
Your responses to this survey will be automatically anonymous, and so your name will not be connected to any publication or presentation that uses the research findings from this study.

DISCLAIMER
The risk of participating is minimal. If you experience any distress during participation, the researchers and Clarke University are not responsible for any medical or mental health expenses.

REFUSAL TO PROVIDE CONSENT
You are not required to participate in this study. Refusal to participate in this study will not affect your rights to services you currently are receiving or may receive from the Psychology program, the Health, Wellness, and Behavioral Sciences Department, or Clarke University.

CANCELLING THIS CONSENT
At any time during the study, you have the right to withdraw your consent to participate. To withdraw from the study, you simply need to stop taking the survey and close your browser. Any information that you have already submitted will remain part of the study because of the anonymizing collection method.

PARTICIPANT CERTIFICATION:
I have read this Informed Consent form. I have been given the opportunity to ask questions regarding the study, and I have received answers to any questions I had regarding the study. I understand that if I have any additional questions about the study or my rights as a research participant, I may contact [redacted]

By checking the box below and clicking continue to the next screen, I agree to be a participant in this study. I acknowledge that I am aware of what this study involves, that I am at least 18 years old, and that I can obtain a copy of this Informed Consent.

11/23/2020

Please, only continue this survey if you are 18 years old or above and had at least two online classes in Fall 2020 semester. The online classes in this survey is defined to be fully online (applied for both asynchronous and synchronous classes). For the purpose of this research, hybrid classes are not considered online classes.

Completion of this questionnaire implies consent to participate in the study.

1. What is your age? _____

2. What is your gender?
   a) Cisgender man
   b) Cisgender woman
   c) Transgender man
   d) Transgender woman
   e) Non-binary
   f) Other (please specify):
   g) Prefer not to answer

3. What is your year in school?
   a) Freshman
   b) Sophomore
   c) Junior
   d) Senior
   e) Graduate

4. What is your major(s) or intended major(s)? _____

5. How many **online classes** did you take in Fall 2020? _____

6. How many classes in **total** did you take in the Fall 2020? _____

7. Think back to the **online classes** you took in Fall 2020 semester. Please state the grade you earned for each **online class** and indicate whether the class was **synchronous or asynchronous**. Please do not list your specific course name and type only the final letter grade you received.

   a) Fall Semester 2020 Online Course #1
      Grade: ___
      Synchronous ____
      Asynchronous ____

   b) Fall Semester 2020 Online Course #2
      Grade: ___
      Synchronous ____
      Asynchronous ____

c) Fall Semester 2020 Online Course #3
Grade: ___
Synchronous ____
Asynchronous ____

d) Fall Semester 2020 Online Course #4
Grade: ___
Synchronous ____
Asynchronous ____

e) Fall Semester 2020 Online Course #5
Grade: ___
Synchronous ____
Asynchronous ____

f) Fall Semester 2020 Online Course #6
Grade: ___
Synchronous ____
Asynchronous ____

Using the following scale, please indicate how these statements are true of you as you reflect on your experiences regarding online learning (in general) in Fall 2020 semester.

Not at all true of me						Very true of me
1	2	3	4	5	6	7

1. I was certain I could understand the ideas taught **online**.
Not at all true of me Very true of me
1 2 3 4 5 6 7

2. I expected to do very well in **online class**(es).
Not at all true of me Very true of me
1 2 3 4 5 6 7

3. I knew that I would be able to learn the material for **online class**(es).
Not at all true of me Very true of me
1 2 3 4 5 6 7

4. I prefer class work that is challenging so I can learn new things.
Not at all true of me Very true of me
1 2 3 4 5 6 7

5. It was important for me to learn what was being taught in **online class**(es).

Not at all true of me Very true of me

1 2 3 4 5 6 7

6. I liked what I was learning in the **online class**(es) I took.

Not at all true of me Very true of me

1 2 3 4 5 6 7

7. I often chose topics for my paper where I would learn something, even if they required more work.

Not at all true of me Very true of me

1 2 3 4 5 6 7

8. Even when I did poorly on an assessment I tried to learn from my mistakes.

Not at all true of me Very true of me

1 2 3 4 5 6 7

9. I thought that what I was learning in **online class**(es) was useful.

Not at all true of me Very true of me

1 2 3 4 5 6 7

10. I thought that what I was learning **online** was interesting.

Not at all true of me Very true of me

1 2 3 4 5 6 7

11. Understanding the subject(s) was important to me.

Not at all true of me Very true of me

1 2 3 4 5 6 7

12. I asked myself questions to make sure I knew the material I had been studying.

Not at all true of me Very true of me

1 2 3 4 5 6 7

13. When work was hard I either gave up or studied only the easy parts.

Not at all true of me Very true of me

1 2 3 4 5 6 7

14. I worked on practice exercises and answered end of chapter questions even when I didn't have to.

Not at all true of me Very true of me

1 2 3 4 5 6 7

15. Even when study materials were dull and uninteresting, I kept working until I finished.

Not at all true of me Very true of me

1 2 3 4 5 6 7

16. Before going to class, I read and studied the assigned readings.

Not at all true of me Very true of me

1 2 3 4 5 6 7

17. I found that when the teacher was talking, I thought of other things and didn't really listen to what was being said.

Not at all true of me Very true of me

1 2 3 4 5 6 7

18. When I was reading, I stopped once in a while and went over what I had read.

Not at all true of me Very true of me

1 2 3 4 5 6 7

19. I worked hard to get a good grade even when I didn't like a class.

Not at all true of me Very true of me

1 2 3 4 5 6 7

20. In general, I was satisfied with the **online class(**es) I took in Fall 2020 semester.

Not at all true of me Very true of me

1 2 3 4 5 6 7

21. In general, I think the **online class**(es) I took helped me to expand my learning skills.

Not at all true of me Very true of me

1 2 3 4 5 6 7

22. In general, I think the **online classes** I took contributed to my knowledge.

Not at all true of me Very true of me

1 2 3 4 5 6 7

23. In general, I think the **online classes** I took in Fall 2020 semester helped me to form/maintain virtual relationships in academic learning.

Not at all true of me Very true of me

1 2 3 4 5 6 7

Within online course(s) (in general), how well do the following behaviors, thoughts, and feelings describe you? Please answer using the following scale:

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

1. Making sure to study on a regular basis

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

2. Putting forth effort to master the materials

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

3. Staying current on the readings

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

4. Taking good notes on readings, PowerPoints, or video lectures

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

5. Looking over class notes between getting online to make sure I understand the material

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

6. Listening/reading carefully

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

7. Being distracted (day dreams, felt asleep, did homework of other classes, checked emails or phone…) while listening to an online lecture.

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

8.Finding ways to make the course material relevant to my life

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

9. Difficulty concentrating on the online lecture

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

10. Applying course material to my life

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

11. Really desiring to learn the material

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

12. Engaging in conversations online (chat, discussions, email) with the instructor(s)

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

13. Engaging in conversations online (chat, discussions, email) with other students

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

14. Having fun in online chats, discussions or via email with the instructor or other students

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

15. Only participating in online conversation if it is required

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

16. Helping fellow students

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

17. Most of the time, I completed my assignments on time.

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

18. I tried to complete my assignments as well as I could.

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

19. Getting a good grade

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

20. Doing well on the tests/quizzes

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

21. Getting to know other students in the **online class**(es)

Not at all characteristic of me	Not really characteristic of me	Moderately characteristic of me	Characteristic of me	Very characteristic of me
1	2	3	4	5

Thank you for participating in our study.

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Measuring Student Engagement in the Online Course: The Online Student Engagement Scale (OSE)

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Abstract

Student engagement is critical to student learning, especially in the online environment, where students can often feel isolated and disconnected. Therefore, teachers and researchers need to be able to measure student engagement. This study provides validation of the Online Student Engagement scale (OSE) by correlating student self-reports of engagement (via the OSE) with tracking data of student behaviors from an online course management system. It hypothesized that reported student engagement on the OSE would be significantly correlated with two types of student behaviors: observational learning behaviors (i.e., reading e-mails, reading discussion posts, viewing content lectures and documents) and application learning behaviors (posting to forums, writing e-mails, taking quizzes). The OSE was significantly and positively correlated with application learning behaviors. Results are discussed along with potential uses of the OSE by researchers and online instructors.

Introduction

Despite the decrease in higher education enrollment overall, online instruction is still growing. A recent report funded by the Online Learning Consortium (Allen & Seaman, 2013) found that 6.7 million students (about 32% of all college students) were taking at least one online course. Indeed, in the analysis of 2,820 institutions (of a potential 4,527 active degree-granting institutions of higher education in the United States), over 69% of chief academic officers felt that online learning is important for the future of their institutions. The vast majority of these officers (77%) believe that online learning is as good as or better than traditional brick-and-mortar learning.

Certainly, research comparing face-to-face and online courses has demonstrated that online courses can be as effective as traditional face-to-face courses (Maki & Maki, 2007; Robertson, Grant, & Jackson, 2005; Zhao, Lei, Lai, & Tan, 2005). Thus, scholarship has moved beyond comparing online and face-to-face classes to exploring ways to enhance teaching and learning in the online environment (Durrington, Berryhill, & Swafford, 2006; Gaytan & McEwen, 2007; Levy, 2008; Young, 2006). Creating and validating research tools to measure various aspects of the online teaching environment is an important part of advancing research about online learning (Roblyer & Wiencke, 2004). Such tools may also provide feedback to instructors about individual courses.

Student engagement is, generally, the extent to which students actively engage by thinking, talking, and interacting with the content of a course, the other students in the course, and the instructor. Student engagement is a key element in keeping students connected with the course and, thus, with their learning (Dennen, Darabi, & Smith, 2007; Kehrwald, 2008; Robinson & Hullinger, 2008; Shea, Li, & Pickett, 2006; Swan, Shea, Fredericksen, Pickett, Pelz, & Maher, 2000). Therefore, the ability to effectively measure student engagement is necessary for online researchers and instructors. The Online Student Engagement scale (OSE) provides that. This paper will discuss the conceptualization of student engagement and the previous steps in creating, assessing the reliability of, and validating the OSE. It then presents the current study, which further validates the OSE's ability to measure student engagement.

Literature Review

Student engagement has been conceptualized in multiple ways across researchers and disciplines (Azvedo, 2015). To explain this abstract concept, the key ideas in the research on online student engagement are explored: social construction, the widely applied Community of Inquiry model, and the particular importance of student engagement to online learning.

Social Construction

Social constructivist theories, such as those created by Vygotsky (1978) and Bandura, Ross, and Ross (1961, 1963), posit that we learn through social interaction. Students may perform a set of actions by themselves but will perform better when allowed to work collaboratively with others. This difference between what students can perform by themselves and what they can perform with others is Vygotsky's "zone of proximal development" (Ally, 2004; Anderson, 2004; Ashcraft, Treadwell, & Kumar, 2008; Hrastinski, 2009; Stacey, 2002; Vygotsky, 1978; Woo & Reeves, 2007). In an online discussion, for instance, students can help each other by filling in the gaps in each other's knowledge and/or by "demonstrating" particular tasks. The zone is the reason interaction with the instructor and with other students is so important to learning.

Bandura et al. (1961, 1963) illustrated that students can also learn by observing others' behaviors. In the online course, such observational learning may occur when students read arguments posted by other students or the instructor. These become "models" for learning. Similar processes could occur for shared papers, wikis, and so on. This move toward more active learning and interaction with students is particularly important in the online environment, where the challenges of lack of synchronicity (not being online at the same time) and lack of placedness (not being in the same geographical location) have to be overcome (Anderson, 2004). To overcome these challenges, researchers recommend creating courses that encourage three characteristics: social presence, community, and meaningful interaction (Ally, 2004; Bigatel, Ragan, Kenan, May, & Redmond, 2012; Dow, 2008; Hill, Song, & West, 2009).

Briefly, the need for active learning and interaction means that students need to feel as if they are dealing with real people (social presence), that they belong in some way with/to this group of learners (community), and that they are involved in sharing, negotiating, arguing, discussing, and perspective taking (meaningful interaction) (Wang, 2008; Woo & Reeves, 2007). According to social constructivism, this type of interaction/engagement is necessary for learning (Ashcraft et al., 2008; Ally, 2004; Bigatel et al., 2012; Hrastinski, 2009). Hrastinski (2009) defines online learner participation as "a process of

learning by taking part and maintaining relations with others. It is a complex process comprising doing, communicating, thinking, feeling and belonging, which occurs both online and offline" (p. 1761).

Some of the implications that constructivism has for online learning are similar to the guidelines it creates for traditional instruction: Learning should be active, allow students to construct their own knowledge, make effective use of collaborative and cooperative methods, and be meaningful to students (Ally, 2004). In this way, online learning environments promote social presence and community while creating meaningful interactions. Under these conditions, significant learning is more likely to occur. The Community of Inquiry model (CoI) provides a clear framework for applying social constructivist ideas to the online learning environment.

Community of Inquiry Model

The Community of Inquiry model discusses three "presences" that are necessary for an effective community of learners: social presence, teaching presence, and cognitive presence (Akyol & Garrison, 2011; Akyol & Garrison, 2014; Annand, 2011; Garrison, 2007; Arbaugh, 2008; Garrison & Anderson, 2003; Garrison & Arbaugh, 2007; Shea et al., 2010; Stodel, Thompson, & MacDonald, 2006). Social presence, as discussed earlier, is the ability of learners to share more than "just the facts" and to feel they are communicating with real people in cyberspace (Kehrwald, 2008). When social presence occurs, students feel they are communicating their emotions and attitudes and interpersonally connecting with others (Garrison & Arbaugh, 2007). Online researchers emphasize social presence as a key factor in student engagement. Researchers have found social presence to be positively related to students' learning and their sense of being connected within the class (Shea et al., 2006), higher performance on writing assignments (Picciano, 2002), and student satisfaction (Dennen et al., 2007). Garrison et al. (2000) found that "social presence marks a qualitative difference between a collaborative community of inquiry and a simple process of downloading information" (p. 96). Thus, online students need to feel that they are not alone in their learning, but connected to a group of learners. We have yet to reach the stage of technological sophistication (although we are probably close) when one can feel engaged with nothing more than a computer, in the sense of feeling as if one is working with someone else to create knowledge, solutions, and so on. Students need to feel that they are working with real people: their peers and instructors. Social presence is a necessary but not sufficient component of student engagement (Dow, 2008).

Cognitive presence includes the practical inquiry model, which moves students' thinking/discussion from a triggered event that makes them aware of some new idea, concept, or problem to exploration of the new information, integration of ideas, and finally to resolution of the problem (Akyol & Garrison, 2011). Teaching presence is about course design and organization, discourse facilitation, and direct instruction (Akyol & Garrison, 2014; Garrison, 2007). Research has supported the relationship between one or more of the presences and perceived learner support and perceived learning (Akyol & Garrison, 2014; Arbaugh, 2008); student satisfaction and sense of community (Garrison, 2007); and higher order learning outcomes (Akyol & Garrison, 2011). Thus, CoI offers a strong model for researching about online courses as well as designing effective online learning environments.

Importance of Student Engagement to Online Learning

Social construction in general and the CoI framework in particular support the need for student engagement with content, other students, and the instructor. Swan et al. (2000) and Chickering and Ehrmann (1996) agree. Swan and her associates (2000) found that the three factors associated with successful course design and students reporting high levels of learning and satisfaction were (1) frequent and quality interaction with instructors, (2) a dynamic discussion (interaction with classmates), and (3) a transparent interface (easy navigation). Likewise, Chickering and Ehrmann (1996) hold that good practice must include student–faculty contact, cooperation among students, and active learning. In general, the research about online learning supports the idea that student engagement is crucial to student success (Dennen et al., 2007; Kehrwald, 2008; Robinson & Hullinger, 2008; Shea et al., 2006; Swan et al., 2000). Creating a learning environment that is cohesive and interactive (Gaytan & McEwen, 2007) ameliorates a major issue with online courses: students' feelings of isolation (Lewis & Abdul-Hamid, 2006; Ortiz-Rodriguez, Telg, Irani, Roberts, & Rhoades, 2005; Russo & Campbell, 2004; Song & Singleton, 2004) by

providing opportunities for students to create connections with the instructor, students, and course content (Young, 2006).

Defining Student Engagement

As stated earlier, while there are strong theoretical foundations and a very useful model for engagement, *student engagement*, as a term, is not well defined. Kuh (2003) sees engagement as "the time and energy students devote to educationally sound activities" (p. 25). His definition gave rise to the National Survey of Student Engagement (NSSE). The NSSE benchmarks five clusters of activities indicating student engagement, including level of academic challenge, a supportive campus environment, enriching educational experiences, student–faculty interaction, and active and collaborative learning (Robinson & Hullinger, 2008). The NSSE perspective on student engagement considers the entire collegiate experience, both inside and outside of the classroom. Other measures focus more on student engagement within the classroom. One of these is Handelsman, Briggs, Sullivan, and Towler's (2005) measure of traditional classroom student engagement. They found four factors illustrating how students devote time and energy in the classroom: skills engagement (keeping up with readings, putting forth effort); emotional engagement (making the course interesting, applying it to their own lives); participation/interaction engagement (having fun, participating actively in small group discussions); and performance engagement (doing well on tests, getting a good grade) (Handelsman et al., 2005, p. 187). They see student engagement as containing both affective and behavioral components.

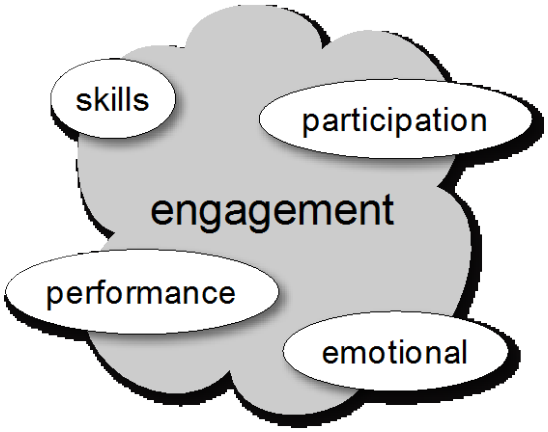

Figure 1. Affective and behavioral components of engagement.

Combining social constructivist notions of learning, the CoI model, and previous incarnations of engagement in the traditional classroom, a description of online student engagement emerges: Engagement involves students using time and energy to learn materials and skills, demonstrating that learning, interacting in a meaningful way with others in the class (enough so that those people become "real"), and becoming at least somewhat emotionally involved with their learning (i.e., getting excited about an idea, enjoying the learning and/or interaction). Engagement is composed of individual attitudes, thoughts, and behaviors as well as communication with others. Student engagement is about students putting time, energy, thought, effort, and, to some extent, feelings into their learning. Therefore, the OSE attempts to measure what students do (actively and in their thought processes) as well as how they feel about their learning and the connections they are making with the content, the instructor, and other students in terms of skills, participation, performance, and emotion.

Previous Work on the OSE

Because the previous work of creating and assessing the reliability and validity of the OSE is detailed elsewhere (Dixson, 2010), a brief summary is presented here. The OSE was initially created using a four-step process: (1) reviewing existing measures of student engagement; (2) conducting a focus

group to discuss how those measures would need to be changed for the online environment; (3) creating a pilot of that initial instrument; and (4) performing a test of the instrument.

Existing Measures

The literature about measuring student engagement indicates three potential measurements: Roblyer and Wiencke's (2004) Rubric for Assessing Interactive Qualities of Distance Courses (RAIQDC), Ouimet and Smallwood's (2005) Classroom Survey of Student Engagement (CLASSE), and Handelsman et al.'s (2005) Student Course Engagement Questionnaire (SCEQ). The RAIQDC measures interaction by asking students about other students' behaviors. Given that a good deal of student behavior is not accessible in the online environment, particularly students' affective responses, the RAIQDC was not acceptable. The CLASSE asks students to report on their own behaviors both within and outside of a particular class, but it was designed to be used with a separate faculty CLASSE so that areas of importance to faculty can be matched to areas of importance to students. This allows faculty to see where there may be areas of incongruence between what they feel is important and what their students value (Ouimet & Smallwood, 2005). While this is a useful tool based on NSSE items, it lacks an explanatory foundation (other than NSSE) for inclusion/exclusion of particular items.

The SCEQ was more theoretically sound. As previously mentioned, Handelsman et al.'s (2005) survey does not conceive of engagement as one characteristic or only as behaviors but as based on multiple factors: skills engagement (what students "do"); emotional engagement (how connected they feel to the course/content, which is especially important in online courses; how applicable they feel it is); participation/interaction engagement (interacting with others, enjoying the content/course); and performance engagement (students' desire/goal to succeed in the course). The notion that students get emotionally involved and need others to learn fits with social constructivist ideas about learning as well as the CoI model of social, cognitive, and teacher presence. It also fits with research findings regarding the need for meaningful activities and connection in online classes. So the SCEQ held a stronger theoretical foundation about engagement and measured not just perceptions of attitudes but also perceptions of behaviors. Therefore, Handelsman et al.'s (2005) SCEQ was used to form the basis of the online survey. However, since this measurement includes items such as "coming to class everyday" and "raising my hand in class," adjustments to fit the online environment were needed. Table 1 summarizes essential shortcomings of each measure.

Table 1

Differences Between Existing Measures

Measure	Shortcomings
RAIQDC	Asks about other students' behaviors but lacks the ability to tap into affective components
$CLASSE_{Student}$	Designed to be used with $CLASSE_{Faculty}$
SCEQ	Needed to be adapted to online environment

Focus Group

To make these adjustments, a focus group of five online instructors met to discuss what each of the four factors (skills engagement, emotional engagement, participation/interaction engagement, and performance engagement) might "look like" in the online environment. They identified a set of 30 behaviors that might represent Handelsman et al.'s (2005) four factors in an online course (see Dixson, 2010, for complete description). For instance, items such as "taking good notes in class" were replaced with "taking good notes over PowerPoints or video lectures." Likewise, "participating in small group discussions" was revised to "participating in small group discussion forums." From that process, an initial 30-item questionnaire was created.

Pilot

The third step in creating the scale consisted of a pilot of the 30 items created by the focus group. Participants for this pilot were 31 students in online communication courses at a regional midwestern university. The results indicated strong reliability (Cronbach's alpha = .95) and significant correlation with two global items on engagement with the course ($r = .73$; $p < .01$), one global item of social presence (getting to know other students), and one global item of teacher presence (getting to know instructor) ($r = .38$; $p < .05$) (Dixson, 2010). Thus, initial reliability as well as an expert jury (focus group) and concurrent validity (correlation with the global items) were supported with the pilot.

Test

Once the initial three steps were accomplished, the fourth step was to test the engagement scale with a larger and more diverse pool of students. To that end, 186 students across 38 courses from six campuses of a large midwestern university (the main campus and five regional campuses) completed the OSE. As an incentive for instructor participation, aggregate data was shared with instructors if five or more students from a course participated. To alleviate students' concerns about instructors having access to the data, no demographic data was collected.

Factor analysis yielded four factors: skills, emotion participation, and performance of 19 items loading .60 or higher (Dixson, 2010). These 19 items indicated strong reliability (alpha = .91) and significant correlation with a course global engagement item ($r = .67$; $p < .001$). (See Table 2 for a listing of how the items distributed across factors.) As in the pilot, these 19 items were significantly correlated with both instructor presence and social (student) presence. An unexpected finding of this study was that students who spontaneously reported multiple channels for communicating with other students and the instructor (i.e., e-mail, discussion forums, etc.) reported significantly higher levels of engagement.

Table 2

Item Distribution Across Factors

Skills	Emotion	Participation	Performance
Study regularly	Put forth effort	Have fun in online chats	Do well on tests
Stay up on reading	Find ways to make materials relevant	Participate actively in forums	Get good grades
Look over class notes	Apply to my life	Help fellow students	
Be organized	Find ways to make material interesting	Engage in online conversations	
Listen/read carefully	Really desire to learn	Post regularly in forum	
Take good notes over readings, PPT, video lectures		Get to know other students	

Completing this final step meant that the OSE had exhibited face, expert jury, and concurrent validity along with reliability, and could serve as a reliable indicator of student engagement in the online learning environment. It contained the four factors expected: skills (i.e., staying up on readings, listening/reading carefully), emotional (i.e., applying course material to their lives, really desiring to learn the material), participation/interaction (i.e., participating actively in small-group discussion forums, helping fellow students), and performance (i.e., getting a good grade, doing well on tests/quizzes) engagement. One concern remained: There was no external validation of engagement, only students' perceptions. Thus, another step was needed.

Next Step

Since all of the data used to accomplish the previous four steps was self-reported, it was conceivable that, while the OSE was consistently and reliably measuring something, it might not be student engagement. An external (outside student perceptions) measure was needed to further validate the instrument. If the OSE was indeed valid, it should have correlated with actual student behavior within the class. While the OSE measures characteristics of student engagement beyond behaviors, behavioral engagement is part of overall student engagement and, thus, should be correlated with self-reports of student engagement. Another study comparing observable (not self-reported) student behaviors with the engagement measure was needed. In the online environment, those behaviors are often tracked by the learning management system.

Current Study

Because of the need to compare observable behaviors with the engagement measure, the current study proposed to correlate the OSE with actual online student behaviors as tracked by course management software. The tracked behaviors included reading posts, reading/viewing content (reading posted documents or e-mails, viewing links or videos), writing posts or e-mails, and taking quizzes. Social constructionists discuss many types of behaviors that occur during the learning process. Students observe (or read or listen to) new information, and they then need to process and interpret that information before they personalize/apply it and, in short, make it their own and make it fit with their view of the world (Ally, 2004). In the online environment, there are definite opportunities for observational learning (reading posts and content, watching lectures) and for application/interactional learning (posting in response to questions or other posts, taking quizzes, writing papers, etc.).

So, two distinct types of behaviors were accessible: observation (or taking in content), and application (or producing/demonstrating learning). The researcher assumed that in most cases students would need to observe (i.e., listen to the lecture so they could apply the ideas to their own lives, read the posts so they could consider and respond to the posted materials) before they applied that learning (e.g., took the quiz, responded to the discussion forum post, etc.). Thus, students would need to read an initial post or question before creating their own post, and they would need to read content and/or view a video lecture before taking the quiz. Therefore, online behaviors available from the course management system were divided into observation learning behaviors and application learning behaviors. Student engagement should be strongly correlated with both types of behaviors, but since applying learning behaviors requires the learning behaviors to occur first, the students who do more application behaviors should be more actively involved in the course and, thus, more engaged. While the distinctions are somewhat arbitrary since learning can and should occur during both types of behaviors, they are meaningful in creating levels of engagement within the course in terms of behaviors.

The researcher is cognizant of the fact that measuring student behaviors via course management software leaves out time spent thinking and reading, and that engagement goes well beyond behaviors produced with clicks online (indeed, the OSE measures a much broader definition of engagement, as presented above). This test is meant only as a method for providing more objective behavioral validation of the OSE than might be provided by only having students self-report their behaviors. It is not attempting to measure (or claiming to measure) all learning that occurs in an online course.

Thus, given the Community of Inquiry model and the previous work to establish the validity and reliability of this measure, the current study, to further validate the OSE, predicts the following:

H_1: OSE will significantly and positively correlate with observation learning behaviors in an online course.

H_2: OSE will significantly and positively correlate with application learning behaviors in an online course.

Method

Participants

To test these hypotheses, online communication instructors at a regional campus of a midwestern university were asked to forward an e-mail within Blackboard (the learning management system) to their students requesting their participation in a study about online learning. This occurred toward the end of the spring semester. Students were asked to complete the OSE and to give their permission for their instructor to release the tracking information about their online behavior. Thirty-four students (23 females and 11 males) from 13 sections of 5 upper level undergraduate communication courses completed the Qualtrics survey and gave permission for their tracking information to be used. This represented about a 10% response rate. The researcher was not instructing any of the participating sections. Five of the students were excluded from correlation analysis due to missing data on the OSE.

Procedures

Once students had completed the survey and the semester had ended, instructors submitted the tracking information for analysis. Tracking information included a semester's worth of observation learning behaviors (number of e-mails, discussions and assignments read, along with the number of web pages, content pages, and files viewed) and application learning behaviors (number of e-mails sent, discussions posted, assessments finished, and assignments submitted). As discussed earlier, while a student has to *do* something (e.g., log on, click a link) to accomplish observation learning behaviors, there is a difference between the student who attends class and one who attends and participates. Observational behaviors were differentiated from application learning behaviors. This data analysis examined only the quantity of behaviors, not the degree to which those behaviors affected student learning. Students could have simply clicked on and opened an e-mail without paying much attention to the content, and they could have taken a quiz by guessing at the answers. But for the purposes of seeing if the engagement scale is correlated with actual behaviors, the quantity of behaviors, while a crude measure, is still a valid estimate of student learning behaviors. Thus, the data analysis distinguished between observation behaviors of paying attention to content and application behaviors of actually doing something with the content and/or with classmates or the instructor. The observation learning behaviors and application learning behaviors were separately summed.

Students also completed the 19-item OSE (see Appendix A). To do so, they reported on a 5-point Likert scale how well each behavior, thought, or feeling was characteristic of them or their behavior. Statements included descriptions of thoughts/emotions such as "really desiring to learn the material"; skills like "being organized" and "taking good notes over readings, PowerPoints, or video lectures"; participation such as "helping fellow students" and "posting in the discussion forum regularly"; and performance items like "doing well on the tests/quizzes" and "getting a good grade." The OSE Cronbach's alpha for this sample was a .86, meaning the instrument demonstrated internal reliability. Results were obtained by running two separate Pearson's correlations: one between the OSE and the number of observation learning behaviors and the second between the OSE and the application learning behaviors.

Results

H_1: The OSE will significantly and positively correlate with observation learning student behaviors in an online course.

This hypothesis was not supported. See Table 3 for correlation statistics.

H_2: The OSE will significantly and positively correlate with application learning student behaviors in an online course.

This hypothesis was supported. See Table 3 (next page) for correlation statistics.

Table 3
Statistics for Hypotheses Tests

	Observational behaviors	**Application behaviors**
n = 29	mean = 1705.91 *sd* = 986.78	mean = 93.58 *sd* = 67.91
OSE mean = 4.02 *sd* = .49	*r* = .32; *p* = ns	*r* = .48; *p* < .01

Discussion

The finding that the application learning behaviors were significantly correlated with the OSE scale strongly supports the validity of the scale in measuring the engagement of students. While the scale goes beyond behaviors (measuring emotional and performance engagement as well as skills and participation), this study provided evidence that the self-reports of students are correlated with their observable (by a course management system) learning behaviors, validating the scale with objective data about behaviors. The validity of self-reports of engagement used by the OSE is supported by actual behaviors in the online class. Thus, the primary purpose of this study was accomplished.

While it was expected that both application behaviors and observation learning behaviors would be positively correlated with self-reported engagement, only application learning behaviors significantly correlated with self-reported engagement. It may be that simply reading posts, e-mails, content, and so on is not enough to be "engaged" in the course. So the number of observation learning activities is less relevant to engagement unless it is followed up by posting in the discussion forums, answering e-mails, and other application learning behaviors, a conclusion that fits with a social constructivist perspective. While notions such as observational learning would indicate that students can learn by reading, listening, and thinking, Vygotsky's ideas about the social nature of learning would indicate that only when we engage in communication with others about what we are learning do we have the opportunities to "test" our skills/knowledge, receive feedback, and engage more deeply with the content. The need for interaction to enhance learning fits with what we know about active learning in the classroom. A straight, traditional lecture with no room for student interaction will, in most cases, simply not be as engaging as some form of active learning (Ghani, 2009; Keyser, 2000; Margurber, 2005). This type of interaction with others, if within the zone of proximal development, can help students move that zone in the direction of becoming more knowledgeable/skilled within the content area. Therefore, social constructionist perspectives are supported with the finding that only application learning behaviors were significantly correlated with students' reports of engagement in online courses.

The sheer number of observation learning behaviors was, however, somewhat surprising. Thirty-four students logged an average of just over 1,700 observation behaviors. This seems an extraordinary number of e-mails, posts, web pages, and other files to read, or at least click on, during a 16-week semester. The fact that the standard deviation (986.78) was almost one thousand indicates a lot of variability from class to class and student to student. It is possible, of course, that many of the behaviors reported by the course management software were just "clicks" and skimming of e-mails, posts, files, and web pages rather than students actually taking the time to read and consider each one. As previously stated, this data does not distinguish the quality of learning, simply the behavior of accessing the information. That fact may explain why the observation learning behaviors were not correlated with student engagement—they are not necessarily indicative of being engaged with the content or other

students/instructors. They are indicative of accessing the potential to be engaged. Observation behaviors were, however, significantly correlated with application behaviors (r = .48; p < .001; n = 29). Thus, observation behaviors are likely a necessary but not a sufficient factor in engagement. The numbers provide a rough indication of the amount of work students are doing before enacting behaviors that demonstrate their learning.

Limitations

Of course, there are limitations to this study. As always, a larger and more diverse sample would lead to stronger and more generalizable conclusions. Given the voluntary nature of the sample, it is certainly possible that those who volunteered were more engaged than others. However, since a correlation was used, the volunteer nature of the sample should have little effect on the statistical tests other than to restrict the variability of results. Accessing students' learning behaviors in more depth (are they taking notes or on Facebook while viewing the video lecture?) would provide a stronger sense of the behaviors involved. Future iterations of the scale should pilot more items asking students to consider their cognitive activities. At this point, students were asked about finding ways to make the course material relevant and applying the material to their lives. Other items measuring cognitive efforts (e.g., "I spend time thinking about the readings, content, etc.") might better tap into this important component.

In the previous study (Dixson, 2010) with 186 students from six campuses using multiple learning management systems, the mean engagement was 3.41. The current sample was quite a bit higher at 4.02, likely due to the smaller size and the use of communication courses that may require more student engagement in terms of discussion forums, chats, and so on. Of course, both means may be affected by the voluntary nature of the samples. More engaged students are more likely to volunteer for the study. Ideally, the next study would be used as part of a regular class and, thus, would require everyone to take the study, creating a sample that is not potentially biased by volunteerism. Even given this limitation, the data from both studies can begin to provide some benchmarks about student engagement in different types of classes that instructors can use to assess the engagement of their own students.

Potential Uses of the Scale

The OSE has three primary functions: (1) to aid research into online course design, (2) to provide feedback to instructors about the level of engagement of their students given the course design choices made, and (3) to provide evidence of teaching effectiveness for merit arguments, teaching awards, and promotion and/or tenure cases.

As a research tool, it has, so far, shown strong reliability and validity. The current study strengthens the argument regarding the validity of the OSE scale. If particular activities, designs, or teaching methods are said to increase student engagement, the OSE can be used to test those claims.

If an individual instructor or set of instructors wished to measure the level of engagement of their students, it could provide that type of feedback as well. The instrument should be especially useful in providing feedback before and after course design modifications to increase student engagement.

University teachers are increasingly being asked to provide multiple measures of teaching effectiveness beyond traditional student evaluations (multiple items with standard Likert scales asking how knowledgeable, organized, etc., the instructor was). The OSE is a valid and reliable scale that taps into something beyond student satisfaction while still using a student report method. Thus, the OSE may be used as an indirect measure of teaching effectiveness. It measures, in more depth than most traditional student evaluations, the perceived engagement of students in an online course. Engagement is a necessary (but not sufficient) step in student learning given that students must be engaged with the course before they can learn. So, while the OSE does not purport to measure learning, it does measure a necessary part of the learning environment that teachers work to create. Like student evaluations, the OSE should not be used in isolation. Since it measures perceived student engagement, it is vulnerable to all of the factors that affect the ability of student evaluations to be used as valid or reliable measures of teaching effectiveness: level of the course, type of content, preparedness of students, and so on. However, it provides a measure of the environment created by the design choices and responsiveness of the instructor and, thus, is an indirect measure of teaching effectiveness.

The OSE provides information beyond that available from course management software. Course management software offers information about the quantity of behaviors, such as number of e-mails read, posts read or written, quizzes taken, and so on. The OSE taps into students' intellectual efforts, skills, performance, and participation as well as the affective/emotional components of learning.

In conclusion, the OSE scale offers an easy, valid, and reliable way to measure students' engagement in online courses. This information is needed to continue to account for the efficacy of online courses, gauge changes in online courses, and move the scholarship of teaching and learning in the online learning environment forward.

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Appendix A
Online Student Engagement Scale (OSE)

Within that course, how well do the following behaviors, thoughts, and feelings describe you? Please answer using the following scale:

1. not at all characteristic of me
2. not really characteristic of me
3. moderately characteristic of me
4. characteristic of me
5. very characteristic of me

1. Making sure to study on a regular basis
2. Putting forth effort
3. Staying up on the readings
4. Looking over class notes between getting online to make sure I understand the material
5. Being organized
6. Taking good notes over readings, PowerPoints, or video lectures
7. Listening/reading carefully
8. Finding ways to make the course material relevant to my life
9. Applying course material to my life
10. Finding ways to make the course interesting to me
11. Really desiring to learn the material
12. Having fun in online chats, discussions or via email with the instructor or other students
13. Participating actively in small-group discussion forums
14. Helping fellow students
15. Getting a good grade
16. Doing well on the tests/quizzes
17. Engaging in conversations online (chat, discussions, email)
18. Posting in the discussion forum regularly
19. Getting to know other students in the class

Motivated Strategies for Learning Questionnaire
Version Attached: Full Test

PsycTESTS Citation:
Pintrich, P. R., & De Groot, E. V. (1990). Motivated Strategies for Learning Questionnaire [Database record]. Retrieved from PsycTESTS. doi: http://dx.doi.org/10.1037/t09161-000

Instrument Type:
Inventory/Questionnaire

Test Format:
7-point Likert scale (1 = not at all true of me to 7 = very true of me).

Source:
Pintrich, Paul R., & de Groot, Elisabeth V. (1990). Motivational and self-regulated learning components of classroom academic performance. Journal of Educational Psychology, Vol 82(1), 33-40. doi: 10.1037/0022-0663.82.1.33

PsycTESTS®

doi: 10.1037/t09161-000

Motivated Strategies for Learning Questionnaire
MSLQ

The following scales and items represent the Motivated Strategies for Learning Questionnaire (MSLQ) that was used in this study to measure students' motivational beliefs and self-regulated learning. The numbers next to the items reflect the item's actual position on the questionnaire. Items marked (*R) were reflected before scale construction. There were 56 items on the questionnaire, but only 44 were used in this study to form the following five scales.

Motivational Beliefs

A. Self-Efficacy

2. Compared with other students in this class I expect to do well.
7. I'm certain I can understand the ideas taught in this course.
10. I expect to do very well in this class.
11. Compared with others in this class, I think I'm a good student.
13. I am sure I can do an excellent job on the problems and tasks assigned for this class.
15. I think I will receive a good grade in this class.
20. My study skills are excellent compared with others in this class.
22. Compared with other students in this class I think I know a great deal about the subject.
23. I know that I will be able to learn the material for this class.

B. Intrinsic Value

1. I prefer class work that is challenging so I can learn new things.
5. It is important for me to learn what is being taught in this class.
6. I like what I am learning in this class.
9. I think I will be able to use what I learn in this class in other classes.
12. I often choose paper topics I will learn something from even if they require more work.
17. Even when I do poorly on a test I try to learn from my mistakes.
18. I think that what I am learning in this class is useful for me to know.
21. I think that what we are learning in this class is interesting.
25. Understanding this subject is important to me.

C. Test Anxiety

3. I am so nervous during a test that I cannot remember facts I have learned.
14. I have an uneasy, upset feeling when I take a test.
24. I worry a great deal about tests.
27. When I take a test I think about how poorly I am doing.

PsycTESTS

doi: 10.1037/t09161-000

Motivated Strategies for Learning Questionnaire
MSLQ

Self-Regulated Learning Strategies

D. Cognitive Strategy Use

30. When I study for a test, I try to put together the information from class and from the book.
31. When I do homework, I try to remember what the teacher said in class so I can answer the questions correctly.
33. It is hard for me to decide what the main ideas are in what I read. (*R)
35. When I study I put important ideas into my own words.
36. I always try to understand what the teacher is saying even if it doesn't make sense.
38. When I study for a test I try to remember as many facts as I can.
39. When studying, I copy my notes over to help me remember material.
42. When I study for a test I practice saying the important facts over and over to myself.
44. I use what I have learned from old homework assignments and the textbook to do new assignments.
47. When I am studying a topic, I try to make everything fit together.
53. When I read material for this class, I say the words over and over to myself to help me remember.
54. I outline the chapters in my book to help me study.
56. When reading I try to connect the things I am reading about with what I already know.

E. Self-Regulation

32. I ask myself questions to make sure I know the material I have been studying.
34. When work is hard I either give up or study only the easy parts. (*R)
40. I work on practice exercises and answer end of chapter questions even when I don't have to.
41. Even when study materials are dull and uninteresting, I keep working until I finish.
43. Before I begin studying I think about the things I will need to do to learn.
45. I often find that I have been reading for class but don't know what it is all about. (*R)
46. I find that when the teacher is talking I think of other things and don't really listen to what is being said. (*R)
52. When I'm reading I stop once in a while and go over what I have read.
55. I work hard to get a good grade even when I don't like a class.

Email to instructors:

Dear [instructor name],

I'm reaching out to you for assistance with my Capstone research project. My project, entitled "Students' Engagement and Academic Outcomes in Online Learning", will examine students' motivation, how they engage in online classes and what their outcomes are.

I'm reaching out to you because you are an instructor at Clarke.

Would you be willing to send an email with my survey to your students or post it on Moodle where students can access it? The survey is a 10-minute online survey. To participate, students must have had experience in at least two online classes in Fall 2020 semester. They must also be 18 years old or older. There is a filter question in the survey regarding students' eligibility, so you will not need to identify which of your students is eligible.

If you'd like to talk further before deciding, I would be happy to meet with you. If you do agree to send or post the survey link to your students, I will provide you with an email template that contains the link.

Thank you,

[redacted]

Email template for instructors to send to students:

Dear [course name] students,

Student [redacted] is completing her Capstone project on students' engagement and academic performance in online learning. Her project is based on a 10-minute survey with questions about students' motivation, engagement and outcomes.

If you have had experience in at least two online classes in Fall 2020 semester. Also, you are 18 years old or older and have 10 minutes of time, [redacted] would appreciate it if you could complete the survey. The survey should be completed by March 15, 2021. If you have not had experience in at least two online classes in Fall 2020 semester and are under 18 years old, you are ineligible to participate. Also, if you've received this survey in another course and have already completed the survey, please do not complete it a second time.

Note that all responses are confidential, and I will not be told who participates, nor will I be provided any information about students' responses.

If you have any questions, please contact [redacted].

Thank you,

[instructor name]