Consent for Participation & Purpose of Study

# Consent

Participation in this study is voluntary. You are free to stop participating and may withdraw your consent at any time. You are not obligated to submit the survey, and you may skip any questions in the survey you want. There are no foreseen risks or benefits to you as a participant. We will not identify you by name in any reports using information obtained in the survey, and your confidentiality as a participant in this study will remain secure.

# Contact Information

If you have any questions about the survey or this research project, you may contact me (elijah.meyer@montana.edu), Jennifer Green (jg@msu.edu), or Stacey Hancock (stacey.hancock@montana.edu). If you have additional questions about the rights of human subjects, you may contact the Chair of the Institutional Review Board, Mark Quinn ([mquinn@montana.edu](mailto:mquinn@montana.edu)).

# Study Description and Purpose

The purpose of this study is to develop an instrument to measure graduate student instructors’ (GSIs’) motivation to use active learning teaching techniques. We define GSIs as graduate students who are the sole or lead instructor of a statistics course or lead a recitation section. This instrument will measure four different types of motivation to use active learning on GSIs when teaching statistics. These motivations include intrinsic, integrated regulation, external regulation, and amotivation. These four types of motivation have been selected because they span our framework of motivation and are linked to a variety of behavioral outcomes in other areas of research.

The purpose of this survey is to gather experts’ feedback on the written items. Your feedback will help identify any opportunities to improve wording and help provide initial content evidence suggesting that these items are measuring their intended type of motivation.

Part 1: Item Review

# Directions

Based on feedback from the last survey, two different types of active learning strategies were selected to be included on our instrument: group work and use of technology. You are asked to please review items for one of the two selected strategies: *Using Technology.* I have provided the written description of the selected strategy that GSIs will read before responding to the corresponding items of motivation below.

We ask that you provide feedback on three different areas on this instrument:

* Feedback on the active learning strategy’s definition
* Feedback on the drafted items
* Feedback on the motivational constructs’ relationship with the drafted items

Questions targeting these three different areas are provided to help guide the review process. These questions can be found in the *Feedback Questions* sections throughout the document. When providing feedback, please note that this **instrument is intended for GSIs who use active learning while teaching statistics.** Please provide feedback in the appropriate feedback sections below, or through inserted comments within the document.

Additionally, we ask you to please review the background questions intended to collect additional data on GSIs. This can be found at the end of the survey in *Part 2*.

# Active Learning Strategy 1 – Using Technology

Technology refers to technological tools that assist in the analysis of data, communication of ideas, and development of student understanding.

When using technology for active learning, students acquire information and discover statistical ideas through their interaction with the technological tool. This may include having students work with Tableau, CODAP, R, Tinkerplots, applets, etc. to discover concepts. This does not include using passive technology, such as displaying a PowerPoint or using a calculator for calculations.

## Feedback Questions: Definition

* Do you agree with the working definition of technology? If not, please explain.
* Do you find this definition specific enough to clearly describe these activities to a general graduate student teaching audience? If not, please explain.

*Definition Feedback:*

This definition seems reasonable. I wonder how GSIs would classify certain technological tools that support student learning and indirectly help them to discover statistical ideas. For instance, Piazza or Slack (or similar tools that serve as discussion board platforms). Do you want GSIs to include or exclude technological tools that foster collaboration?

## Construct 1: Intrinsic Motivation

Intrinsic Motivation – Performing an activity for oneself, to experience pleasure and satisfaction inherent in the activity. Example: A person plays a game of basketball because of the sheer joy they experience while playing it.

### Items

Directions: Read each item carefully. Using the scale below, please select the number that best reflects the extent to which you agree or disagree with the following statements about your use of technology in the classroom when teaching statistics.

Answer each item according to the following scale: 5 – Strongly Agree; 4 – Agree; 3 – Neutral; 2 – Disagree; 1 – Strongly Disagree

1. I find using technology satisfying when teaching statistics
2. I find it enjoyable to use technology when teaching statistics
3. I find it interesting to use technology when teaching statistics
4. I’m committed to regularly using technology when teaching statistics
5. I get excited when using technology to teach statistics
6. My favorite statistics lessons to teach are ones that involve technology
7. I feel proud about lessons where I have used technology
8. I feel pleased about lessons where I have used technology

### Feedback Questions: Wording

* Are there concerns about the wording of the item (e.g., double-barreled, idioms, jargon, etc.)?
* Are there concerns about how items are phrased (e.g., leading items, items that may be misinterpreted, items that may not be appropriate for GSIs)?

*Wording Feedback*

I am concerned about the use of ‘regularly’ in item (d). Perhaps a GSI leads small group class sessions and is highly committed to using RShiny apps in *some* class meetings for *some* topics, but also leads traditional cooperative worksheet activities during others. How would you hop such a participant responds to this item?

### Feedback Questions: Construct

* Do you believe each item reflect qualities of intrinsic motivation?
* Do you believe there are missing items?
* Are aspects of intrinsic motivation’s definition mis- or underrepresented within the set of items?

*Construct Feedback*

I think (d) and (g) correspond to motivational constructs that are not intrinsic motivation. (g) refers to pride, which may be more aligned to attainment value or a measure of self-concept. Additionally, it doesn’t seem like the ‘commitment’ referenced in (d) necessarily corresponds to interest and/or enjoyment value appraisals.

When it comes to missing dimensions of intrinsic motivation, I suggest adding in an item regarding teaching with technology being ‘fun,’ which should load similarly to the ‘enjoyable’ item in (b).

## Construct 2: Integrated Regulation

Integrated Regulation – A willingness to engage in a behavior because it is important and valuable to oneself. Example: A person attends school because they believe that the act aligns with their personal belief system.

### Items

1. Using technology is necessary when teaching statistics
2. Using technology is consistent with my goals as an instructor when teaching statistics
3. Using technology is consistent with my values as an instructor when teaching statistics
4. Using technology is essential to my identity as an instructor when teaching statistics
5. Using technology is important for me as an instructor when teaching statistics
6. I incorporate technology to align my teaching with disciplinary “best” practices
7. Using technology makes me a better instructor when teaching statistics

* Feedback Questions: Wording Are there concerns about the wording of the item (e.g., double-barreled, idioms, jargon, etc.)?
* Are there concerns about how items are phrased (e.g., leading items, items that may be misinterpreted, items that may not be appropriate for GSIs)?

*Wording Feedback:*

*I worry “essential” in (d) is polarizing. How does one ‘somewhat’ agree or disagree with a statement about an essential quality? Perhaps “using technology is a key part of my identity…”*

### Feedback Questions: Construct

* Do you believe each item reflect qualities of integrated regulation?
* Do you believe there are missing items?
* Are aspects of integrated regulation’s definition mis- or underrepresented within the set of items?

*Relationship Feedback:*

*(f) implies that teaching with technology is valuable because of its alignment to an external criterion (best practices). This is in contrast to the other items, which describe an importance that is internally-referenced.*

## Construct 3: External Regulation

External Regulation – Engaging in a behavior to satisfy an external demand, receive an external reward, or avoid a punishment. Example: A student studies hard to get a good grade and receive a reward from their parents, or to avoid punishment for receiving a poor grade.

### Items

1. I use technology to teach statistics because it is recommended to me by my colleagues
2. I use technology to teach statistics because this is the way I am expected to teach statistics by my colleagues
3. I use technology to teach statistics because I would get in trouble by my supervisors if I didn’t use it
4. I use technology to teach statistics because students would be upset with me if I didn’t teach using it
5. I use technology to teach statistics because I think it will help me earn a teaching award
6. I use technology to teach statistics because I am praised by my colleagues for doing so
7. I use technology to teach statistics only when I am being observed by another instructor
8. I use technology to teach statistics so that my peers think I am a good instructor

### Feedback Questions: Wording

* Are there concerns about the wording of the item (e.g., double-barreled, idioms, jargon, etc.)?
* Are there concerns about how items are phrased (e.g., leading items, items that may be misinterpreted, items that may not be appropriate for GSIs)?

*Wording Feedback:*

*Item (a) appears to only obliquely reference the external reward/punishment compared to the others.*

### Feedback Questions: Construct

* Do you believe each item reflect qualities of external regulation?
* Do you believe there are missing items?
* Are aspects of external regulation’s definition mis- or underrepresented within the set of items?

*Relationship Feedback:*

*NA*

## Construct 4: Amotivation Items

Amotivation – The absence of intention or clear motives to engage in an activity. Amotivation is the lack of intrinsic motivation, integrated regulation, and external regulation. Example: An athlete claims to not value or see the point in training anymore for competition.

### Items

1. Using technology to teach statistics does not improve the way statistics is taught
2. Using technology to teach statistics does not improve student learning
3. I question if I should use technology to teach statistics
4. Technology’s role in teaching statistics is unclear to me
5. Using technology to teach statistics ends up using more class time than it is worth
6. I do not see what value using technology to teach statistics brings to my classroom
7. I do not see what value using technology to teach statistics bring to me as an instructor
8. I do not wish to continue incorporating technology in my classroom
9. I do not know why I use technology to teach statistics
10. I do not see myself using technology in the future while teaching
11. I do not understand why we use technology when teaching statistics

### Feedback Questions: Wording

* Are there concerns about the wording of the item (e.g., double-barreled, idioms, jargon, etc.)?
* Are there concerns about how items are phrased (e.g., leading items, items that may be misinterpreted, items that may not be appropriate for GSIs)?

*Wording Feedback:*

*NA*

### Feedback Questions: Relationship

* Do you believe each item reflect qualities of amotivation?
* Do you believe there are missing items?
* Are aspects of amotivation’s definition mis- or underrepresented within the set of items?

*Relationship Feedback:*

*NA*

### Additional Comments

*If you have additional comments that you would like to make about the sections above, please do so here:*

*NA*

Part 2: Background Questions Review

# Directions – Background Questions Review

Background questions will be given at the beginning of the instrument to collect background data on each GSI filling out the survey. We ask you to please review these background questions and consider the following:

*Feedback Questions*

* Are the background questions written clearly?
* Are the background questions appropriate for GSIs?
* Are GSIs unable to answer certain background questions?
* Are there any additional background questions you suggest we consider collecting data on?

Please write feedback in the *Background Questions Feedback* area at the end of the background questions, or through inserted comments within the section.

## Background Questions

Are you currently a graduate student or within one year of graduation?

Please list the name of the university in which you are currently enrolled as a graduate student.

Please list the name of the department in which you are currently enrolled as a graduate student.

What degree type you are currently pursuing? Ex. Doctorate in Statistics

1. What is the subject you are getting your degree in? Ex. Statistics
2. How many years have you been a graduate student at your current institution? Round up (e.g., if you have completed 3.25 years, please enter 4).
3. Are you currently involved in teaching a statistics course, or leading a statistics recitation/discussion section?
4. Prior to becoming a graduate student at your current institution, did you have experience teaching as an instructor or recitation/discussion leader?
5. How many college terms you have taught a statistics course or led a statistics recitation/discussion section before being enrolled as a graduate student at your current institution? Ex. 2 Semesters; 3 Quarters
6. How many terms you have taught a statistics course or led a statistics recitation/discussion section while being enrolled as a graduate student at your current institution? If you are currently teaching a statistics course or leading a statistics recitation/discussion section this term, please include that in your count
7. List all statistics courses and statistics recitation/discussion sections you have taught and indicate how many times you have taught each course or section.
8. Do you engage in conversations about teaching with other peers? If so, how often and what about?
9. Describe the classroom that you currently teach in. In other words, describe the arrangement of desks/tables, the technology available, Etc.
10. Does your department offer a training program for new graduate students?
11. What kind of support does your department provide graduate student instructors?
12. Please read the following definition of using technology in your classroom:

Technology refers to technological tools that assist in the analysis of data, communication of ideas, and development of student understanding.

When using technology for active learning, students acquire information and discover statistical ideas through their interaction with the technological tool. This may include having students work with Tableau, CODAP, R, Tinkerplots, applets, etc. to discover concepts. This does not include using passive technology, such as displaying a PowerPoint or using a calculator for calculations.

Based on this definition, describe how you use technology when teaching statistics. If you do not use technology when teaching statistics, please write “N/A.”

1. Please read the following definition of using group work in your classroom:

Group work refers to a method of instruction that gets students to work together in groups of two or more.

When using group work for active learning, students communicate, share ideas, and think critically about the topic(s) with their group members. This includes think-pair-share, group presentations, or other small group work activities that have students engage with their group members and the topic(s) as described above.

Based on this definition, describe how you use group work when teaching statistics.

*Background Question Feedback*

*NA – these look good!*

### Additional Comments

*If you have additional comments that you would like to make about the background questions above, please do so here:*