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: *Group work.* 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 – Group work

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.

## Feedback Questions: Definition

* Do you agree with the working definition of group work? If not, please explain.  
  Generally yes. I like that it is concise, and that the emphasis is on the desired outcome, namely students working together. One thought that comes to my mind is that the extent or intensity of the group work is not qualified in the definition. Ideally, the group work must be meaningful and extend over a certain amount of time. Perhaps also consider “actively work together”. For me personally, I would like for students to actively exchange and discuss statistical ideas/concepts.
* Do you find this definition specific enough to clearly describe these activities to a general graduate student teaching audience? If not, please explain.

Along the same lines, I suspect that some information should be provided to what qualifies as meaningful group work. Perhaps provide an example, of what looks like group work but might not be very effective. Examples include “students collecting data as part of an experiment” for a project, any type of activity where students can “hide” in a group and let others take the lead.

*Definition Feedback:*

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

### Feedback Questions: Wording

* Are there concerns about the wording of the item (e.g., double-barreled, idioms, jargon, etc.)?  
  Not really.
* 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)?  
  Not really.

*Wording Feedback*

### Feedback Questions: Construct

* Do you believe each item reflect qualities of intrinsic motivation?   
  Item g strikes out for me although there is nothing wrong with the item, it just addresses a different aspect in my opinion. I can be intrinsically motivated to do something without thinking about pride. Pride would only be an outcome to consider if the activity also provides a challenge.  
  Item d – commitment is also something I don’t think is necessary for intrinsic motivation.
* Do you believe there are missing items?  
  - Maybe rewarding? Example: Using group work when teaching statistics is rewarding.   
  - An item or two that would limit someone’s intrinsic motivation. For example, an item related to group activities not always going as planned, being time consuming possibly or losing direct less control over how students spend their time during the activity.
* How about an item related to thinking about group activities outside the classroom? Example: I often think about group activities that I can use in the classroom, …  
  Is it necessary to have negatively worded items that require reverse coding in the analysis? I am not an expert, but I often come across such questions in surveys to verify that students are internally consistent or simply just paying attention.
* Are aspects of intrinsic motivation’s definition mis- or underrepresented within the set of items?

*Construct Feedback*  
Just to confirm: The way I understand these items is that they can be used to assess how intrinsically motivated GSIs are using group work for the benefit of their own pleasurable experience when teaching. None of the motivation relates any benefits to students.

## 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 group work is necessary when teaching statistics
2. Using group work is consistent with my goals as an instructor when teaching statistics
3. Using group work is consistent with my values as an instructor when teaching statistics
4. Using group work is essential to my identity as an instructor when teaching statistics
5. Using group work is important for me as an instructor when teaching statistics
6. I incorporate group work to align my teaching with disciplinary “best” practices
7. Using group work 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.)?  
  None
* 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)?  
  None

*Wording Feedback:* I am unclear about why in item e you emphasize the instructor part by saying “for me as an instructor” compared to item a “group work is necessary when teaching statistics”. Essentially, do you perceive a difference between “group work is necessary when teaching statistics” versus “group work is necessary for me as an instructor when teaching statistics”. I say this because item a is the only item that does not directly reference the instructor part, while all other items do.   
  
Item f – Could one argue for this item to be an example of external regulation because best standards are set by others rather than the instructor themselves?

### Feedback Questions: Construct

* Do you believe each item reflect qualities of integrated regulation?   
  Item f – Could one argue for this item to be an example of external regulation because best standards are set by others? (as opposed to the instructor themselves)
* Do you believe there are missing items? No.  
  Using group work … reflects my beliefs about effective teaching or good teaching.
* Are aspects of integrated regulation’s definition mis- or underrepresented within the set of items?

*Relationship Feedback:*

## 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 group work to teach statistics because it is recommended to me by my colleagues
2. I use group work to teach statistics because this is the way I am expected to teach statistics by my colleagues
3. I use group work to teach statistics because I would get in trouble by my supervisors if I didn’t use it
4. I use group work to teach statistics because students would be upset with me if I didn’t teach using it
5. I use group work to teach statistics because I think it will help me earn a teaching award
6. I use group work to teach statistics because I am praised by my colleagues for doing so
7. I use group work to teach statistics only when I am being observed by another instructor
8. I use group work 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.)?  
  None
* 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)?  
  None

*Wording Feedback:*

* Item c? “get in trouble” perhaps “would negatively influence my performance review by my supervisor”. I am torn using the word “trouble” because it sounds a little bit too colloquial and can mean a lot of things. On the other hand, the broad range of what it may mean is also appealing.

Item d? Should the order of “teach” and “use” be flipped? Example: … if I taught not using it or … if I didn’t use it when I teach  
  
What about the idea of using group work because of peer pressure, e.g. because everyone else use group work?

### Feedback Questions: Construct

* Do you believe each item reflect qualities of external regulation?
* Do you believe there are missing items?   
  Maybe another item related to student outcomes. Example: I use group work to teach statistics because students will give me higher scores in my teaching evaluations.
* Are aspects of external regulation’s definition mis- or underrepresented within the set of items?

*Relationship Feedback:*

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

### Feedback Questions: Relationship

* Do you believe each item reflect qualities of amotivation?
* Do you believe there are missing items?  
  Maybe: Using group work to teach statistics is overrated.
* Are aspects of amotivation’s definition mis- or underrepresented within the set of items?  
  Items d, I and k are all very similar

*Relationship Feedback:*

### Additional Comments

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

I have a couple of thoughts that might or might not be relevant:

I understand that group work is a mode of teaching. Nevertheless, I feel that we don’t do group work for the purpose of teaching only but rather for the benefit of improved student learning and understanding. We use group work to allow students to learn from peers and because group work also provides a different mode of instruction that might be more effective for some students. I believe that group work can positively influence attitudes towards statistics and the overall class environment. Group work done well generates a lot of interactions and usually this makes students feel more comfortable to reach out and ask for help. So, I am trying differentiate between the instruction/teaching mechanism and the learning process. I feel more emphasis on the role group work plays in student learning might be helpful or appropriate.

Again, I am not an expert and you probably know far more about instrument development than I do. The SATS survey by C. Schau tends to include a few negatively worded items with each construct. I have seen other surveys that try to get at latent constructs do the same. Here, the first three constructs consist of only positively worded questions while the last one primarily uses negatively worded questions.   
Do you know what is commonly done in instrument development? How important is it to have positively and negatively worded items for the same construct? Just a thought.

Do you assume that the GSIs receiving this survey have taught statistics and have used group work at least once? I am uncertain what answers you might get from someone who is interested in teaching or about to teach for the first time.

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. For 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. In how many college terms have you 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 on teaching statistics to undergraduate students 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*   
 I assume that you will also try out these questions with actual graduate students. This should give you an idea about the range of answers you might get. You might also consider to purposefully give the survey to international and domestic graduate students. Domestic students will have more experience and a better understanding of group work. International students not necessarily. Just a thought but it will be important to assure the questions work for both types of graduate students.

### Additional Comments

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

Not that I can think of at the moment.