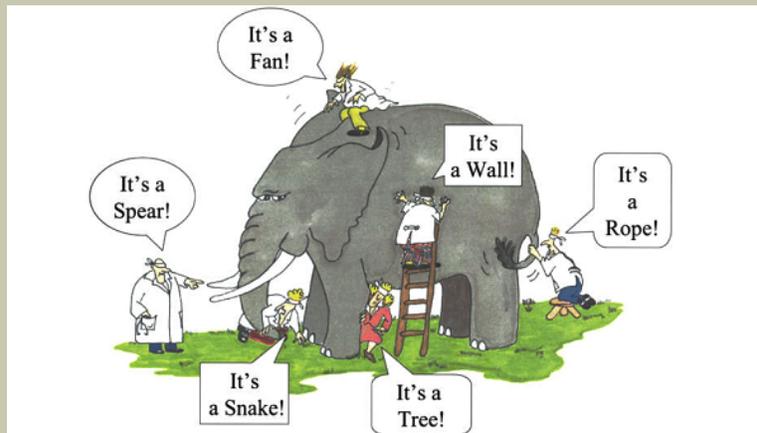
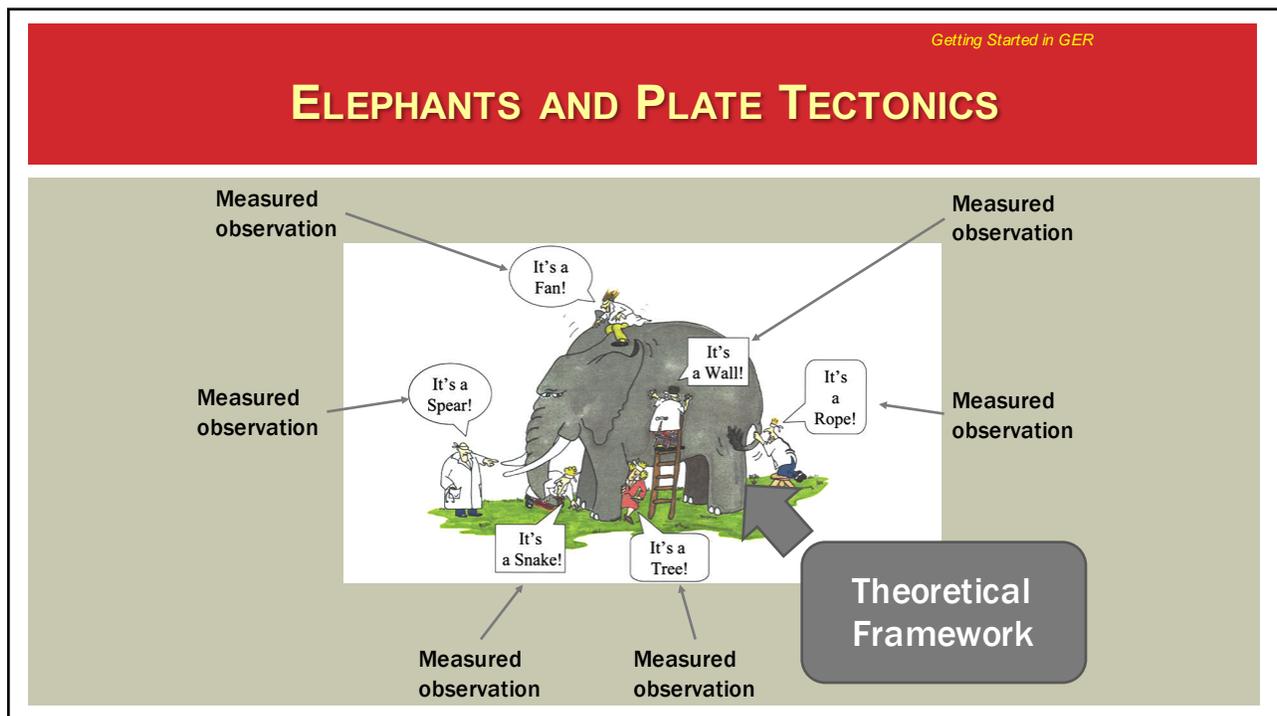
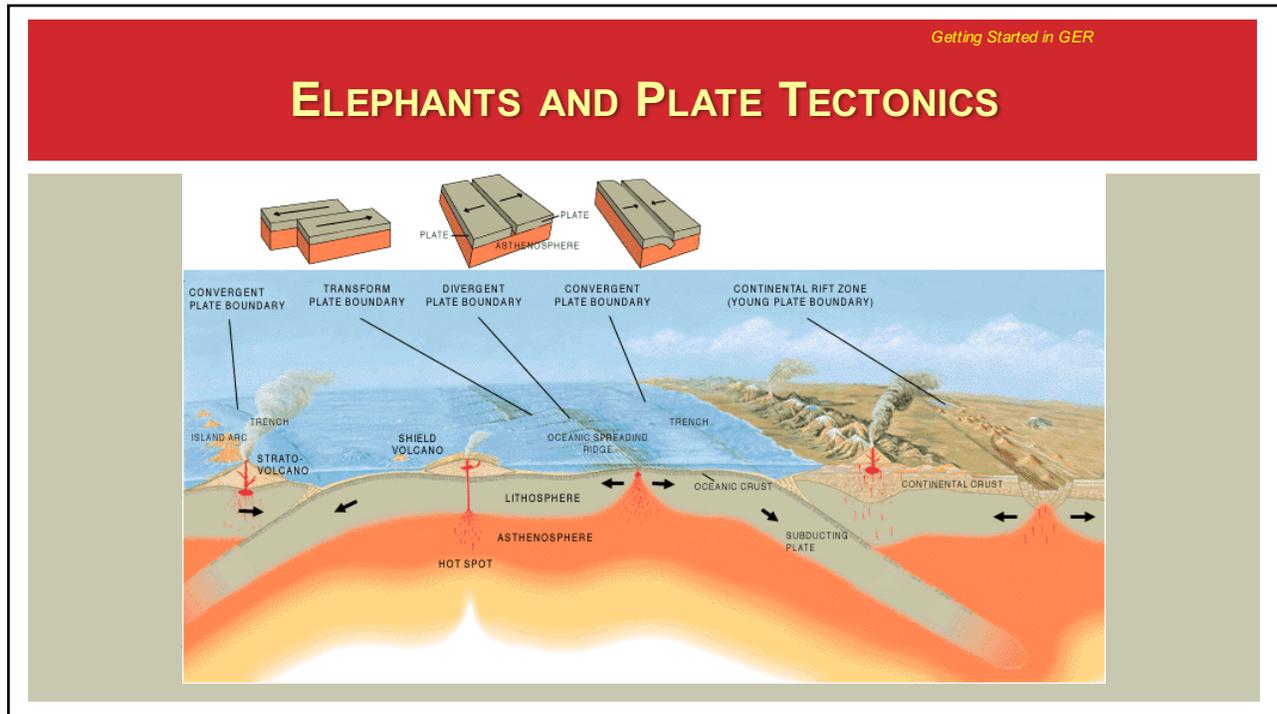


## STUDENT LEARNING RESEARCH

*Getting Started in GER*

## ELEPHANTS AND PLATE TECTONICS





## THEORETICAL FRAMEWORK

### Definition:

- “Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions. The theoretical framework is the **structure** that can hold or support a theory of a research study. The theoretical framework **introduces and describes** the theory that **explains why** the research problem under study exists.”<sup>1</sup>

**i.e. The lens in which you view your data and formulate interpretations**



<sup>1</sup>Swanson, 2013

## THEORETICAL FRAMEWORK EXAMPLES

### Motivational Frameworks

JOURNAL OF GEOSCIENCE EDUCATION 62, 725–735 (2014)

#### What Motivates Introductory Geology Students to Study for an Exam?

Laura A. Lukes<sup>1,2,a</sup> and David A. McConnell<sup>1</sup>

#### ABSTRACT

There is a need to understand why some students succeed and persist in STEM fields and others do not. While numerous studies have focused on the positive results of using empirically validated teaching methods in introductory science, technology, engineering, and math (STEM) courses, little data has been collected about the student experience in STEM courses. The aim of this study was to capture and characterize the student perception of their motivation to study for an exam in a geoscience class. Students enrolled in introductory physical geology courses ( $n = 42$ ) at 5 different institutions (seven instructors at two research universities and three community colleges) were interviewed using a semistructured protocol. The interview data were analyzed using a grounded theory approach. The resulting emergent themes included goal orientation and emotion. All students report a performance component to their motivation, where a learning task is a means to an end,

Lukes, L. a., & McConnell, D. a. (2014). What Motivates Introductory Geology Students to Study for an Exam? *Journal of Geoscience Education*, 62(4), 725–735.

## THEORETICAL FRAMEWORK EXAMPLES

### Research Questions:

- What motivates students to study for an exam (task-level motivation)?
- Are there differences between high and low performing students as they prepare for an exam?
- What role do emotions play in student motivation to study for an exam?
- Are there any differences between research university and community college populations?

## THEORETICAL FRAMEWORK EXAMPLES

### Participants

- 73 students from R1 and 2YC institutions

### Methods (observations)

- Semi-structured interviews about the task-level motivation to study for an exam
- Transcription and coding of responses

What theory guided interpretation of results?

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## THEORETICAL FRAMEWORK EXAMPLES

```

graph LR
    A[Goal Orientation Theory] --> B[Performance Goals]
    A --> C[Mastery Goals]
            
```

- Primary drive is to display competence or ability in relation to external judgement from others<sup>1</sup>
  - External focus
- Primary drive is to master the skills, acquire the knowledge, and overcome the challenges associated with the task itself<sup>1</sup>
  - Internal focus

<sup>1</sup>Schunk et al., 2013

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## THEORETICAL FRAMEWORK EXAMPLES

### Results

Performance Level	Performance goal orientation (%)	Mastery goal orientation (%)
High	100	70
Low	100	18

FIGURE 3: Percent of high performers (earned A or B average on exams;  $n = 20$ ) and low performers (earned a C or below average on exams;  $n = 22$ ) who reported aspects of performance (e.g., extrinsic rewards like grades and what grades could get them like degree, job, etc.) and mastery (e.g., desire to learn, interest, future value, etc.) goal orientations.

Participant Group	Performance goal orientation (%)	Mastery goal orientation (%)
2YC	100	53
R1	100	35

FIGURE 4: Percent of R1 and 2YC participants who reported performance and mastery goal orientations.

## THEORETICAL FRAMEWORK EXAMPLES

### Results

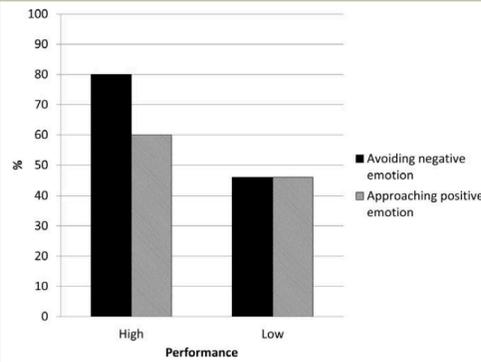


FIGURE 5: Percent of high and low performers who report they are motivated to avoid negative emotions (e.g., anxiety, shame, guilt, self-disappointment). Percent of high and low performers that report they are motivated to approach positive emotions (e.g., pride, joy) are also illustrated.

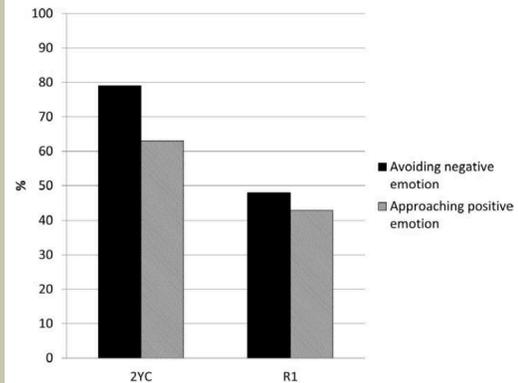


FIGURE 6: Percent of R1 and 2YC students who reported avoiding negative emotions and approaching positive emotions.

## THEORETICAL FRAMEWORK EXAMPLES

### Motivational Frameworks (cont.)

frontiers in  
PSYCHOLOGY

ORIGINAL RESEARCH ARTICLE  
published: 19 February 2015  
doi: 10.3389/fpsyg.2015.00125



#### Investigating the motivational behavior of pupils during outdoor science teaching within self-determination theory

Ulrich Dettweiler<sup>1\*</sup>, Ali Ünlü<sup>2</sup>, Gabriele Lauterbach<sup>1</sup>, Christoph Becker<sup>1</sup> and Bernhard Gschrey<sup>2</sup>

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Ulrich Dettweiler, School of

This paper presents data from a mixed-method pilot study ( $n = 84$ ) searching into learning psychological aspects of an outdoor science teaching program. We use data from qualitative explorations into the pupils' learning motivation during field observation, a group interview, and open questionnaires, in order to understand quantitative measures from the Self-Determination Index (SDI), and the Practical Orientation (PO) of the program. Our data suggest that lower self-regulated pupils in "normal" science classes show a significantly higher self-regulated learning motivational behavior in the outdoor educational setting ( $p < 10^{-4}$ ), and that the outdoor-teaching has generally been perceived as more practical

Dettweiler, U., Ünlü, A., Lauterbach, G., Becker, C., & Gschrey, B. (2015). Investigating the motivational behavior of pupils during outdoor science teaching within self-determination theory. *Frontiers in Psychology*, 6(FEB), 1–16.

## THEORETICAL FRAMEWORK EXAMPLES

### Research Questions:

- Do students in the outdoor experience exhibit more motivational behavior than classroom students?
- Do students find outdoor education more valuable than in classroom activities?
- Do group dynamics and physical activity levels correlate positively with self-regulated motivational behavior?

## THEORETICAL FRAMEWORK EXAMPLES

### Participants

- 84 students from two different elementary schools

### Methods (observations)

- Observational field notes and interviews (qualitative)
- Self-report questionnaire (quantitative)
- Heartrate monitoring during outdoor activity (quantitative)

## THEORETICAL FRAMEWORK EXAMPLES

### Self-determination Theory

- Posits that motivational behavior is dependent on the satisfaction of three primary psychological needs<sup>1</sup>:

Behaviour	Nonself-determined					Self-determined
Type of Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Type of Regulation	Non-regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Locus of Causality	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal

<sup>1</sup>Deci & Ryan, 2000

## THEORETICAL FRAMEWORK EXAMPLES

### Results

The most obvious finding in this survey is clearly that in the outdoor educational setting, pupils show significantly higher learning motivational behavior—irrespective of gender or school culture, but that school culture in terms of relatedness has a significant influence on the level of self-regulated motivational behavior. Moreover, less self-regulated pupils profit more from the outdoor setting than those who show already a high intrinsic learning regulation

## THEORETICAL FRAMEWORKS

**In conclusion, framing your data and interpretations within a theoretical framework...**

- Ties your work to an existing literature base
- Lends strength and coherence to your conclusions
- Informs the connection between multiple data measurements
- ...and much more



## BRAINSTORM AND Q&A

**Work in your research groups to brainstorm...**

- Which phenomena are your group interested in?
  - What are potential underlying factors leading to this phenomena?
  - Do one of the example frameworks fit your research goals?
- What are potential ways you could triangulate the measurements taken as part of your study?
  - How could a framework help this triangulation?