Oceans vs. Robots:
Exploring the importance of topic effects in student science engagement
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Background
Focal Questions
1. Theory: How do learner contexts, learning content, and learning activity shape per-ceptions of the relation of self to science?
2. Measurement: Can simpler surveys capture key individual differences?
We explore these questions with 5th and 6th graders around various psychometric constructs from the literature.
This work also informs the larger project:

Research Design & Methods
-252 5th and 6th graders were administered self-report survey. 59% female.
-89 motivational items adapted with matrix sampling to contain a balance of the following:

<table>
<thead>
<tr>
<th>Context</th>
<th>Way of Eng.</th>
<th>Topic</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal</td>
<td>Action</td>
<td>Astronomy (stars)</td>
<td>Curiosity</td>
</tr>
<tr>
<td>Informal</td>
<td>Thinking</td>
<td>Biology (plants)</td>
<td>Self-efficacy</td>
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<tr>
<td>Neutral</td>
<td>Controlling Knowledge</td>
<td>Earth Sci. (hurricanes)</td>
<td>Value</td>
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<td></td>
<td></td>
<td>Engineering (robots)</td>
<td>Identity</td>
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<tr>
<td></td>
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<td>Physical Sci. (gravity)</td>
<td>Interest</td>
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<td></td>
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<td>Persistence</td>
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<td>Responsibility</td>
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EXAMPLE ITEMS:
- I would like to do activities related to robots at home. (Interest)
- If I started a class project on climate change, I think I could do a really good job. (Self-efficacy)

These preferences are dynamic and vary greatly by individual:

Example of 10 students from middle of sample

Selected References