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Implementation

Purpose of the PGOS

To assess students' motivation and goal orientations in university-level physics courses. These describe students' reasons for engaging in academic tasks which can affect important educational outcomes such as types of cognitive strategies used, and how well newly learnt material is retained.

Course Level: What kinds of courses is it appropriate for?

Intermediate and Intro college

Content: What does it assess?

Beliefs / Attitudes (goal orientation, motivation)

Timing: How long should I give students to take it?

5 minutes

Example Questions

Sample statements from the PGOS:

I can answer more physics questions than other students.

1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree

I understand a new physics concept by trying hard.

1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree

I work in a group on physics problems.

1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree

I can complete an assignment without really having understood the answers.

1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree

Access: Where do I get the assessment?

Download the assessment from physport at www.physport.org/assessments/PGOS.

Versions and Variations: Which version of the assessment should I use?

The most recent version of the PGOS, published in 2010, is version 4.

Administering: How do I give the assessment?

- Give it as both a pre- and post-test. This measures how your class shifts student goal orientations.
 - Give the pre-test at the beginning of the term.
 - Give the post-test at the end of the term.
- Use the whole test, with the original wording and question order. This makes comparisons with other classes meaningful.
- Make the test required, and give credit for completing the test (but not correctness). This ensures maximum participation from your students.
- Tell your students that the test is designed to evaluate the course (not them), and that knowing how they think will help you teach better. Tell them that correctness will not affect their grades (only participation). This helps alleviate student anxiety.
- For more details, read the **PhysPort Guides** on implementation:
 - **PhysPort PGOS implementation guide** (www.physport.org/implementation/SOSECP)
 - **PhysPort Expert Recommendation on Best Practices for Administering Belief Surveys**

Scoring: How do I calculate my students' scores?

- The PGOS score is the average Likert rating for questions in each category (ego, task, cooperation, work avoidance).
- For instructions on scoring the PGOS, see below
- See the **PhysPort Expert Recommendation on Best Practices for Administering Belief Surveys** for instructions on calculating shift and effect size (www.physport.org/expert/AdministeringBeliefSurveys/)
- A student receives 1 point for their strongly disagree response to a questions, 5 points for their strongly agree response, and 2-4 points for disagree, neutral or agree response, respectively
- Calculate students' average score for each of four goal orientation categories. Calculating the average total scores is not recommended here because the Cooperation factor has four items whereas the other factors have five items. See Clusters section for information on which items belong to which orientation goal.

Clusters: Does this assessment include clusters of questions by topic?

There are four clusters of questions on the PGOS which have been confirmed through factor analysis.

- Task orientation (items 3,8,14,16,19) is associated with the belief that success is a product of effort, understanding and collaboration.
- Ego orientation (items 1,2,6,7,13) describes the belief that success relies on greater ability and attempting to outperform others.
- Cooperation (items 4,9,11,15,17) oriented students value interaction with their peers in the learning process.
- Work avoidance (items 5,10,12,18) describes the goal of minimum effort – maximum gain.

Typical Results: What scores are usually achieved?

Typical scores for the four goal orientations from Lindstrom and Sharma 2010:

Table 3. Descriptive statistics and correlations for the four goal orientations in the final survey administered at the end of semester 2, 2008 (N = 162).

	Mean (SD)	Ego	Task	Cooperation	Work avoidance
Ego	3.08 (0.659)	1	$r = 0.164, p = 0.036$	$r = 0.139, p = 0.077$	$r = 0.066, p = 0.404$
Task	3.87 (0.478)		1	$r = 0.155, p = 0.049$	$r = -0.380, p = 0.000$
Cooperation	3.25 (0.689)			1	$r = 0.041, p = 0.601$
Work avoidance	2.31 (0.657)				1

Interpretation: How do I interpret my students' scores in light of typical results?

Look at goal orientations on pre-test:

Look at the individual goal orientation scores (of which there are four) for your students to get a sense of what kinds of motivations your students have at the beginning of the course. You can also identify individual students with high work-avoidance scores, who may be at risk for doing poorly in your course.

Look at changes in goal-orientations from pre- to post-test:

You can look at how the distribution of goal orientations changed in your course from pre- to post-test

Resources

Where can I learn more about this assessment?

C. Lindstrøm and M. Sharma, [Development of a Physics Goal Orientation Survey](#), Int. J. Innov. Sci. Math. Educ. **18** (2), 10 (2010).

Translations: Where can I find translations of this assessment in other languages?

We don't have any translations of this assessment yet.

If you know of a translation that we don't have yet, or if you would like to translate this assessment, please [contact us!](#)

Background

Similar Assessments

None

Research: What research has been done to create and validate the assessment?

Research Validation: Silver ●

This is the second highest level of research validation, corresponding to at least 5 of the validation categories below.

- Based on research into **student thinking**
- Studied using **student interviews**
- Studied using **expert review**
- Studied using **appropriate statistical analysis**
- Research conducted **at multiple institutions**
- Research conducted **by multiple research groups**
- Peer-reviewed publication**

Research Overview

The 5-point Likert agree/disagree questions on the PGOS were taken from a previous survey of goal orientation by [Duda and Nicholls \(1992\)](#) and revised so that they would be appropriate for a university level physics course. Several new questions were created to ensure each goal orientation category had a sufficient number of questions to probe it. The PGOS questions underwent expert review. The PGOS was given to over 1500 students, including physics majors and non-majors, at the University of Sydney over a three-year time period. A factor analysis was performed on three different versions of the PGOS, to ensure that students' views of which questions were similar was the same as the intended categories of goal orientations. Version 3 of the PGOS had appropriate factor loadings for the goal orientation categories. Focus groups which were conducted with a subset of students to help the developers better understand students' goal orientations. The PGOS has been given to over 1500 students at one university, and the results published in two peer-reviewed articles.

Developer: Who developed this assessment?

Christine Lindstrøm and Manjula D. Sharma

References

- C. Lindstrom and M. Sharma, [Initial development of a Physics Goal Orientation survey using factor analysis](#), presented at the UniServe Science Proceedings Visualisation, Sydney, Australia, 2008.
- C. Lindstrøm and M. Sharma, [Self-Efficacy of First Year University Physics Students: Do Gender and Prior Formal Instruction in Physics Matter?](#), Int. J. Innov. Sci. Math. Educ. **19** (2), 1 (2011).
- C. Lindstrøm and M. Sharma, [Development of a Physics Goal Orientation Survey](#), Int. J. Innov. Sci. Math. Educ. **18** (2), 10 (2010).