PhysPort Implementation Guide:
Behavioral Engagement Related to Instruction (BERI)
Version 1

PhysPort
Supporting physics teaching with
research-based resources

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Implementation

Purpose of the BERI

To measure university student behavioral engagement, defined as on-task behavior in the classroom.

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

Graduate, Upper-level, Intermediate, Intro college, High school, and Middle school

Content: What does it assess?

Teaching

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

N/A minutes

Example Questions

Description of engaged and disengaged behaviors that observers use to determine if groups of 10 students are engaged during a given portion of a class session, from Lane and Harris 2015.

TABLE 1

Descriptions of student in-class behaviors that indicate they are engaged.

Engaged	
Listening	Student is listening to lecture. Eye contact is focused on the instructor or activity and the student makes appropriate facial expressions, gestures, and posture shifts (i.e., smiling, nodding in agreement, leaning forward).
Writing	Student is taking notes on in-class material, the timing of which relates to the instructor's presentation or statements.
Reading	Student is reading material related to class. Eye contact is focused on and following the material presented in lecture or preprinted notes. When a question is posed in class, the student flips through their notes or textbook.
Engaged computer use	Student is following along with lecture on computer or taking class notes in a word processor or on the presentation. Screen content matches lecture content.
Engaged student interaction	Student discussion relates to class material. Student verbal and nonverbal behavior indicates he or she is listening or explaining lecture content. Student is using hand gestures or pointing at notes or screen.
Engaged interaction with instructor	Student is asking or answering a question or participating in an in-class discussion.

TABLE 2

Descriptions of student in-class behaviors that indicate they are disengaged.

Disengaged	
Settling in/ packing up	Student is unpacking, downloading class material, organizing notes, finding a seat, or packing up and leaving classroom.
Unresponsive	Student is not responsive to lecture. Eyes are closed or not focused on instructor or lecture material. Student is slouched or sleeping, and student's facial expressions are unresponsive to instructor's cues.
Off-task	Student is working on homework or studying for another course, playing with phone, listening to music, or reading non-class-related material.
Disengaged computer use	Student is surfing web, playing game, chatting online, checking e-mail.
Disengaged student interaction	Student discussion does not relate to class material.
Distracted by another student	Student is observing other student(s) and is distracted by an off-task conversation or by another student's computer or phone.

Access: Where do I get the assessment?

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

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

The latest version of the BERI, released in 2015, is version 1.

Administering: How do I give the assessment?

- Prior to conducting a classroom observation, obtain a printed copy of the instructor's notes or lesson plan.
- At the beginning of the class, the fills out a coversheet that contains general information and notes about the class.

- For a large lecture room, randomly choose a spot in the classroom where you are sitting in the row directly behind the students being observed and at an angle so that the students were still within your sight line. For alternative classroom settings, the number of students or observers' position may have to be adjusted so that all students in the observation group can be adequately see.
- Using the engaged and disengaged behaviors shown under Example Questions, cycle through each of the 10 students in sequence and for each student recorded "E" for engaged, "D" for disengaged, and "U" for uncertain. Uncertain is most often used when the view of the students is obstructed.
- It takes approximately 3 to 10 seconds to gauge the level of engagement of each student, with a 10-student cycle taking approximately one minute to complete. Don't record the specific behavior of each individual; rather, for each 10-student cycle record one observation point (e.g., "8/10 students engaged") with a time stamped at the start of the cycle.
- Once the class starts, record observation points directly onto the copy of the instructor's notes in the section corresponding to what is being covered. This ensures that the instructor will later be able to relate engagement with what was happening in their class at any specific time. An observation point is taken for every page of notes, for any major change in activity or content, or at 2-minute intervals depending on which time interval is shorter. Changes in the classroom activity (e.g., clicker question, in-class discussion, demonstration) or instructor behaviors (e.g., moving around the classroom, using humor or real-world examples) are recorded under each observation point.
- Instructor questions to the class and student questions to the instructor should also be documented with the following information: the section of the room in which the question/answer originated and how the interaction is followed up (e.g., entire class, subgroup of students, one student).

Scoring: How do I calculate my students' scores?

- Calculate the average student engagement score for the class including the standard error. You can also calculate the average student engagement score for specific instructional activities.
- Plot the student engagement score over time to get a sense of which classroom activities are more or less engaging.

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

There are no clusters of questions on the BERI.

Typical Results: What scores are usually achieved?

Typical scores from Lane and Harris 2015:

FIGURE 2

Average student engagement (number of students engaged) grouped by instructional activity for each instructor in a first-year Oceanography course. Error bars represent standard error. The number of observation sets (*n*) used to calculate mean and standard error is indicated above each bar. For example, the bar representing "Instructor 2-Clicker" is the average of 82 instances in which 10 students were observed during a clicker question. These numbers also roughly show the distribution of activities during class time, with "Lecture" most common, followed by "Clicker."
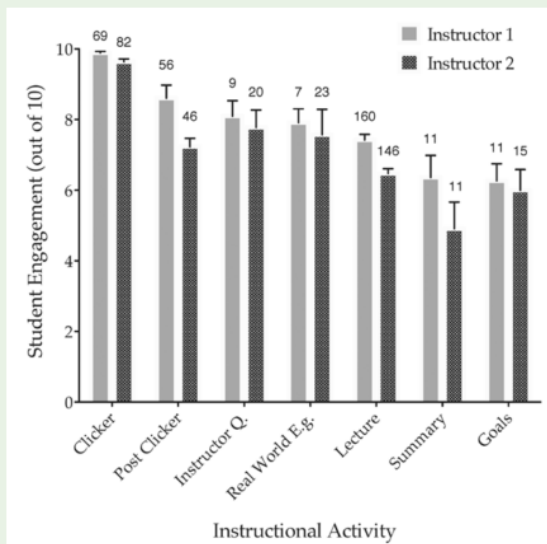
Typical scores on the BERI over one class period, from Lane and Harris 2015:

FIGURE 3

Sample of engagement data over a 50-minute class period, showing classroom activities that are more/less engaging. Data like these are provided to instructors shortly after observation.
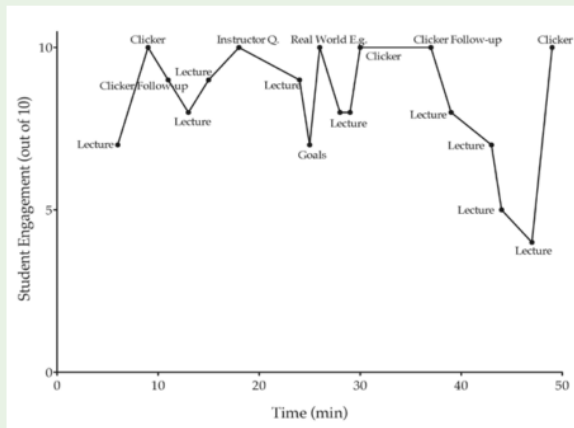
Interpretation: How do I interpret my students' scores in light of typical results?

You can compare the BERI score for your course to other courses using similar instructional activities shown in Typical Results. This will give you a sense of what kinds of scores are possible given differences in activities.

Resources

Where can I learn more about this assessment?

E. Lane and S. Harris, <u>A New Tool for Measuring Student Behavioral Engagement in Large University Classes</u>, J. Coll. Sci. Teaching **44** (6), 83 (2015).

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 <u>contact us</u>!

Background

Similar Assessments

None

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

Research Validation: Bronze 🟠

This is the third highest level of research validation, corresponding to at least 3 of the validation categories below.

- ☑ Based on research into **classroom behavior**
- ☑ Studied using **iterative observations**
- ☑ Studied using **inter-rater reliability**
- ☐ Studied using **training materials**
- ☐ Research conducted **at multiple institutions**
- ☐ Research conducted **by multiple research groups**
- ☑ **Peer-reviewed publication**

Research Overview

The BERI observation protocol categories were developed based on observations of large classes to determine which student behaviors could be defined as engaged and disengaged. A table of engaged and disengaged behaviors was subsequently created. After several trials, the developers determined that 10 students was the optimal number to observe at once. New observers were given a short introduction to the BERI and then participated in one 50-minute practice observation session. Data from over 2000 individual judgements of student engagement from six paris of observers in three different educational settings resulted in an inter-rater agreement of 96.5%. The validity of the BERI was tested by simultaneously observing three different groups of 10 students in one class, where the developers found the level of engagement was consistent for students sitting in different parts of the class. They also tested the validity by observing students from the front or back of the class for 25 classes in one course and found students in the front of the class are significantly more engaged. The BERI was used to observe seven classes of varying sizes (50–300 students), in different subjects within science, on different course levels (first year to fourth year), and on 14 different instructors with varying instructional methods. They found that interactive lecture had higher student engagement than traditional lecture.

Developer: Who developed this assessment?

Erin S. Lane and Sara E. Harris

References

- E. Lane and S. Harris, <u>A New Tool for Measuring Student Behavioral Engagement in Large University Classes</u>, J. Coll. Sci. Teaching **44** (6), 83 (2015).