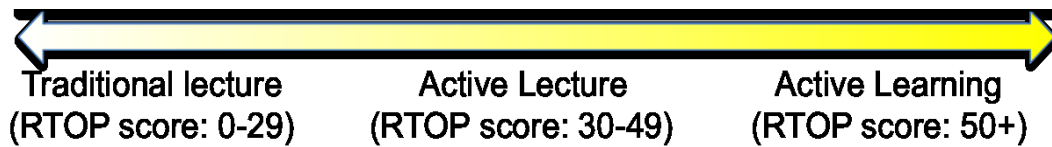


## The Reformed Teaching Observation Protocol (RTOP) Scoring Resource

The RTOP instrument characterizes classrooms on a spectrum from traditional lecture to reformed, student-driven, active learning. The instrument consists of 25 questions on five subscales that use a Likert scale from 0-4, where 0 indicates no occurrence of characteristic in question and 4 indicates maximized use of the characteristic in question. Given this scale, a classroom can be characterized on a scale from 0 to 100, where 0 indicates traditional, lecture-based and 100 indicates a reformed, student-driven class. The RTOP score is not intended as a value judgement, but rather, classifies the nature of the class being observed.



RTOP scoring graphic [On the Cutting Edge project](#)

### **Lesson Design and Implementation:**

This subscale examines the design and application of a lesson to determine if it is sufficient to support student understanding. Items examine how the instructor organizes the lesson to honor students' preconceptions from other classes and everyday experiences, and to provide opportunities to explore aspects of the topic prior to formal instruction.

### **Propositional Knowledge:**

This scale addresses what the character of the content the instructor teaches and their command of the material. For example, given the context of the course, does the lesson highlight fundamental concepts and are these concepts presented clearly to illustrate the relationships among key components.

### **Procedural Knowledge:**

This scale addresses what the students are asked to do within the classroom and includes a variety of higher order skills, tools and strategies an instructor might choose to employ in order to support student learning of the content. Much of this subscale examines the scientific ways of knowing and if students are engaged in this process in the classroom.

### **Student-Student Interaction:**

This scale evaluates the number and type of interactions among students and how the instructor facilitates such interactions. In reformed classes, students are not passive listeners, but rather actively communicating with one another. This process of explaining their own ideas and evaluating the ideas of others is key to the development of student critical thinking skills.

### **Student-Instructor Interaction:**

This scale addresses the culture of respect and comfort in the classroom as supported by both learners and the teacher. In a reformed classroom, the teacher fosters a culture where students feel comfortable asking questions and have control over their own learning process. A teacher in this classroom demonstrates patience, listens to students, and acts as a resource for student learning. As class size increases it becomes more challenging for the instructor to accurately assess the depth of learning and identify potential misconceptions harbored by students.

## Reformed Teaching Observational Protocol (RTOP)

### LESSON DESIGN AND IMPLEMENTATION

The instructional strategies and activities respected students' prior knowledge and the preconceptions inherent therein	0 1 2 3 4
The lesson was designed to engage students as members of a learning community	0 1 2 3 4
In this lesson, student exploration preceded formal presentation.	0 1 2 3 4
This lesson encouraged students to seek and value alternative modes of investigation or of problem solving	0 1 2 3 4
The focus and direction of the lesson was often determined by ideas originating with students.	0 1 2 3 4

### CONTENT

#### Propositional knowledge

The lesson involved fundamental concepts of the subject	0 1 2 3 4
The lesson promoted strongly coherent conceptual understanding	0 1 2 3 4
The teacher had a solid grasp of the subject matter content inherent in the lesson.	0 1 2 3 4
Elements of abstraction (i.e., symbolic representations, theory building) were encouraged when it was important to do so.	0 1 2 3 4
Connections with other content disciplines and/or real world phenomena were explored and valued.	0 1 2 3 4

#### Procedural Knowledge

Students used a variety of means (models, drawings, graphs, concrete materials, manipulatives, etc.) to represent phenomena.	0 1 2 3 4
Students made predictions, estimations and/or hypotheses and devised means for testing them.	0 1 2 3 4
Students were actively engaged in thought-provoking activity that often involved the critical assessment of procedures.	0 1 2 3 4
Students were reflective about their learning.	0 1 2 3 4
Intellectual rigor, constructive criticism, and the challenging of ideas were valued.	0 1 2 3 4

### CLASSROOM CULTURE

#### Communicative Interactions

Students were involved in the communication of their ideas to others using a variety of means and media.	0 1 2 3 4
The teacher's questions triggered divergent modes of thinking.	0 1 2 3 4
There was a high proportion of student talk and a significant amount of it occurred between and among students.	0 1 2 3 4
Student questions and comments often determined the focus and direction of classroom discourse.	0 1 2 3 4
There was a climate of respect for what others had to say.	0 1 2 3 4

#### Student/Teacher Relationships

Active participation of students was encouraged and valued.	0 1 2 3 4
Students were encouraged to generate conjectures, alternative solution strategies, and ways of interpreting evidence.	0 1 2 3 4
In general, the teacher was patient with students.	0 1 2 3 4
The teacher acted as a resource person, working to support and enhance student investigations.	0 1 2 3 4
The metaphor "teacher as listener" was very characteristic of this classroom.	0 1 2 3 4