



## Just-in-Time Teaching

### What is Just-in-Time Teaching?

The Just-in-Time Teaching (JiTT) model was introduced by Novak, Gavrin, Christian and Patterson in the late 1990s for physics education and has since been adopted by instructors for a number of disciplines. In its simplest terms, the JiTT model can be described as a “partially flipped” classroom. The typical series of events is:

*A) The Instructor assigns material (reading, video, etc.) and posts a set of problems, conceptual questions, and/or writing prompts to be completed by the students just before coming to class.*



*B) Students complete the assignment and submit their answers via an online learning platform. Students also indicate their “muddiest point”, i.e., the topic that they felt was least clear from the readings and questions*



*D) Based on this immediate feedback, the Instructor tailors the lecture period to address actual student need via additional explanation of concepts, reviewing of problems posted, presentation of new problems, etc.*



*C) The Instructor collects the student answers and uses these, along with the “muddiest point” responses, to identify areas that require the most clarification.*

### What are the predicted advantages of Just in Time Teaching?

- *The classroom time focuses on actual student needs – learning is student-centered.*
- *Time traditionally spent lecturing and introducing a topic can be replaced with working problems, which students want, but without a “fully flipped” classroom.*
- *Students adopt an active learning approach and come to class better prepared and more engaged – class discussions are more vibrant and the discussion does not seem as fast or new, so a deeper treatment of material is possible during class time. Students do not seem as overwhelmed and are more in control of their learning.*
- *Students who practice and recall the information just after reading and learning it are better able to retain the material.*
- *Students learn to use the textbook effectively and pace their reading – no more cramming – and increase their ability to read and comprehend technical material.*

- *The Instructor has “real-time” assessment of the students’ understanding of the material – can “intercept” before quizzes or tests.*
- *In the case where an Instructor has experienced many iterations of teaching the same class, having to prepare a lecture “just in time” keeps it exciting!*

### Thinking of implementing JiTT? Here are some variables for you to consider:

- *How will your students be encouraged to complete the readings and answer the problems? Will the questions be graded or will they receive participation points simply for completing the exercise?*
- *What is an appropriate time window for a) the students to complete the reading and questions, and b) you to prepare the lecture based on student responses? To be truly “Just-in-Time”, the window for student responses should close as near to the class time as possible, but with enough time for you to collect and consider the responses.*
- *In what format will the questions be asked? Will you create original questions or use the textbook’s test bank? What level of difficulty is appropriate?*
- *When will the correct answers be revealed to the students: when they respond to the questions, after the deadline for submission passes, or not until the next class meeting? Will you post a full answer key to the questions or rely on students to record the answers in class?*
- *How will you approach the “muddy point” questions? Will you make sure that the pertinent material is covered in the class? Or, will you respond to each “muddy point” either directly in the online platform or compile them and post the written answers?*
  - *N.B. The recommended “best practice” is to project examples of the most common muddy points, using the students’ comments verbatim, and address them directly in class. This is thought to increase student “buy-in” and allow students to see that others had similar muddy points.*

The JiTT method is not one size fits all! Further, the specific approach to the JiTT method does not have to be set-in-stone from the beginning; particularly if it is your first time, you can iteratively self-evaluate, ask for feedback, and find an approach that meets your needs.

### Where can I find more information?

- 1) Novak, G., et al. (1999). *Just-in-Time Teaching: Blending Active Learning with Web Technology*. Upper Saddle River, N.J.: Prentice Hall.
- 2) Simkins, S., & Maier M. Eds. (2010). *Just-in-Time Teaching: Across the Disciplines and across the Academy*. Sterling, VA: Stylus Publishing.
- 3) Additional examples might be published in discipline-specific journals (e.g., *Journal of Chemical Education*).
- 4) “Just-in-Time Teaching” <http://jittdl.physics.iupui.edu/jitt/> (accessed 2/24/16)