

## Best Practices in Classroom Development

We aim to provide those with classroom teaching responsibilities resources to align their classroom experience with the core of PhD training: building creators and disseminators of new knowledge. As faculty, our goal is to efficiently get students the foundational knowledge and habits of mind required to be lifelong learners. The following are some recommended best practices based on cognitive and educational research to achieve those aims.

1. **Design course syllabus:** Ensure that the course syllabus conforms to best practices; get a syllabus template and more information [here](#).
2. **Write learning objectives for each class session or lecture:** Students too often don't understand lecture goals, even when faculty feel that goals are self-evident. Further rationale for learning objectives can be found [here](#). Learning objectives are concrete, specific, and measurable. Bloom's [revised taxonomy](#) of educational objectives can be used as a starting point in designing learning objectives.
3. **Include active learning:** Encourage active student participation in classroom sessions (encouraged by STEM education reform advocates such as Harvard's [Eric Mazur](#) and Stanford's [Carl Weiman](#)). Examples include:
  - a. Employ anonymous clicker or software polling. [PollEverywhere](#), requires only a student phone or laptop, is free, and integrates with Powerpoint. The WashU Teaching Center staff likes [Socrative](#). Use answers to poll questions to spur additional discussion or mini-lectures.
  - b. Consider [think, pair, share](#) exercises. Pose a question. Allow students to discuss in pairs, then ask them to share outcomes of their discussion. Other discussion strategies can be found [here](#).
  - c. [Flipped classroom](#) design, with video lecture as homework and class time for discussion, mini-lectures, group problems, or other activities.
4. **Supplement lectures with online resources:** Whether as flipped classroom content or as a supplement to in-class active lectures, consider the growing library of video resources, which offer opportunity for students to revisit difficult concepts. Video lectures are quickly replacing textbooks as student-favored modes of study and learning.
  - a. You can access [video resources](#) curated for DBBS by Becker Library.
5. **Incorporate primary literature:** For discussion of primary papers, consider using one class session to explain the [explicit steps](#) involved in critical evaluation. Use a simple sample figure to model the process.
6. **Evaluate learning:** Recent literature suggests that course evaluations can offer incomplete or misleading information about course effectiveness. Consider additional tools to assess effectiveness. See the [Teaching Center](#) for ideas.