Using Teaching Inventories and Classroom Observation Protocols

A variety of published tools can assist instructors when assessing their teaching practices. Many such tools, including classroom observation protocols and teaching inventories, have been utilized in science, technology, engineering and math (STEM) courses, but are easily adaptable to other disciplines.

In observation protocols, an observer witnesses classroom teaching or views a videotape of instruction. While doing so, the observer fills out the protocol, typically consisting of questions that (1) ask whether particular teaching and learning behaviors were observed, (2) use a Likert-scale to capture the extent to which the behavior was seen in the classroom, and/or (3) allow for open-ended general feedback. Because observation protocols are typically designed to measure particular approaches, instructors should be careful to choose one for its specific assessment purpose. In contrast, teaching inventories can often be completed quickly by the instructor to obtain an overall assessment of practices. Teaching inventories are often used in more low-key, self-assessing reflective teaching approaches.

Instructors may keep in mind several benefits and challenges with classroom observation protocols and inventories. Training is often required if an observation protocol is used for research or other purposes where reliability between observers is essential. Also, while using a protocol just once provides a snapshot view of the classroom, multiple observations can enhance the reliability of the assessments. Some protocols may also pose judgment on instruction, which can be awkward to share with the instructor being assessed. Teaching inventories, while often quick to complete, involve self-report of teaching practices, and can lack total objectivity. They also

tend to focus on evidence of quantity (e.g. how often a particular behavior is observed) over quality. Where possible, coupling teaching inventories with observation protocols may be desirable.

Examples

A variety of published observation protocols and teaching inventories have been implemented and researched extensively in higher education:

- The American Society for Biochemistry and Molecular Biology has a comprehensive list of published instruments that can be found here: Teaching Practices Instruments. A few of note include:
  - Teaching Dimensions Observation Protocol (TDOP) (Osthoff et al., 2009)
    - Assesses multiple dimensions of teaching and is customizable.
    - http://tdop.wceruw.org/
  - Reformed Teaching Observation Protocol (RTOP) (Piburn et al., 2000)
    - Measures student- versus teacher-centered practices.
    - http://physicsed.buffalostate.edu/AZTEC/RTOP/RTOP_full/index.htm
  - Approaches to Teaching Inventory (ATI) (Trigwell and Prosser, 2004)
    - Measures whether the instructors' teaching practices are focused on information transmission or conceptual change.
    - https://link.springer.com/article/10.1007/s10648-004-0007-9
  - Teaching Practices Inventory (TPI) (Wieman and Gilbert, 2014)
    - Characterizes general teaching practices in math and science.
    - http://www.lifescied.org/content/13/3/552.full

- COPUS (Classroom Observation Protocol for Undergraduate STEM) (Smith, et. al, 2013)

CTL staff are available to discuss these and a variety of other teaching inventories that might be of use to instructors.

Recommendations

- **Choose Carefully** - Instructors should choose a teaching inventory and/or observation protocol that measures the behaviors for which feedback is desired. Additionally, instructor and observer should meet beforehand to align goals, ensuring that the observer knows to pay particular attention to specific practices.

- **Debrief** - Instructor and observer should schedule a time to debrief soon after the observation. This often happens over coffee, in a no-judgment, evaluation-free climate.

- **Compare Data Points** - Instructors may consider using both a teaching inventory for self-assessment purposes, and have an observer use a teaching protocol in class. When these instruments assess similar items, the outcomes/feedback can be useful to compare.

- **Assess Again** - After receiving feedback from the observer and

reflecting upon practices, instructors might consider asking the observer to re-assess practices during a subsequent class in which changes have been made.

- **Consider Total Alignment** - Instructors can assess the syllabus and the flow of course design in tandem. The "Downloads" section at the bottom of this page includes an assessment for considering, as an example, the degree of inclusivity in the syllabus and course design.

References and Additional Resources

Osthoff, E., Clune, W., Ferrare, J., Kretchmar, K., & White, P. (2009). Implementing immersion: Design, professional development, classroom enactment and learning effects of an extended science inquiry unit in an urban district. Madison: University of Wisconsin–Madison, Wisconsin Center for Educational Research.

Piburn, M., Sawada, D., Falconer, K., Turley, J. Benford, R., Bloom, I. (2000). Reformed Teaching Observation Protocol (RTOP). ACEPT IN-003.

Trigwell, K., Prosser, M. Development and Use of the Approaches to Teaching Inventory. (2004). Educational Psychology Review, 16(4): 409-424.

Smith, M., Jones, F., Gilbert, S., and Wieman, C. (2013). The Classroom Observation Protocol for Undergraduate STEM (COPUS): A New Instrument to Characterize University STEM Classroom Practices. CBE-Life Sciences Education, Vol. 12.4.

Wieman C., Gilbert S. (2014). The Teaching Practices Inventory: A New Tool

for Characterizing College and University Teaching in Mathematics and Science. CBE-Life Sciences Education, 13(3):552–569.

Downloads

Assessment, modified from a JMU tool, exploring the degree of inclusive practices, approaches, and language in the syllabus and course design.