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## Online Observation Protocol Sheet: User Guide

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**Online Observation Protocol Sheet: User Guide**  
Western Michigan University – Improving Undergraduate STEM Education

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**About the Online Observation Protocol Sheet**

The use of online instruction for undergraduate STEM courses is growing rapidly. In response to this trend, leaders in the field of STEM education, including the National Science Foundation and the American Association for the Advancement of Science, have called for the development of shared language and tools for researchers and practitioners to use to describe online STEM instruction. Educational researchers and practitioners have access to and have made productive use of validated instruments for studying face-to-face, classroom-based teaching practices, however analogous tools do not yet exist for online instruction. These tools are urgently needed in order to maximize the benefits of this rapidly growing mode of instruction for STEM learning. In order to meet this need, this project will develop and validate two measurement tools - an observational protocol and a self-report instrument - that can be used to reliably collect comparable, non-evaluative data for the description, study, and improvement of online, undergraduate STEM courses.

Substantial research has articulated how undergraduate students learn and which teaching practices best support student learning (e.g. Chickering & Gamson, 1987; Pascarella & Terenzini, 1991, 2005). There are empirically validated curricula and instructional strategies for postsecondary classrooms. The effort to transform postsecondary courses to include more of these empirically validated strategies has resulted in expansive efforts to accurately describe what teaching practices actually occur in college classrooms.

Surveys of teaching practices (e.g. Faculty Survey of Student Engagement; Center for Postsecondary Research, 2014) and observational instruments for classifying instructor behavior in the classroom (e.g. Hora et al., 2012; Reform Teaching Observation Protocol [RTOP]; Piburn et al., 2000; Teaching Dimensions Observation Protocol [TDOP]) are widely used to paint a comprehensive portrait of (a) what instructors report about their teaching and (b) what teaching practices are actually observed in postsecondary classrooms (Turpen & Finkelstein, 2009). These methods in combination (observation and self-report) provide an objective portrait of postsecondary teaching that serves as a baseline for individual instructors, colleges, and faculty developers to plan and enact change initiatives, and for researchers to measure the influences of organizational factors and impacts of change initiatives on instructors' practices. Yet, they only cover a portion of the teaching and learning landscape.

Despite the widespread and increasing adoption of online learning approaches (Johnson et al., 2013), there are no comprehensive instruments of teaching practices nor an objective set of descriptors necessary to classify teaching practices in online courses. Clear definitions of

instructional practices are necessary in order to describe and evaluate instructional practices and, ultimately, to improve them (AAAS, 2013).

The goal in developing these instruments is to describe how postsecondary instructors teach in online STEM courses. This instrument development project used a sequential mixed methods approach to research, design, pilot-test, refine, and then implement an observation protocol and a self-report survey of instructional practices for undergraduate online STEM courses. These instruments will fill a gap in the available set of tools to study teaching and learning environments. They are grounded in current theory guiding research on online courses and connected to current instruments (developed by this research team and others), forming a continuum of observation categories and codes, and self-reported practices that can be adapted for use across the spectrum of course approaches.

### **How to Use the Online Observation Protocol Sheet**

The Online Observation Protocol Sheet is an observational report intended to help us identify valid, meaningful, non-evaluative representations of the teaching occurring in online undergraduate STEM courses. The observation should be conducted on a course that has been fully developed and taught.

The Online Observation Protocol Sheet is divided into seven component areas: General, Course Materials, Assignments, Activities, Lab Work, Discussion, and Testing.

Online courses are generally divided into modules of some kind (weekly, thematic, or other designation), so each column of answers represents a course module. There is a space for you to enter the module name or number. We crafted the observation by module because not all items may be present in all modules. *Each double-sided sheet is able to be used for a total of six modules. In many courses, this is insufficient, so printing two or three copies for the form may be necessary for some courses in order to observe all the modules.*

All items on the Online Observation Protocol Sheet require yes/no responses. If you feel that an item is not applicable to a course, such as lab work for a non-lab course, you may either leave the item blank or cross out the entire row. This is not intended to be an evaluative protocol, so selecting “No” or leaving an item blank has no negative effect on the observation. As you complete the form, it is important to remember that the goal is not to evaluate a course but rather to determine what elements are incorporated into online undergraduate STEM courses.

**General.** This section addresses general mechanisms for communication such as course announcements, guidelines for class communication, and course or module goals. Please mark the appropriate response (yes or no) indicating whether the listed item is used in a module.

**Course Materials.** This section focuses on basic materials that provide content such as course textbooks, required readings (course pack), lecture notes or slides, images, audio, and visual material. Please mark the appropriate response (yes or no) indicating whether the listed item is used in a module.

**Assignments.** This section asks about the types of assignments used in the class, such as written assignments, math problems, presentations, projects, and other summative and formative assessments that are not considered tests or quizzes. Please select the appropriate response (yes or no) indicating whether the listed type of assignment is used in the module. Note that formative assessments include non-graded, lower risk assignments that provide immediate feedback to monitor student progress. Summative assessments include graded, higher risk assignments that evaluate student progress and contribute to final outcomes.

**Activities.** This section asks about other types of assignments, such as worksheets, tasks, or collaborative projects. In some courses it may not be clear where to draw the line between “assignments” and “activities” as presented on this form; in such cases consider assigned work to be activities when it does not fit any of the specific sub-categories within the “Assignments” grouping.

**Lab Work.** This section focuses on materials and activities specifically involving laboratory assignments, materials, and activities. Please mark the appropriate response (yes or no) indicating whether the listed item is used in a module.

**Discussion.** This section addresses asynchronous and synchronous discussions including discussion forums and synchronous video chats. Please mark the appropriate response (yes or no) indicating whether the listed item is used in a module.

**Testing.** This section focuses on assessments considered quizzes (graded or ungraded) or examinations (including mid-term and final exams). Please mark the appropriate response (yes or no) indicating whether the listed item is used in a module.

Please include any comments or questions you may have in the Notes section.

**Scoring.** The Online Observation Protocol Sheet is designed for non-evaluative uses. As such, it is not appropriate to count or score the affirmative responses. A course that has a larger variety of types of assignments is not necessarily “better” than a course that has a smaller variety of types of assignments, and this is further complicated by the number of modules affecting the total number of indicators. Any attempt to derive a quantitative score from the use of this observation protocol is not recommended and is likely to be misleading as a comparative tool. Instead, instructors should qualitatively consider results to explore whether improvements to the course design and implementation might be possible.

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