Comprehensive Instructional Profile Report

April 26, 2021

How to Read this Report

This report is based on data collected through the Classroom Observation Protocol for Undergraduate STEM (COPUS) and the Teaching Practices Inventory (TPI) during the S19 semester. The report is divided into the following 5 sections:

1. An explanation of COPUS and the data it generates
2. Your results from the COPUS observations that were done in your course this semester
3. Your results from the TPI this semester
4. Recommendations for you based on your COPUS and TPI results
5. Information about how the Engineering and Computing Education Core (ECEC) can help you implement the recommendations in this report

Throughout the report, comparisons are made between your data and the data the ECEC has collected on other instructors’ courses in the College of Engineering. This dataset contains only instructors who have participated in ECEC programs during or after the Fall 2017 semester and does not contain all teaching faculty in the college.

We encourage you to use the information contained in this report to engage in deliberate reflection on your teaching practices. There is a structured reflection packet available at https://engineering.unl.edu/ecec/resources-faculty/ that can guide you through this process. If you have any questions about this report or how to interpret its contents, contact Dr. Markeya Peteranetz.

Comprehensive Instructional Profile (CIP) for Sample

1. COPUS

Smith et al. (2013) developed a teaching observation procedure known as the Classroom Observation Protocol for Undergraduate STEM or COPUS. This protocol allows STEM faculty, after a short 1.5-hour training period, to reliably characterize how faculty and students are spending their time in the classroom.

Observers attend a course multiple times (50 minutes each) and used a COPUS form to mark behaviors in 2-minute intervals.
The protocol has 3 main parts as listed below:

1. Students are Doing
   - L: Listening to instructor/taking notes, etc.
   - Ind: Individual thinking/problem solving. Only mark when an instructor explicitly asks students to think about a clicker question or another question/problem on their own.
   - CG: Discuss clicker question in groups of 2 or more students
   - WG: Working in groups on worksheet activity
   - OG: Other assigned group activity, such as responding to instructor question
   - AnQ: Student answering a question posed by the instructor with rest of class listening
   - SQ: Student asks question
   - WC: Engaged in whole class discussion by offering explanations, opinion, judgment, etc. to whole class, often facilitated by instructor
   - Prd: Making a prediction about the outcome of demo or experiment
   - SP: Presentation by student(s)
   - TQ: Test or quiz
   - W: Waiting (instructor late, working on fixing AV problems, instructor otherwise occupied, etc.)
   - O: Other — explain in comments

2. Instructor is Doing
   - Lec: Lecturing (presenting content, deriving mathematical results, presenting a problem solution, etc.)
   - RTW: Real-time writing on board, doc. projector, etc. (often checked off along with Lec)
   - Fup: Follow-up/feedback on clicker question or activity to entire class
   - PQ: Posing non-clicker question to students (non-rhetorical)
   - CQ: Asking a clicker question (mark the entire time the instructor is using a clicker question, not just when first asked)
   - AnQ: Listening to and answering student questions with entire class listening
   - MG: Moving through class guiding ongoing student work during active learning task
   - 1:1: One-on-one extended discussion with one or a few individuals, not paying attention to the rest of the class (can be along with MG or AnQ)
   - D/V: Showing or conducting a demo, experiment, simulation, video, or animation
   - Adm: Administration (assign homework, return tests, etc.)
   - W: Waiting when there is an opportunity for an instructor to be interacting with or observing/listening to student or group activities and the instructor is not doing so
   - O: Other — explain in comments

3. Student Engagement (optional)
   - L: Small fraction (10-20%) obviously engaged.
   - M: Substantial fraction both clearly engaged and clearly not engaged.
   - H: Large fraction of students (80+) clearly engaged in class activity or listening to instructor.
   - Student engagement alternatives:
     1. Just mark when engagement is obviously high or obviously low.
     2. Count “N” students near you (~10) and assess how many appear engaged at every 1 minute interval. Enter value for all engaged instead of L/M/H. NOTE what your value of N was.

When interpreting the data generated from COPUS, the activities listed above under “Students are Doing” and “Instructor is Doing” are collapsed into 8 categories (4 for students and 4 for faculty). For students:

- “Receiving” is indicated by the code “L”.
- “Working” is indicated by the codes “Ind,” “WG,” “OG,” “Prd,” and “TQ”.
• “Talking” is indicated by the codes “CG,” “AnQ,” “SQ,” “WC,” and “SP”.
• “Other” is indicated by the codes “W” and “O”.

For faculty:
• “Presenting” is indicated by the codes “Lec,” “RtW,” and “D/V”.
• “Guiding” is indicated by the codes “FU,” “PQ,” “CQ,” “AnQ,” “MG,” and “101”.
• “Administrative” is indicated by the code “Adm”.
• “Other” is indicated by the codes “W” and “O”.

**Instructional Profiles**

Based on Stains et. al (2018)’s research, analysis of COPUS observations results in three main categories (Instructional Profiles) represented by 7 clusters as shown below.
Cluster 1 falls under Didactic Instruction. This mode of instruction contains around 80% lecture with minimal student involvement. Cluster 1 has no observed student involvement except sporadic questions from and to the students.

Cluster 2 falls under Didactic Instruction. This mode of instruction contains around 80% lecture with minimal student involvement. Cluster 2 has clicker questions that are sometimes associated with group work.

Interactive Lecture Clusters

Cluster 3 falls under Interactive Lectures. This mode of instruction supplements lectures with student-centered strategies. Cluster 3 might contain clicker questions that are sometimes associated with group work.

Cluster 4 falls under Interactive Lectures. This mode of instruction supplements lectures with student-centered strategies. Cluster 4 represents lectures with clicker questions and group work.

Student-Centered Clusters

Cluster 5 falls under Student Centered Instruction. This mode of instruction supplements lectures with student-centered strategies, primarily through group worksheets and questions and one-on-one assistance from the instructor.

Cluster 6 falls under Student Centered Instruction. This mode of instruction supplements lectures with student-centered strategies in large portions, primarily through group worksheets and assistance and questions from the instructor.

Cluster 7 falls under Student Centered Instruction. This mode of instruction supplements lectures with student-centered strategies in large portions. Cluster 7 is defined as represents a variety of group work strategies with less consistent usage.

2. Your COPUS Results

Your CIP is based on your instruction in your ENGR 000 course. COPUS observations were conducted on 3/1/2019 and 3/10/2019. The range of interrater reliability estimates (kappa) for the COPUS observations used for your CIP was from 0.850 to 0.872, which represents strong reliability. The data analysis resulted in the following:

Instructional Profiles

Our goal is to have fewer than one third of courses sessions classified as a 1 or a 2. **Your cluster for Observation 1 was 2. Your cluster for Observation 2 was 7.**

The graphs below show the various student and instructor activities that were recorded for each of your observations. Student activities are shown in blue/purple, and instructor activities are shown in red/orange. Darker shading indicates more activities from that category were coded by your observers during the 2-minutes period. Category components are given with the explanation of COPUS above.
Cluster 2

Observation 1

Cluster 7

Observation 2

COPUS Categories

The next chart shows how your COPUS results compare to the results from all other instructors in the College of Engineering who have been observed with COPUS in one of the ECEC's programs.
3. Your TPI Results

This inventory can aid instructors in reflecting on their teaching. It has been tested with several hundred university instructors in STEM fields. Inventory results can be used to gauge the extent of use of research-based teaching practices. Keep in mind that no single course is expected to incorporate all of the things listed in the TPI and there is no single formula for high-quality instruction.

This chart shows a high-level comparison of how your responses to the TPI compare to those of other faculty in the college. The scoring of the TPI gives more weight to practices that are shown by research to be more beneficial to student learning. The perimeter of the chart represents the maximum possible value for each category.
Summary of TPI Results

- For Information for Students, you scored 6 out of 6. This is an area of strength for your teaching.
- For Supporting Materials, you scored 6 out of 7. This is an area of strength for your teaching.
- For In-Class Activities, you scored 14 out of 20. This is an area of strength for your teaching.
- For Assignments, you scored 6 out of 6. This is an area of strength for your teaching.
- For Feedback and Testing, you scored 12 out of 13. This is an area of strength for your teaching.
- For Other, you scored 4 out of 10. Your practices in this area are likely benefitting students, but there are likely ways to expand what you are already doing.
- For TA Training and Guidance, you scored 3 out of 7. Your practices in this area are likely benefitting students, but there are likely ways to expand what you are already doing.
- For Teaching Collaboration, you scored 5 out of 6. This is an area of strength for your teaching.
4. Recommendations

COPUS

This chart shows the number of College of Engineering faculty whose observed course sessions were classified into each of the seven clusters. **Our goal is to have fewer than one third of courses sessions classified as a 1 or a 2.** Your observed course sessions were 2 and 7.

Based on these classifications, we recommend you consider incorporating student interaction and activity into your courses more consistently. In addition to your current practices, consider including brief discussions among pairs or groups of students, more regular opportunities for students to ask and answer questions, or individual and group practice activities.

TPI

**All of the practices highlighted in this section are evidence-based practices we strongly encourage instructors to use.** What follows is a comparison between what you reported and what other instructors in the College of Engineering have reported.
Information for Students

You indicated that you do provide students a list of topic-specific competencies students should achieve in the course. About 76.92% of instructors in the college who have taken the TPI reported providing a list of topic-specific competencies.

Supporting Materials

You indicated that you do provide students with solutions to homework assignments. About 80.77% of instructors in the college who have taken the TPI reported providing solutions to homework assignments.

You indicated that you do provide students with worked examples of sample problems. About 80.77% of instructors in the college who have taken the TPI reported providing worked examples.

In-Class Activities

You indicated that you pause to ask students questions about 7-10 times per class. On average, instructors in the college who have taken the TPI reported pausing to ask students questions about 4-6 times per class.

You indicated that you have students discuss or solve problems in groups an average of 4-5 times per class. On average, instructors in the college who have taken the TPI reported having students discuss or solve problems in groups 1 time per class.

You indicated that you do have students complete assignments or quizzes near or at the start of class over material they were to view before class. About 53.85% of instructors in the college who have taken the TPI reported using this practice.

You indicated that on average you lecture 20-40% of the class period. Instructors in the college who have taken the TPI reported lecturing 40-60% of class periods.

You indicated that you pose a question to students and then have them engage in discussion 4-5 times per class. On average, instructors in the college who have taken the TPI reported having students engage in discussion following a question 1 time per class.

Assignments

You indicated that you do assign graded homework at least every 2 weeks. About 92.31% of instructors in the college who have taken the TPI reported assigning graded homework at least every 2 weeks.

Feedback and Testing

You indicated that you do let students see graded assignments and you do let students see graded quizzes/exams. Of the instructors in the college who have taken the TPI, 100% reported letting students see graded assignments and 84.62% reported letting them see graded quizzes/exams.
You indicated that you do let students see the answer keys for graded assignments and you do let students see the answer keys for graded quizzes/exams. Of the instructors in the college who have taken the TPI, 84.62% reported letting students see the answer keys for graded assignments and 53.85% reported letting them see the answer keys for graded quizzes/exams.

**Other**

You indicated you do not use a consistent measure of learning that can be used to compare learning across sections and semesters. About 7.69% of instructors in the college who have taken the TPI reported using a measure to comparing learning across sections and semesters.

You indicated that you do not provide opportunities for students to self-evaluate their learning. About 34.62% of instructors in the college who have taken the TPI reported providing opportunities for self-evaluation.

**TA Training and Guidance**

You indicated you do not have TAs for this course.

**Peer Collaboration for Teaching**

You indicated you occasionally discuss how to teach this course with your colleagues. On average, other instructors in the college who have taken the TPI reported they occasionally discuss teaching their courses with colleagues.

You indicated you occasionally observe a colleague’s class to get or share ideas for teaching. On average, other instructors in the college who have taken the TPI reported they rarely observe colleagues’ classes to get or share ideas for teaching.

**5. Next Steps**

**Contact the ECEC:**

Email us at engr-ecec@unl.edu or visit the ECEC website

Our Instructional Designers can help you:

- incorporate more evidence-based strategies into your courses
- design, develop, implement, and evaluate new learning activities and innovative pedagogies
- integrate instructional technology into your teaching to enhancing learning

Our Learning Assessment Coordinator can:

- review your classroom assessment processes and provide recommendations
- teach you how to evaluate the quality of your classroom assessments
- help you develop new classroom assessments
Our ongoing faculty programs include:

- Faculty Teaching Fellows Program - engage in a variety of activities over multiple years that will help you improve your teaching and build relationships with other faculty focused on teaching excellence
- Learning by Design - learn the Backwards Design process as you develop or redevelop a course
- Peer Observation of Classroom Activities (POCA) - get feedback on your teaching and learn about how other instructors in the college approach teaching