**Steps for Representing and Using Evidence of Student Learning**

University of Kansas Center for Teaching Excellence

Benchmarks for Teaching Effectiveness

January 2020

**Overview.** The best way to identify and evaluate evidence of student learning is to think in terms of backward design. Start with what you want to achieve or know and work back from there. The prompts below are meant to guide instructors in developing a reflection on their own students’ learning, but could be adapted for use by a peer reviewer/ evaluator.

1. **Identify Goals** 
   * What are some of the most essential concepts or skills you want students to take away from your course?
   * Are there other goals you have been trying to achieve in your course? (For example, increased student motivation or engagement? Motivation and engagement don’t represent learning, but they are important factors in learning).

**2. List Assignments and Assessments**

• What opportunities do students have to demonstrate achievement of the concepts or skills you have identified? List those.

o Examples: assignments, exams, quizzes, surveys, student reflections, instructor reflections or informal observations, attendance records, clicker responses.

• How can you break down the components of larger measures into more specific elements?

o Examples: Analysis of components in a rubric; exam questions that are tied to specific learning goals; instructor notes about student

understanding in class discussions; examples of student work at various levels of accomplishment, including your feedback.

**3. Examine and Reflect on the Evidence**

• Choose assignments or assessments that best align with the major course goals. o What can you learn from student performance on the measures? o What is working well in the course?

o Is there anything you would like students to do differently in the future?

**Applying this Guidance- a Highly Scaffolded Example from A Classical Music Theory Course**

*Note, this is a hypothetical example, complied from some real examples, of material from an undergraduate course on music theory. Below is an example of how this instructor might use the prompts to reflect on evidence of student learning gathered in their course, followed by a table summarizing some of the evidence, and a peer reviewer’s narrative about this material.*

**1. Identify Goals:** What are some of the most essential learning outcomes (concepts and/or skills you want students to take away from your course- e.g., interpreting empirical articles, understanding of a central concept, etc…)? Are there other goals you have been trying to achieve in your course (e.g., increased student motivation or engagement?)?

One goal of this course is for students to learn to compose like composers from the classical period. This involves being able to analyze a piece of music, identify the underlying structure of it, and apply that structure to creating a new version based on that model. This course is required of all students in the School of Music who enter a variety of other programs.

2. **List Assignments/Assessments:** What opportunities do students have to demonstrate achievement of those outcomes? List measures or evidence in the course (e.g., assignments, exams, quizzes, surveys, student reflections, instructor reflections or informal observations, attendance records, clicker responses)?

To create opportunities for students to learn how to do this, I have adopted a flipped course design. For each unit of the course, I developed a complete online module that included a video lecture (which replaced reading), a quiz on the lecture, and a homework assignment that could only be completed after passing the lecture quiz. I then designed class time to focus on a group composing activity, followed by critiques of the compositions. Measure/evidence I can look at to see how well they are achieving the outcomes include:

• Performance on the team-based composition assignment

• My observations of their engagement in the activity, and my own engagement

• Quality of the students’ critiques (and as compared to critiques in past offerings of the course) • Student responses to a survey asking them for feedback on the “flipped” design (which I did the first time I tried this approach)

3. **Examine and Reflect on the Evidence:** Choose measures from your list under prompt 2 that best align with the major course goals you listed under prompt 1. What can you learn from student performance on the measure(s)? What is working well in the course? Is there anything you would like students to do differently in the future?

My Evidence:

• Performance on the team-based composition assignments

o Assignment 1- Two of 5 groups showed high-level mastery, 2 showed intermediate performance, and 1 showed limited performance with significant mistakes

o Assignment 2- Three of 5 groups showed high-level mastery, 1 showed intermediate performance, and 1 showed limited performance with significant mistakes

• Anecdotal observations of teamwork, My own engagement/response to the class o Students were highly engaged in the team-based activity, appeared to put considerable effort

o It was so much more enjoyable to teach class in this way

• Quality of student critiques

o Students gave far better critiques than they had in the past; they were immersed in it the entire class period

• Student survey responses (notes, the four rows for each item represent 4 course sections):

**Student Reflections in a Music Theory Class**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question** | **Strongly**  **Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly Agree** |
| 1. In the traditional, textbook-based instruction courses (last semester), I completed the textbook readings before every class: | 0  2  2  0 | 4  7  4  6 | 1  3  3  2 | 7  2  7  4 | 1 (13)  0 (14)  1 (17)  5 (17) |
| 4. In the hybrid model, I listened to the videos in entirety before completing a quiz: | 1  0  1  1 | 0  0  0  0 | 0  1  1  0 | 3  4  5  6 | 10 (14)  9 (14)  12 (19)  10 (17) |
| 9. In-class collaborative work (in groups or pairs) provided a helpful venue for applying concepts I learned in the videos: | 0  0  0  0 | 1  4  1  3 | 1  7  5  3 | 3  3  11  8 | 8 (13)  0 (14)  2 (19)  3 (17) |
| 10. In preparing for class, I prefer to read a traditional textbook, rather than watch a video: | 2  3  5  1 | 3  4  5  7 | 2  6  3  6 | 3  1  1  0 | 3 (13)  0 (14)  5 (19)  3 (17) |
| 12. The new model (video lecture, quiz) took more of my time than the traditional model: | 2  2  1  1 | 2  3  5  2 | 2  1  2  5 | 3  6  6  5 | 4 (13)  2 (14)  4 (18)  4 (17) |
| 13. The videos helped me grasp essential concepts better than the textbook: | 1  0  0  2 | 3  0  5  2 | 4  4  6  4 | 1  6  4  6 | 4 (13)  4 (14)  3 (18)  3 (17) |
| 14. Compared to a lecture-based classroom, the hands-on in-class activities in the new model were a more effective way for me to learn | 0  0  0  2 | 3  0  1  4 | 4  8  7  5 | 4  6  7  4 | 2 (13)  0 (14)  4 (19)  2 (17) |

**Sample Narrative (written from perspective of a peer reviewer)**

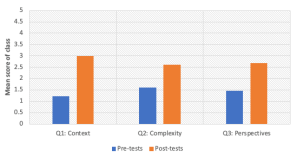
Prof. Clark’s introductory Music Theory course is required for students who will enter all of the undergraduate programs in the School of Music. One goal is for students to learn to compose like composers from the classical period. This involves being able to analyze a piece of music, identify the underlying structure of it, and apply that structure to creating a new version based on that model. Last semester Prof. Clark tested some new strategies for helping students meet this goal, which involved creating an online module that enabled students to learn some foundational information about the composers who were the focus of this unit. She then used class time for a team-based assignment in which groups developed their own compositions in the style of the target composer, and critiqued other group’s compositions. The students were highly engaged in the activities, and majority of student teams produced compositions that showed at least an intermediate level of mastery of the style. The students also provided much better critiques of each others’ work than they did when Prof. Clark used a more traditional approach to the material. Student responses to a survey also indicated that most students felt that the combination of online module and in-class assignment both got them to do the coursework and helped them learn how to apply the material better. Nonetheless, the fact that not all students saw the value of the group activities, and one team significantly underperformed, suggests she might want to consider some additional strategies for motivating and holding students accountable for the group work in her next offering.

**Example Reflections on Student Learning**

*The following are examples of brief reflections on student learning written by faculty at the University of Kansas. Many of these are excerpted from online course portfolios in the KU CTE course portfolio gallery, available here:* [*https://cte.ku.edu/portfolio-gallery*](https://cte.ku.edu/portfolio-gallery) *. Note that all of these examples will be more meaningful when encountered in the full course portfolio context. The intention here is to illustrate different ways of analyzing, representing and writing about student learning.*

**Example 1- History Course with quantitative evidence, pre- and post-test**

One major learning goal for this course is that students will be able to examine cultural patterns and respond flexibly to multiple worldviews (it counts towards Core goal 4.2: intercultural competence. A key assignment related to this goal asks students to read a short vignette about an intercultural business relationship and write an essay. This activity is done at the beginning of the semester and again at the end of the semester to assess the growth in their ability to consider and respond to multiple world views. The figure below shows the mean scores of students on the Pre-test (blue) and Post-test (orange) for three grading criteria (context, complexity, and perspectives). By the end of the semester the students wrote considerably more sophisticated, thoughtful, and culturally sensitive answers than they had written in response to the pre-test, and nearly all of the students moved up a couple of notches on my rating scale. Thus, I think the course is helping students develop their abilities to examine cultural patterns and respond flexibly to multiple worldviews.



*This work was adapted from Megan Greene’s course portfolio on the University of Kansas’ Center for Teaching Excellence website.*

**Example 2- History Capstone Course, no quantitative data**

An important outcome of the history capstone course is the ability to write a research paper drawing on multiple scholarly sources. A rubric was created to clearly outline the expectations of the research paper. The rubric places particular emphasis on research and analysis, two essential aspects of a research paper in history (See rubric for more details). I also made the research paper a scaffolded assignment that was completed in steps over the semester. I am happy with the way the rubric and the class structure supported good student work. To demonstrate, I will describe two students, each of whom benefited from a different aspect of the course:

Student One’s experience in this course was successful largely because the course design. By placing so much emphasis on developing a topic, this student was able to achieve success. Student One left KU with a sense of the skills they learned in their major and with tangible evidence that they could deploy those skills. I think that without the opportunity to develop a topic that interested them and without a scaffolded assignment that gave them low-stakes benchmarks to meet throughout the process, this student might not have succeeded in such a demanding course.

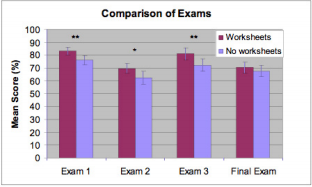
Student Two really benefited from the collaborative learning environment embedded in the course structure. Their writing and analytical skills matured over the course of the semester. Although Student two seemed to lack motivation at the outset of the class, the structure of the course, particularly the enforced deadlines and one-on-one attention, kept them on track, allowing them to successfully complete the course and acquire more advanced critical thinking skills.

*This work was adapted from Sheyda Jahanbani’s portfolio on the University of Kansas’ Center for Teaching Excellence website.*

**Example 3- Music Theory (written from perspective of a peer reviewer)**

Prof. Clark’s introductory Music Theory course is required for students who will enter all of the undergraduate programs in the School of Music. One goal is for students to learn to compose like composers from the classical period. This involves being able to analyze a piece of music, identify the underlying structure of it, and apply that structure to creating a new version based on that model. Last semester Prof. Clark tested some new strategies for helping students meet this goal, which involved creating an online module that enabled students to learn some foundational information about the composers who were the focus of this unit. She then used class time for a team-based assignment in which groups developed their own compositions in the style of the target composer, and critiqued other group’s compositions. The students were highly engaged in the activities, and majority of student teams produced compositions that showed at least an intermediate level of mastery of the style. The students also provided much better critiques of each others’ work than they did when Prof. Clark used a more traditional approach to the material. Student responses to a survey also indicated that most students felt that the combination of online module and in-class assignment both got them to do the coursework and helped them learn how to apply the material better. Nonetheless, the fact that not all students saw the value of the group activities, and one team significantly underperformed, suggests she might want to consider some additional strategies for motivating and holding students accountable for the group work in her next offering.

**Example 4- Physics Course, exam data, comparing across two course versions**

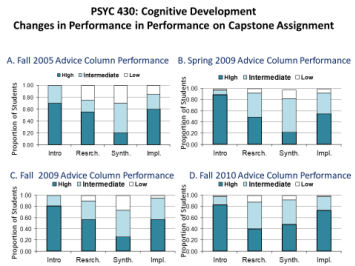


[In the context of an introductory Physics course]….To increase student learning some class time was redirected from lecturing to group problem-solving activities in the form of worksheets. The goals of the worksheets were to 1. push students to describe and illustrate difficult concepts, 2. maximize peer interaction and 3. improve performance on exams. In contrast to traditional algebraic formulation of physics problems, the worksheets contained elements that required students to explain physics concepts using words and pictures. In class, the worksheet solutions were discussed; students were asked to explain their answers to their peers in front of the class. Student learning was measured by worksheets and exams. During the semester the worksheets were piloted, the same course was taught concurrently in a traditional lecture style by a colleague. The homework and tests the students received were the same. Exams were comprised of half multiple choice questions and half short-answer/picture questions similar to worksheet questions. Students in the class that used worksheets to guide interactions obtained final course scores 4.5% higher than those in the traditional lecture course that was taught concurrently. This difference in final course scores is due to the fact that students in the worksheet-based class scored ignificantly higher on three of the four exams (See graph below). The increase in exam score is likely (at least in part) due to the fact that during the group worksheet discussion, misconceptions were brought to light and be addressed immediately in class.

*This work was adapted from Michael Murray’s portfolio on the University of Kansas’ Center for Teaching Excellence website.*

**Example 5. Psychology Course: Rubric-based evidence, tracked over multiple course offerings**

My course on Cognitive Development PSYC 430 includes a capstone assignment that integrates many of the skills I want students to take away from the course. The assignment asks students to write a simulated advice column, providing practical recommendations to parents based on their critical reading of empirical articles from the psychological literature. One dimension of the assignment that has been particularly difficult for students is the synthesis of multiple research findings, especially when those findings lead to divergent conclusions. This weakness clearly stands out in Panel A of Figure 1, which summarizes the percent of students in the Fall semester of 2005 who received high, intermediate, and low scores on four major dimensions of the assignment. In the Spring of 2007, I partnered with colleagues from the KU Libraries and Writing Center to redesign the course to better support students’ attainment of the skills required for this assignment, with particular emphasis on improving their synthesis skills. The first set of changes involved breaking the assignment into more stages and providing increased support and feedback at each step. These changes yielded small upgrades in students’ use of research, synthesis of research, and application to real world conclusions (see panel B). To promote further improvement in synthesis in later semesters, we added several learning activities (e.g., students evaluated and discussed sample papers with the rubric) that specifically targeted this skill area (Fall 2009), and then required students to write a traditional literature review paper before producing the advice column (Fall 2010). After making these changes, I saw particularly strong increases in students’ abilities to synthesize multiple findings and apply them in real world conclusions. The shift in synthesis scores is especially noteworthy because at the same time that I increased support and feedback to the students, I also increased the number of articles students were required to synthesize. Thus, my students are performing better on an even more sophisticated learning task. Nonetheless, there may still be room for improvement, the changes I made to support synthesis may have also led to the small drop in high level performance on the “use of research” category. In the next offering, we will work with students on how to maintain a clear research emphasis while writing for the “real world.”



*This work was adapted from Andrea Follmer Greenhoot’s portfolio on the University of Kansas’ Center for Teaching Excellence website.*