Guidance for Representing and Using Evidence of Student Learning for Teaching Evaluations

University of Kansas Center for Teaching Excellence
January 2020

This document is designed to provide guidance for university-level instructors, potential peer reviewers, and faculty mentors on representing and using evidence of student learning in reviews of faculty teaching effectiveness. Specifically, this guidance addresses how to identify materials and artifacts that will provide evidence of student learning, how to represent the evidence, and how to create a narrative that interprets the evidence.

Contents of this document include:

1. Overview of steps for representing and using evidence of student learning

2. Two examples that can be used to model and provide faculty self- or peer-reviewers practice with reviewing, representing, and writing about evidence of student learning for the purposes of teaching evaluation.
    a. Case 1 is highly scaffolded example in which the hypothetical instructor has already identified and represented the evidence
    b. Case 2 is a less scaffolded example (Case 2) in which the reviewer must select and decide how to represent the evidence.

3. A set of complete examples that represent evidence of student learning from a variety of different course types.

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?
        - 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.
    - 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?
    - 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.
    - What can you learn from student performance on the measures?
    - What is working well in the course?
    - Is there anything you would like students to do differently in the future?

CASE 1: A Classical Music Theory Course (highly scaffolded example)

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
     - Assignment 1- Two of 5 groups showed high-level mastery, 2 showed intermediate performance, and 1 showed limited performance with significant mistakes
     - 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
     - Students were highly engaged in the team-based activity, appeared to put considerable effort
     - It was so much more enjoyable to teach class in this way
   - Quality of student critiques
     - 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):

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)

Note, this hypothetical example is a compilation based on some real examples.

Review this example. Imagine you are a peer reviewer looking over these materials, and draft a short narrative to represent student learning in this course.

CASE 1 (Highly Scaffolded Example)

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.

CASE 2: A Child Development Course (Less scaffolded example)

Use the Reflection Prompts on page 2 to review the Child Development course materials.

- How would you look at the evidence?
- What does the evidence tell you?
- Generate bullet points or draft a narrative about this course

Development & Learning of the Child
Spring 2018
Monday & Wednesday 9:00-9:50

Instructor
Prof. Lester Brown
Office hours: Monday 12:00-2:00, Wednesday 10:00-12:00, and by appointment
Office: JRP 632
Email: lester.brown@ku.edu

Course Goals
Through this course, students will:
1. Become familiar with major theories of child development
2. Consider the influence of nature, nurture, and their interaction on children's outcomes
3. Understand the influences of cognition, emotion, and context on children's behavior
4. Reflect on and evaluate pre-existing beliefs regarding child development
5. Understand the interconnected relationships between children, families, and society
6. Understand the roles of parents, peers, and schools in promoting the well-being of individual children
7. Integrate information about physical, cognitive, social, and emotional development to understand the whole child

How to Succeed in this Course
- Be present in every class, both physically and mentally
- Read the assigned material before class
- Approach readings, lectures, and discussions with an open mind
- Participate actively and thoughtfully in class discussions
- Show respect for others' ideas and viewpoints

Competencies Promoted by this Course
This course has been designed to meet the following Kansas Educator Preparation Program Standards for Professional Education:
Standard #1: The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate, relevant, and rigorous learning experiences.
Standard #2: The teacher uses understanding of differences in individuals, languages, cultures, and communities to ensure inclusive learning environments that enable each learner to meet rigorous standards.

School of Education Mission: Within the University, the School of Education serves Kansas, the nation and the world by (1) preparing individuals to be leaders and practitioners in education and related human service fields, (2) expanding and deepening understanding of education as a fundamental human endeavor, and (3) helping society define and respond to its educational

responsibilities and challenges. To accomplish this mission, the School of Education (1) offers an extensive curriculum leading to academic degrees and professional licensure, (2) requires faculty and students to engage in scholarship, and (3) provides a wide range of professional services to schools, other institutions, and individuals.

Diversity in the School of Education: Diversity is an integral part of the University of Kansas School of Education's commitment to excellence. The faculty, staff, and students of the School of Education value inclusiveness and equal opportunity for diverse learners and an environment of mutual respect for all members of our community. We believe that all students benefit from training and experiences that will help them to learn, lead, and serve in an increasingly diverse society.

Course Assignments

Exams (45%): There will be three in-class exams, each covering approximately one-third of the course material. Exams will assess your knowledge of material covered in course readings, lectures, and discussions and ability to integrate and apply the material learned in class. Each exam will account for 150 points (15% of your final grade).

Controversial issue presentation (10%): Each student will participate in presentation on a controversial issue in child development. The presentations will take place in your discussion sections, and will have a panel format. For each topic, a small group of students (3 - 4 students) will be assigned to take the pro side of the issue and a second small group will take the con side. Panel members are expected to present the arguments for their side of the issue clearly and concisely. If a student misses class on a day he or she is scheduled to be a panelist, the student will be asked to help lead a discussion on a topic of the instructor's choosing later in the semester. The presentation will account for 100 points (10% of your final grade).

Controversial issue report (10%): You will write a short (4 – 5 pages) paper on a controversial issue in child development. Grades will be based on the quality of the argument and supporting evidence, as well as quality of writing. Grades will not be based on the side of the controversy that you choose to support. The CIR will account for 100 points (10% of your final grade).

Developmental milestones guide (15%): For this assignment, you will develop a written guide describing typical development for children of a particular age. The purpose of this assignment is to integrate information about physical, cognitive, social, and emotional development to convey a picture of the whole child. The developmental milestones guide (DMG) will account for 150 points (15% of your final grade).

Attendance and participation (15%): Attendance and participation will be assessed for both the lecture and discussion sections. Grades will be based on attendance, participation in discussion, and the submission of in-class individual and group assignments. Attendance and participation will account for 150 points (15% of your final grade).

Controversial Issue Report Assignment

Learning goals:
*Explore a current controversy related to child development
*Use evidence to support an argument
*Integrate and synthesize information from multiple sources in a coherent manner
*Present information about an important topic in an understandable and engaging manner

For the controversial issue report, you will focus on understanding a current controversy in the field of child development. First, you will read a series of articles describing your chosen controversy. Some of the articles will argue for a particular position, whereas others will take a more balanced view of the issue. Based on the readings, you will write a 4 - 5 page paper making an argument supporting <u>one side</u> of the controversy. Papers will be due in class on ///.

Your paper should include a summary of the topic, a clear statement of your opinion on the controversy (*do you support Position A or Position B*), a discussion of the supporting evidence for your position (<u>*why*</u> *do you support your chosen position*), and a discussion and refutation of the evidence for the other position (*why do you* <u>*not*</u> *support the other position, given the evidence for it*).

Evidence to support your argument may be drawn from the readings posted to Blackboard, the course textbook, class lectures, and class discussions. When you are searching for evidence to support your argument, remember that a research study that is based on responses from many people is much stronger than a story that is about one person. Knowing something about a single person does not tell us much about how an issue will affect other people.

Your paper should reflect your own work. This means that you should take the information you obtain from sources and put it into your own words, and give credit to authors (using in-text citations) when you use their ideas. Your paper should include a reference list formatted in APA style. Direct quotations should be used rarely, if at all (more than two direct quotations in your paper is too many). Any passage taken directly from a source should be placed within quotation marks and attributed to the author (using APA style). Quoting from a source without attribution is considered plagiarism and is a violation of the University's policies on academic honesty.

Grades will be based on the quality of your argument and the quality of the evidence you use to support your argument. The clarity of your writing (including use of correct spelling and grammar) will also be a part of your grade. See attached rubric for more information on how papers will be evaluated.

Controversial Issue Report Evaluation Rubric

Grades for the Controversial Issue Report will be based on the clarity and quality of the topic framing, the quality of the argument presented, the quality of the evidence used to support the argument, and clarity of writing. A well-done paper will clearly and concisely summarize the topic under consideration, clearly state the argument being made (pro or con), support the argument with appropriate evidence (including refutation of opposing arguments), and be written in a clear and engaging style.

Summary of topic 20 Points	Unsatisfactory	Marginal	Good	Excellent
	Minimal summary of issue or summary is disorganized.	Summary of issue is moderately organized; some points are unclear or confusing.	Paper includes clear and concise summary of issue.	Summary of issue is thorough and thoughtful.
	Many key elements of issue are missing.	Some key elements of issue are addressed.	Most key elements of issue are addressed.	All key elements of issue are addressed.

Argument 15 Points	Unsatisfactory	Marginal	Good	Excellent
	Paper does not clearly state which side of the argument is being supported. No attempt made to tie argument to evidence.	Paper clearly states argument being supported. Relations of evidence to argument are unclear or missing.	Paper clearly states argument being supported. Some ties between argument and evidence.	Paper clearly states argument being supported. Paper clearly ties evidence to argument.

| Supporting evidence

40 Points	Unsatisfactory	Marginal	Good	Excellent
	Little supporting evidence is presented; paper does not use readings to support central argument.	Some evidence is presented; readings are used to support central argument, but not extensively.	Multiple pieces of supporting evidence are presented; paper uses multiple sources.	All provided sources of supporting evidence are used.
	Many key pieces of supporting evidence are missing.	Some key pieces of supporting evidence are addressed.	Most key pieces of supporting evidence are addressed.	All key pieces of supporting evidence are included.
	Paper includes multiple factual inaccuracies.	Paper includes some factual inaccuracies.	Information provided is generally correct, with only minor inaccuracies.	All information provided is accurate.
	Little discussion of relations between evidence and central argument.	Paper has a clear argument and evidence, but links between the two are unclear.	A good effort is made to tie evidence to the central argument.	All evidence presented is tied back to the central argument.
	Paper does not address opposing arguments.	Minimal discussion of opposing arguments.	Paper addresses opposing arguments, but does not present evidence refuting those arguments.	Paper addresses and refutes opposing arguments.

Quality of writing 25 Points	Unsatisfactory	Marginal	Good	Excellent
	Paper is poorly organized; logic of argument is hard to follow.	Some problems with organizational structure.	Paper is generally well-organized.	Paper is well-organized, with clear relations and transitions between ideas.
	Paragraphs are disorganized.	Some paragraphs are disorganized.	Paragraphs are generally well-organized.	Each paragraph is logically structured, with a clear topic sentence.
	Introduction and conclusion are missing or disorganized.	Minimal introduction and conclusion.	Clear and logical introduction and conclusion.	Introduction and conclusion are well-written and interesting; they engage the reader with the paper topic.
	No transition sentences between paragraphs.	Inconsistent use of transitions between paragraphs.	Appropriate transitions between paragraphs.	Transitions between paragraphs are smooth.
	Sentence structure is rudimentary.	Appropriate sentence structure.	Sentence structure is appropriate and somewhat varied.	Varied sentence structure.
	Many grammatical and/or spelling errors.	Multiple grammatical or spelling errors.	A few minor grammatical or spelling errors.	Correct grammar and spelling throughout.
	Too many direct quotations. No use of in-text citations.	Some overuse of quotations. In-text citations missing in some cases.	Minor errors in the use of in-text citations.	In-text citations and quotations are used appropriately.
	Reference list is missing.	Reference list is present, but is missing citations or has many errors in formatting.	Reference list is generally correct but has some formatting errors.	Reference list is formatted appropriately in APA style.

Student learning data -- Controversial issue paper

Spring 2016			% of students at rubric level			
Rubric element	Possible points	Average score	Unsatisfactory	Marginal	Good	Excellent
Summary of topic	20	15.5	0%	20%	50%	30%
Argument	15	13.2	8%	28%	40%	24%
Supporting evidence	40	28	30%	30%	30%	10%
Quality of writing	25	18	10%	40%	25%	25%

Spring 2017			% of students at rubric level			
	Possible points	Average score	Unsatisfactory	Marginal	Good	Excellent
Summary of topic	20	17.3	0%	18%	47%	35%
Argument	15	14.3	8%	28%	40%	24%
Supporting evidence	40	29.1	25%	34%	29%	12%
Quality of writing	25	20	10%	35%	29%	26%

Spring 2018			% of students at rubric level			
	Possible points	Average score	Unsatisfactory	Marginal	Good	Excellent
Summary of topic	20	18	2%	16%	44%	38%
Argument	15	14	6%	30%	41%	23%
Supporting evidence	40	28.6	28%	32%	27%	13%
Quality of writing	25	23.5	2%	20%	38%	40%

Development and Learning of the Child- Summary of Final Exam Performance- Spring 2018

The final exam included 20 short answer questions worth 5 points each. Questions were categorized in relation to the major learning outcomes. They were also categorized according to the type of thinking they asked students to do (describe/explain, interpret research findings, apply).

Average Exam Score= 60 pts out of 100   **Distribution:**

90 to 100:   5%
80 to 89%: 22%
70 to 79%: 38%
60 to 69%: 25%
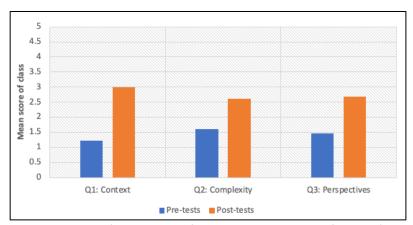<60:   10%

Summary of Performance on Individual Items

Topic/Learning Outcome (From syllabus)	Aligned Questions	Average Score (out of 5)
1 Theories	Q1, Q3, Q10, Q15, Q16, Q19, Q20	3.2
2 Nature Nurture	Q2	1.4
3.1 Cognition	Q4, Q5	2.8
3.2 Emotion	Q1, Q9	2.7
3.3 Context	Q13, Q3	2.5
4 Beliefs about Child Devel	Q8,Q9, Q17,Q18	4.1
5 Children, families and society	Q7,Q11, Q12	3.8
6 Parents, peers and school	Q6, Q14	1.2
7 Integration across domains	Q13	1.0
Types of Questions		
Defining, Describing, Explaining	Q1 through Q16	3.3
Interpreting research findings	Q17, Q18	1.5
Applications to real life	Q19,Q20	2.0

Page Point Total: _____

Example Reflections on Student Learning

Example 1- History Course with quantitative evidence
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. https://cte.ku.edu/portfolios/greene2019

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.
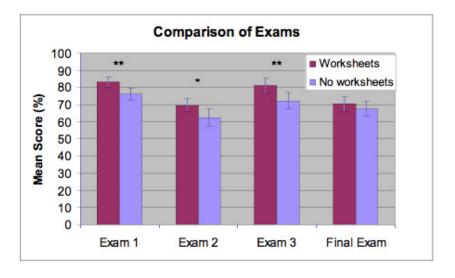
This work was adapted from Sheyda Jahanbani's portfolio on the University of Kansas' Center for Teaching Excellence website. https://cte.ku.edu/portfolios/jahanbani2010

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

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 significantly 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.
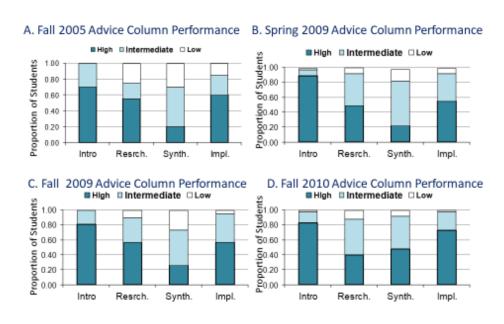

This work was adapted from Michael Murray's portfolio on the University of Kansas' Center for Teaching Excellence website. https://cte.ku.edu/portfolios/murray2006

Example 5. Psychology Course

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."

PSYC 430: Cognitive Development
Changes in Performance in Performance on Capstone Assignment

A. Fall 2005 Advice Column Performance
B. Spring 2009 Advice Column Performance
C. Fall 2009 Advice Column Performance
D. Fall 2010 Advice Column Performance

This example was adapted from Andrea Greenhoot's Course Portfolio on the University of Kansas's Center for Teaching Excellence website. https://cte.ku.edu/portfolios/greenhoot2010