TLL 3476 - ASSESSMENT & EVAL IN MATH & SCIENCE EDUCATION
Spline 2024[1]

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COURSE DESCRIPTION:

In this course, students will draw on the research literature and their own professional experiences to examine current practices of large- and small-scale assessment and teacher evaluation in science, technology, engineering, and mathematics (STEM) education. We will explore the nature of assessment in STEM, a range of approaches to assessment (e.g. formative, summative, peer, performance, etc.), reflect on the relationship between assessment and curriculum and instruction, and, examine how to design assessments in service of meaningful learning across educational contexts and for a range of learners while centering equity and justice. The course will also grapple with the connections between assessment and evaluation, first, in relation to teacher or facilitator evaluation, and second, in how to use assessments to meet or evaluate organizational goals. Thus, our learning goals for the course are:

1. Explore how assessment is linked to learning, instruction, equity considerations, and educator practice through study of formative, performance, summative, and large-scale assessments related to student learning, teacher effectiveness, (and program evaluation).
2. Consider how assessment is related to equity, justice, and freedom in education.
3. Support each other through this community to share ideas and questions to push our thinking toward reaching personal learning goals.
4. Advance thinking on your Problem of Practice and proficiency with the University of Pittsburgh Education Doctorate Identities of Adaptive Leaders, Scholar Practitioners, Collaborators, and Social Justice Advocates.
5. Engage in research and writing for an academic audience.

How will we achieve these goals?

Paulo Freire (2003) defines praxis as "reflection and action upon the world in order to transform it" (p. 51), a kind of informed action geared toward social justice. In, *Teaching to Transgress*, bell hooks, tells us her work celebrates "teaching that enables transgressions—a movement against and beyond boundaries. It is that movement which makes education the practice of freedom." These two principles help to position us as active, collaborative, and reflective contributors to various communities, and to that end you will participate in this learning community and use tools and resources to communicate and deepen our collective understanding of assessment. Our collective work is guided by the following questions:

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[1] Course adapted from Dr. Veena Vasudevan EDUC 3476 Spring 2022 section.

What can we know and learn together?

In this course, we will examine research literature, policy, and your own professional experiences in relation to assessment across the STEM disciplines. We will consider what assessment is (in our respective learning contexts), how assessment is positioned, and what implications the design and implementation of assessments at different levels (e.g. formative, summative, evaluative). We will collectively discuss, interrogate, deconstruct theories of research about the relationship between assessment and teaching and learning. We will explore the relationship between assessment and equity, power, pedagogies, curriculum, and instruction. Such that we will bring to bear our experiences on questions like: how has assessment continued to reify existing systems of oppression? What is the meaning of assessments in our respective learning contexts? Who is assessment *for*? What is the work assessments do in my learning context? How is assessment related to leadership at my institution? How can STEM assessments be rooted in the values of freedom, equity, and justice?

What can we do together?

Together we will co-construct a vision for assessment, that both draws upon relevant research literature and is undergirded by relevant theory. Each student will architect a vision and understanding for assessment and evaluation within specific learning contexts or institutional spaces, depending on what is most relevant. We will engage in questions of praxis like: how can I design assessments that apply an equity lens? What are assessment experiences like for children and youth and how might we design in service of engendering a culture of learning? How can we alter how our institutions use assessments?

HOW THE COURSE WORKS:

This course is a hybrid course, with most of the work you do being asynchronous, with the exception of our Saturday in-person sessions. Such a hybrid format provides opportunities to make the most of both asynchronous and synchronous time together. (Please note that attendance at all Saturday sessions is mandatory.)

There are several ways we will engage in the exploration of assessment this semester: 1) synchronous class sessions 2) weekly assignments 3) written assignments. Grading for the class is out of 100 points.:

Community Participation (20 points):

> Throughout this class we will be cultivating a learning community that is rooted in respectful and thoughtful engagement of ideas, opinions, and experiences. We will be engaging both asynchronously, during the week through reading and discussions and other activities together, and synchronously when we meet for Saturday sessions four times this semester.

Synchronous Saturday Sessions

We will all be 'together' in class for each Saturday session. Canvas will the place to find up-to-date information on what to prepare in advance of synchronous sessions.

- During synchronous sessions be prepared to:
  - Discuss the previous 2 weeks of readings and materials. We will have several text-based discussions as a way to model and engage in praxis around reading and sense-making around research literature within STEM. Therefore, as you read/engage with course content, I encourage you to take notes, write down key quotes with page numbers and author information, so that you can refer back to those as we engage in these discussions.
  - Reflect and interrogate your instructional practices, your approach to curriculum, understanding and sense-making about assessment, and your pedagogical praxis.
- **All of you are expected to attend the Saturday sessions in-person. However, under extenuating circumstances, you may join the class virtually through Zoom. If you are unable to attend in-person, please let me know as soon as possible.**

Leading Class Discussions asynchronously

You will- with a partner – have a chance to lead a discussion on a specific topic during the semester. Each pair will sign up for one week during our 1/13 class. You will be responsible for reading course materials, designing discussion questions or other activity, monitoring discussion posts/giving feedback to peers, and summarizing the overall ideas of the week. We will speak more about this during 1/13 class.

Weekly assignments (20 points):

- Each week we will read and explore various topics together to deepen our understanding and perspectives on assessment and evaluation. We will do so in two main ways: 1) engaging in social annotation via a tool called Perusall 2) discussion posts.
- Weekly assignments are an opportunity to critique, reflect, make connections to practice/other ideas you are interrogating in other coursework and contexts, and pose questions. This is also an essential component of the community building and shared sense-making we are trying to build in this class. When we are reading more theoretical pieces, it's also an opportunity to engage more deeply and get feedback from your peers, and engage in collective sense-making.
- On occasion, depending on the topic, we may engage in other tasks during the week, but the sensibilities of critical engagement remain the same for all weekly assignments.

Written Assignments (60 points)

The written assignments are an opportunity for you to critically engage with the content of the course. Other written assignments will support your development of your dissertation-in-practice, which will be different based on your year (first or second).

    Assignment #1: STEM Assessments (15 points) [Due 2/2/24]

    This written assignment will require you to characterize STEM/STEAM education in a P-20 classroom setting relevant to you and examine the notion of 'proficiency' within the context. You will develop a set of questions to interview a student and teacher in your context.

    Assignment #2: Critiquing an Assessment System (20 points) [Due 4/7/24]

    This written assignment will require you to use Pellegrino's (2014) framework (or another framework of your choice), along with interviews and other relevant sources, to characterize and critique the assessment system in your (or another) school district.

    Assignment #3: (cohort specific) (25 points) **[Initial ideas, due 3/1/24; Draft/concept, due 4/5/24; Final draft due 4/26/24]**

        FIRST YEAR STUDENTS (COHORT 2021) : *Problem of Practice + Annotated Bibliography*
        In this assignment, students will center their dissertation-in-practice idea (or working idea) and will curate a list of 20-25 peer-reviewed journal articles, book chapters, white papers, policy assessments, that are relevant to your inquiry. You will create an annotated bibliography that will synthesize the key themes in the article and make connections to your own understanding of a topic area, and highlight keywords. Then, you will write your problem-of-practice statement that asks you to explore the story of your research question (inquiry question) and how it is substantiated by the literature. You will engage in peer review of this piece.

        SECOND-YEAR STUDENTS (COHORT 2020): *Draft of Applied Inquiry Plan (AIP) Sections 1 & 2*
        You will be transforming your AIP into Sections 1 and 2 for your DIP. At this point, you should have your theory of change (developed in your other class) and an idea of how to collect your data. Include sample surveys, interview questions, etc. if you have them. This will give us an idea of what types of data you will collect, and I can provide feedback on this.

COURSE AND UNIVERSITY POLICIES:

Student Expectations

Active participation in this course is vital to developing a community of inquiry, practice, and learning. Active participation entails logging into your canvas course, interacting with instructional materials, and completing learning activities by specified due dates and times. Please know that I will work with you to extend due dates if the deadlines are challenging to meet. We strive to build a learning community by recognizing our strengths in our collective knowledge, personal and professional experiences. We can achieve this by sharing the artifacts we develop, experiences, strategies, and making contributions in the discussion forums. I know that there are many aspects of our lives (internal and external factors) that distract us, but I hope that we can do what Dr. James Lang urged educators to do - to create our learning environment as classroom retreats or what Dr. Sabina Vaught described as "retreat spaces." I hope that this course serves as a retreat where we can interact with each other and build on our collective wisdom.[2]

We will conduct most of our work in the discussion forums, but you are encouraged to communicate privately with the instructor via email. I will also use the announcement tool to disseminate course-related information. The assignments in this course consist of discussion forums and reflection activities to enable us to share and discuss our insights, ideas, strategies, and resources in the form of instruction-student produced content and/or external resources such as articles, podcasts, TedTalks, blogs, and YouTube videos, etc.

Inclusion and Diversity

The course aligns with the School of Education's mission to ignite learning and deliver a respective, inclusive, and equitable learning experience. We behave professionally, and we communicate mindfully while feeling free to share contrasting viewpoints and ideas. We create an open learning environment for students from diverse backgrounds and perspectives. The diversity denoted by the intersections of race, gender, disability, sexuality, age, socioeconomic status, ethnicity, and culture that we all bring to this course is advantageous in serving as a strength and resource in our learning community.

"As the course instructor, I am committed to pedagogy that is anti-racist, non-sexist, non-classist, non-heterosexist, and non-gender-normative. This includes fostering an environment that is as safe and inclusive as possible. I intend to name and correct any actions on my part that fall short of these commitments as best as possible.

The University of Pittsburgh prohibits and will not engage in discrimination or harassment based on race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran. The University is committed to creating a learning environment that is inclusive of all races, genders, socioeconomic statuses, religions, sexual orientations, nationalities, and languages." (Roop, L., 2020).

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[2] (Source: Cassie Quigley syllabus)

In particular, we are committed to including the voices of minoritized groups in this class, including those of womxn and other people of color, transgender people, LGBTQIA+ people, non-Christian people, non-US citizens, and those who speak multiple languages. If you feel uncomfortable due to your social identities and background or how they are perceived, please let us know. If you do not feel comfortable talking with the instructors, you can contact the [Office of Equity, Diversity, and Inclusion](#).

Preferred Names and Pronouns: You can use the NameCoach feature in Canvas to indicate your preferred pronoun. You can [Use NameCoach with Canvas](#) to add your pronouns.

Attendance and Observance of Religious Holidays

Pitt guidelines on class attendance and observance of religious holidays:

- "The observance of religious holidays (activities observed by a religious group of which a student is a member) and cultural practices are an important reflection of diversity. As your instructor, I am committed to providing equivalent educational opportunities to students of all belief systems. At the beginning of the semester, you should review the course requirements to identify foreseeable conflicts with assignments, exams, or other required attendance. If at all possible, please contact me (your course coordinator/s) within the first two weeks of the first class meeting to allow time for us to discuss and make fair and reasonable adjustments to the schedule and/or tasks." *From Faculty Assembly, December 2020*
- We interpret this language to apply to cultural and spiritual observances, feasts, dances, ceremonies, etc., not covered by colonial notions of religion and/or culture.
- Please notify me in advance of any anticipated absences related to the guideline

Late Submission

All assignments have due dates and times to keep us on track in the course. If you need an extension, please let me know as soon as you can.

Plagiarism and Academic Integrity

Please review the [University of Pittsburgh's Policy on Academic Integrity](#).

Disability Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, at 412-648-7890 or 412-383-7355 (TTY) as early as possible, but no later than the fourth week of the term or visit the [Office of Disability Resources and Services](#) website as early as possible, but no later than the 4th week of the term. The DRS will work with you to provide accommodations.

NOTE: We recognize that while institutional resources can be useful and important support, interacting with the university can at times be experienced as an invasion of privacy or a source

of distress. If you are uncomfortable interacting with the university, please feel free to communicate with us directly about what would be helpful to your learning and participating in the community of the course (Source: Sabina Vaught).

Please review the [University of Pittsburgh Non-Discrimination Policy](#)

Pitt single-occupancy restroom map and information: https://www.studentaffairs.pitt.edu/lgbtqia/single-occupancy-restrooms/

Accessibility

Canvas is ADA Compliant and has fully implemented the final accessibility standards for electronic and information technology covered by Section 508 of the Rehabilitation Act Amendments of 1998. Learn more about [Canvas accessibility statement.](#)

Sexual Harassment

The University of Pittsburgh is committed to maintaining a community free from all forms of sexual harassment. Sexual harassment violates University policy as well as state, federal, and local laws. It is neither permitted nor condoned. It is also a violation of the University of Pittsburgh's policy against sexual harassment for any employee or student at the University of Pittsburgh to attempt in any way to retaliate against a person who makes a claim of sexual harassment. Any individual who, after thorough investigation and an informal or formal hearing, is found to have violated the University's policy against sexual harassment will be subject to disciplinary action, including, but not limited to, reprimand, suspension, termination, or expulsion. Any disciplinary action taken will depend upon the severity of the offense. For more information, see [this Web site](#).

Please review in detail the Course and University policies page in the "Start Here" module in Canvas. In addition, please review the page titled Relational Responsibilities.

REQUIRED MATERIALS:

We will read a number of articles, book chapters, and also engage with multimodal content including videos, podcasts, blogs, which will be available on Canvas. **Always refer back to Canvas for what's coming up from week to week that is where the most up-to-date content will be.**

Some additional/optional suggested books and resources for your background reading:

Bailey, K., & Jakicic, C. (2011). *Common formative assessment: A toolkit for professional learning communities at work*. Solution Tree Press.

Brookhart, S. M. (2015). Performance assessment: Showing what students know and can do. West Palm Beach, FL: Learning Sciences International.

Watanabe, M. (Ed.). (2012). *" Heterogenius" Classrooms: Detracking Math and Science, a Look at Groupwork in Action*. Teachers College Press.

National Research Council. (2001). *Knowing what students know: The science and design of educational assessment*. National Academies Press.

National Research Council, & Mathematics Learning Study Committee. (2001). *Adding it up: Helping children learn mathematics*. National Academies Press.

Links to relevant standards:

National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. National Academies Press. https://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts

ISTE Standards: STUDENTS. ISTE. https://www.iste.org/standards/iste-standards-for-students

ISTE Standards: TEACHERS. ISTE. https://www.iste.org/standards/iste-standards-for-teachers

ISTE Standards: EDUCATION LEADERS. ISTE. https://www.iste.org/standards/iste-standards-for-education-leaders

ISTE Standards: Computational Thinking. ISTE. https://www.iste.org/standards/iste-standards-for-computational-thinking
K–12 Computer Science Framework. (2016). Retrieved from http://www.k12cs.org

Common Core State Standards Initiative. (2010). Common Core State Standards for Mathematics. Washington, DC: National Governors Association Center for Best Practices and the Council of Chief State School Officers. http://www.corestandards.org/

Additional Resources

Pitt Writing Center

I highly encourage you to take advantage of the writing center. You may schedule an appointment online, but I called, and they suggested that you give them a call to schedule a Zoom appointment with them for. They can be reached at (412) 624-6556 or via web: https://www.writingcenter.pitt.edu/graduate-services. Make sure you sign up with a *faculty* member for feedback session.

APA Formatting

You are required to use APA Formatting for all major assignments. This is a useful resource.

IL 3476 SPRING 2024 | SCHEDULE OF TOPICS:

Below are the broad topics (exploring assessment, formative assessments, summative assessments, alternative assessments, teacher evaluation) that we will explore in the class. Specific readings and materials can be found in Canvas.

Exploring Assessment		
Class	Topic	Assignments
Week 1 Jan 8th – 14th	Exploring Foundational Ideas	*Synchronous class on Jan 13th*
Week 2 Jan 15th – 21st	Cultivating STEM identities	Discussion week 2 due on Jan 21st
Week 3 Jan 22nd – 28th	Assessing Proficiency and Practice	Discussion 3 due on Jan 28th
Week 4 Jan 29th – Feb 4th	Tracing Equity in Education and Assessment	*Synchronous class on Feb 3rd* Assignment 1 due Feb 2nd
Week 5 Feb 5th – 11th	Problem Posing	Discussion 5 due Feb 11th
Week 6 Feb 12th – 18th	Countering traditional narratives around Assessment	Discussion 6 due Feb 18th
Formative Assessments		
Week 7 Feb 19th – 25th	Assessment for Learning	Discussion 7 due Feb 25th
Week 8 Feb 26th – Mar 3rd	Formative Assessment and Learning Progressions	*Synchronous class on Mar 2nd* Assignment #3 part A due Mar 1st
Week 9 Mar 4th – Mar 9th	Peer Assessment and Review	Discussion 9 due Mar 9th
SPRING BREAK (Mar 10th – 17th)		
Summative Assessments		
Week 11 Mar 18th – 24th	Summative assessments in classrooms and systems	Weekly task due Mar 24th
Week 12 Mar 25th – 31st	Performance assessments	Weekly task due Mar 31st

Week 13 Apr 1st – 7th	Large-scale assessments and policy	*Synchronous class on Apr 6th* Assignment #3 part B due Apr 5th Weekly task due Apr 7th
Week 14 Apr 8th – 14th	Validity and bias	Weekly task due Apr 14th
Teacher Evaluation		
Week 15 Apr 15th – 21st	Assessments and teacher evaluation	Final Assignment #3 due Apr 26th Weekly task due Apr 21st