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Addressing Grand Challenges in Assessment: Assessment Professionals, Educational Developers, and Faculty Cooperate to Increase Equity and Rapidly Improve Pedagogy

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Abstract
In this paper, we explore the types of collaboration between assessment professionals, educational developers, and faculty members that are required to successfully address the grand challenges in higher education assessment. We examine how these stakeholders can work together to increase equity, measure learning over time, and create rapid and equitable improvements in pedagogy through increased use of data disaggregation, improved communication, use of emerging technologies, student self-assessments, ePortfolios, and professional development. We conclude by emphasizing the importance of sustained collaboration between assessment professionals, educational developers, and faculty members to ensure equitable and effective learning experiences for all students.

Keywords
assessment, equity, pedagogy, measurement, educational development

Introduction

Kinzie et al. (2019) noted that the distance between the work of educational developers and assessment professionals has narrowed. A key event that brought these groups together was the introduction of backward design, which encourages educators to begin instructional design by identifying desired student learning outcomes (SLOs) and then working backward to create a purposeful and effective learning experience for students aligned with those outcomes (Wiggins & McTighe, 2005). As SLOs became central to the work of educational design, educational developers increasingly became engaged in supporting high-quality assessment of student learning (Beach et al., 2016; Sorcinelli et al., 2006). Educational developers have also become more focused

on curricular mapping and alignment both within and between courses (Sorcinelli et al., 2006), resulting in increased participation in assessment organizations.

Concurrently, assessment professionals have embraced a substantive transition from a compliance-driven mandate to one centered on assessment for improvement (Jankowski et al., 2018). A focus on assessment for improvement has increased the extent to which assessment professionals work with educational developers and faculty members to consider ways in which assessment findings could be addressed through pedagogical changes. The growing overlap in mission has eroded the traditional boundaries between assessment professionals and educational developers, ushering in more integrated methodologies to advance student learning. It has also created some growing pains as distinct offices learn to cooperate and collaborate effectively.

The readiness of assessment professionals to engage more actively in educational development work was evident in their enthusiastic responses to the Grand Challenges in Assessment in Higher Education Project (Grand Challenges Project). Singer-Freeman and Robinson (2020a, 2020b) identified a strong consensus among assessment professionals around addressing three grand challenges: 1) Using assessment findings to increase equity, 2) Using assessment findings to create rapid and equitable improvements in pedagogy, and 3) Making assessment findings actionable and visible to drive innovation. Interestingly, challenges two and three are also discussed actively in the educational development literature (Brugstahler, 2020; Dziuban et al., 2017; Hogan & Sathy, 2022; Phuong et al., 2017; Walkington, 2013). Importantly, successfully addressing these challenges requires collaboration between educational developers, assessment professionals, and faculty members.

Over the past four years, the Grand Challenges Project has galvanized the assessment community to bring about meaningful change. The project has involved over 400 volunteers including assessment professionals, educational developers, faculty members, administrators, students, and representatives from higher education organizations. The work of these volunteers is overseen by an advisory board with representatives from ten national endorsing organizations. After a rigorous process of peer and advisory board review, the project published three strategic plans for improvement that include national and local objectives, tactics, and measures (Grand Challenges in Assessment, 2021a, 2021b, 2021c).

In this article, we describe ways in which collaboration between assessment professionals, educational developers, and faculty members is essential to successfully address the first two Grand Challenges by increasing the use of high-quality assessments that can increase equity and support rapid pedagogical improvements in higher education. The goal of this paper is to highlight strategies used to increase equitable assessment practices and support rapid pedagogical improvements in higher education from the work of the Grand Challenges in Assessment project. We begin by sharing ways in which revisions to assessment tools and practices with support from large language models and the examination of biased grading distributions through data disaggregation can support increased equity. We then consider ways in which improving measurements of learning can speed pedagogical improvements. We discuss a range of ways we can focus measurements more tightly on in-class learning, including the use of aligned assessments across a curriculum, the examination of data collected in course management systems, self-assessments of changes in knowledge, and ePortfolios or comprehensive learners' records.

Through each of these examples, we highlight ways in which cooperation between assessment professionals, educational developers, and faculty members is essential.

Potential Strategies and Improvements

Effective Integration of Equity Practices into Assessment

One route to increasing equity in higher education is to revise assessment practices to remove bias. The Grand Challenges Project encourages campuses to create inclusive language strategies for assessment communications, redesign Student Learning Outcomes (SLOs) to describe expected learning in unbiased ways that can be understood and demonstrated by all students, review assessment procedures with an equity mindset, and evaluate learning using equitable measures (Phillips et al., 2023). These tasks will be most effectively accomplished by jointly sponsored sessions in which assessment professionals provide content expertise on the development of assessment instruments and assure alignment between institutional, program, and course SLOs, faculty members reconsider SLOs and assessment tasks through an equity lens, and educational developers provide instructional support for course content development.

Using Data Disaggregation to Increase Equity

A second tactic to increase equity through assessment is the use of data disaggregation, which can reveal instances in which institutions and individual classes are failing to educate minoritized students (Hobbs et al., 2021; Milligan et al., 2021; Moreno & Song, 2021; Phillips et al., 2023; Singer-Freeman et al., 2022). An equity gap describes a distribution of grades in which students from minoritized groups are under-represented among high course grades and over-represented among low course grades. Disaggregation of grades and performance data on different types of assignments allows for a nuanced understanding of the diverse learning experiences of various student groups and can reveal inequities masked by traditional reporting practices. (Hobbs et al., 2021; Singer-Freeman et al., 2019; Singer-Freeman et al., 2022). However, the effective use of data disaggregation to increase equity requires a collaborative effort between assessment professionals, faculty members, and educational developers. Empowering faculty members to use data effectively in their teaching is essential to maximizing its impact on student learning. Assessment and institutional research professionals can provide faculty with data and data visualization tools. They can teach faculty to interpret data to identify meaningful differences in learning achievement among different students: equity gaps. Once gaps are identified, educational developers can train faculty members to adapt curricular and co-curricular strategies to reduce equity gaps and can help faculty members implement more equitable grading practices, such as those championed by Feldman (2018).

Artificial intelligence tools such as ChatGPT can speed equity work by providing feedback and identifying potential features of assessments and communications that might cause inequities or reviewing materials from the student perspective. For example, AI-powered tools can help instructors identify and address accessibility issues in their communication materials by detecting biases in language and suggesting alternative phrasing (Singer-Freeman et al., 2023). AI can also review lecture notes, taking the perspective of an international student, a student with a learning disability, a student from an underrepresented ethnic minority group, or a novice student, and make suggestions of places that would benefit from more detail or references to prior learning.

The Center for the Advancement of Teaching at Wake Forest University integrated AI tools into its course design institute and found that when asked to review SLOs for bias and alignment, it helps faculty progress more quickly toward the creation of equitable learning outcomes. The suggestions that emerge from AI rarely become the final version of a learning outcome. However, AI can review SLOs to suggest ways to decrease biased measurements, increase their accessibility to students, and increase their alignment with other program or university SLOs (Singer-Freeman et al., 2023). Faculty report that the suggestions can be a useful starting place as they consider the improvements they wish to make.

To ensure AI is used effectively and ethically to optimize learning, collaboration between faculty, educational developers, and assessment professionals is necessary. Assessment professionals can collaborate with faculty to analyze student performance data to identify where AI-based suggestions for new teaching techniques or assignment tweaks can be most impactful. Additionally, they can evaluate the effectiveness of AI-driven interventions and provide feedback to faculty on how to refine their use of these tools. Educational developers can work with faculty to understand their specific needs and challenges and identify how AI tools can best be integrated into their instructional practices. They can also design professional development workshops and resources that equip instructors with the skills and knowledge needed to use AI tools effectively.

Because equity work cannot be accomplished without collaboration, it relies on the development of cooperative and trusting relationships between offices of assessment, institutional research, educational developers, and faculty. Common roadblocks to progress include institutional research professionals' concerns about data privacy and faculty concerns about the negative impact on promotion and tenure. Successful efforts are most likely to result from planning teams with representation from each group of stakeholders, who are guided by policies to protect student privacy and faculty promotion and tenure. An example of one small successful effort can be seen at the University of North Carolina at Charlotte. The Office of Assessment and Accreditation offered a faculty learning community over a two-year period during which faculty were provided with disaggregated data (provided by institutional research) that revealed assignments in their classes for which equity gaps existed. Once the equity gaps were identified, faculty received training on the use of culturally relevant methods of assessing student learning from an assessment professional with experience in educational development. The faculty made changes in their courses and received support from assessment professionals as they re-evaluated their courses for the presence of equity gaps the following year.

Using Assessment Findings to Support Rapid Improvements in Pedagogy

In addition to encouraging changes in teaching that will increase equity, the Grand Challenges Project also seeks to increase the extent to which measures of student learning are used to improve pedagogy more broadly. To learn more about instances in which faculty make pedagogical changes, we interviewed faculty members from a range of different institutions (See faculty showcases at https://tinyurl.com/eaxnvk35). We found that faculty members make three types of changes to pedagogy: rapid, reactive, and proactive. Rapid changes occur during a course when formative assessments reveal a gap in student understanding or skill development and the faculty member makes an adjustment to planned learning activities. After a course is completed, the faculty member analyzes multiple sources of information, including summative assessment data, student feedback, and their own observations. They then decide which rapid changes made during

the course should remain in place during the next course delivery and consider other changes to make in future course offerings. We classify these as reactive changes because they are based on a systematic review of data. Finally, instructors make proactive changes to courses after learning about a new technique or pedagogical approach through professional development if they believe this new technique might improve their course.

All three types of changes are valuable and benefit from collaboration. To support reactive changes, assessment professionals can help instructors develop assessment instruments and analyze assessment data. On the other hand, rapid and proactive changes most often rely on support from educational developers, who provide instructional design support and offer pedagogical training. See examples in Hill (2024a, 2024b). A collaborative approach to pedagogical improvements is essential to overcome the potential challenges of a more compartmentalized approach in which educational developers focus primarily on course design and assessment professionals focus primarily on outcomes. When offices of assessment have overly restrictive assessment plans that require common artifacts across many classes, this can interfere with a faculty member's ability to make a rapid change. Collaborating with educational developers, assessment professionals can facilitate periodic reviews of the common assignments required for assessment. Conversely, if a faculty member makes a change that improves teaching but lacks a well-thought-out evaluation plan, this can cause disruptions to assessment cycles and make it difficult for the faculty member to evaluate whether the change resulted in the desired improvements.

Measuring Learning Rather than Knowledge to Speed Pedagogical Improvements

Too often, we fail to differentiate students who do well in classes because of prior knowledge from those who do well because they received effective teaching. The Grand Challenges in Assessment project proposes that to speed the pace of improvements in pedagogy and ensure that the changes we make lead to equitable learning gains, we must find ways to improve our measurement of changes in students' knowledge over time and across contexts (Garcia et al., 2021; Singer-Freeman, 2024). Long-term tracking of performance provides valuable insights into the effectiveness of pedagogical strategies and curricular changes. This is the sort of knowledge we must be able to access to make effective changes in pedagogy and to sunset ineffective practices. The measurement of learning over time is a difficult endeavor, and implementation of any of the possible tactics relies on collaboration between assessment professionals, educational developers, and faculty members.

To effectively measure changes in learning, it is essential to create an aligned assessment structure: institutional and program SLOs must align with course SLOs, signature assignments, and program-level evaluation criteria. While assessment professionals work with educational developers to set up aligned templates for assessment reporting, educational developers must work with instructors to make proper alignment and use of programmatic and institutional-level templates in individual courses. This alignment occurs by linking assessment tasks with SLOs and evaluation criteria and creating differentiated feedback for students performing at different levels. After aligned systems are created and data generated, both assessment professionals and educational developers will be needed to support faculty members as they access and interpret course- and program-level SLO data. Once faculty members gain insights into gaps in student learning, educational developers can support faculty members in adapting pedagogies to address these gaps.

An example of a departmental effort to create an aligned system of SLO tracking and measuring learning over time in an undergraduate major can be seen in Jarchow et al. (2018). This paper describes the process by which a faculty advisory committee developed SLOs for a new major in sustainability. Curriculum mapping and course syllabi were then used to evaluate individual course coverage of each SLO, and improvements in student learning were identified by comparing learning demonstrated in an introductory course to the learning demonstrated in a capstone course. Once an aligned assessment structure is created, technology can be used to support longitudinal measurement of learning.

Harnessing Technologies to Measure Learning and Improve Pedagogy

Course management systems and adaptive learning platforms generate extensive datasets, including individual assignment grades, task duration, and resource utilization. These datasets offer institutions opportunities for nuanced examinations of learning evidence, including the impact of prior learning on current learning. A high level of collaboration is needed to effectively analyze and derive meaningful insights from the complex data generated by these platforms (Mitra, 2022). Assessment or institutional research professionals bring expertise in psychometrics and statistical analysis, enabling them to design and implement robust data analysis models and create aligned assessment plans. Kansas State University provides an example of how assessment professionals provide resources and training to help faculty understand assessment data for both course and program-level assessment (see https://www.k-state.edu/assessment/training/canvas/). However, a collaborative approach is required to support the creation of models that identify meaningful patterns and individual differences in learning needs, which faculty members can use to inform improvements in teaching. Even without powerful technological support, there are some simple ways in which measurement of learning can be harnessed to improve pedagogy.

Using Self-Assessments of Learning to Improve Pedagogy

Engaging students in reflective practices (Bolton, 2018) enhances the learning process by fostering self-awareness and ownership of their educational journey (Berry & Singer-Freeman, 2023; Hodgson et al., 2022; Singer-Freeman et al., 2021). Self-assessments of learning also provide useful information about changes over time when students are asked to reflect on ways in which their understanding, knowledge, or skills have improved (Berry & Singer-Freeman, 2023; Singer-Freeman et al., 2021; Singer-Freeman et al., 2022). Collaboration between assessment professionals, educational developers, and faculty members is essential to incorporate self-evaluation strategies into pedagogy effectively and to provide faculty members training on best practices in utilizing student self-assessment for assessment of changes in knowledge. Assessment professionals can support the design of self-assessment tools aligned with learning outcomes and reporting templates that encourage meaningful insights on growth rather than achievement. Simultaneously, educational developers can support the integration of new tools into the educational framework, designing user-friendly interfaces and fostering an environment that encourages students to actively participate in self-reflection. With strong support from assessment professionals and educational developers, faculty members can integrate reflective assessments into classes in ways that offer improved learning and improved measures of learning.

An example of this can be seen in Singer-Freeman et al. (2021). This study describes a collaborative effort between faculty, students, and an assessment professional to assess learning

and improve a program. A student intern investigated junior and senior sociology majors' views of their learning in the major. In surveys and focus groups, students reflected on their learning, identifying areas of strength and weakness. Results revealed that students valued some learning outcomes more than others and reported different patterns of improvements in learning for different outcomes. The project benefited students by encouraging reflection on their learning, faculty by providing valuable insights for program improvement, and the student intern by gaining research experience and a deeper understanding of assessment and learning. After identifying gaps in the curriculum, program faculty received support from educational developers as they made improvements.

Using ePortfolios or Comprehensive Learner's Records to Measure Learning and Improve Pedagogy

ePortfolios or Comprehensive Learners Records offer a more comprehensive approach to capturing and reflecting on student learning experiences over extended periods of time. Designed to be tools for documentation and reflection, ePortfolios support self-evaluative abilities and serve as a dynamic record of a student's educational journey (Singer-Freeman & Bastone, 2018; Singer-Freeman et al., 2022). Comprehensive ePortfolios can be established around program or institutional learning outcomes and track students' progress around these outcomes over the course of their education. An ePortfolio provides both a compilation of artifacts a student selects to document, the acquisition of a desired learning outcome, and the student's reflection on their learning around this outcome. Integrating ePortfolios into pedagogy requires collaboration between assessment professionals and educational developers, particularly when institution-wide programs are implemented around specific programs, such as general education or a capstone project. ePortfolio curricula are most successful when educational developers are fully involved in promoting adoption, providing faculty members with training, and developing ongoing technological and pedagogical support. They contribute expertise in instructional design, technology integration, and pedagogical strategies that will ensure alignment with educational goals. Assessment professionals bring critical insights into designing evaluation frameworks that focus on change over time rather than snapshot reporting from a single cohort. Together, educational developers and assessment professionals can articulate assessment criteria and devise authentic assessment methods that align with the specific goals of ePortfolio implementation. This cooperative effort ensures that the ePortfolios not only showcase student work but also serve as reliable tools for evaluating and documenting learning over time. Once established, ongoing communication between educational developers and assessment professionals is essential to ensure that identified gaps in learning are addressed through thoughtful curricular and pedagogical improvements.

An example of how a collaborative effort can result in a programmatic ePortfolio program that supports improvements in pedagogy can be seen in Crowell and Calamidas (2016). This paper describes the implementation of a programmatic ePortfolio built around 13 competencies related to public health program goals. Using student reflections on learning and faculty assessments of learning, they found that assessments of learning were consistent, with faculty rating students slightly lower than students rated themselves. Importantly, the systematic review of learning over time in individual students, which was made possible by ePortfolios, identified areas for improvement, such as writing, oral communication, and research methods. In response, faculty implemented changes to curriculum, course offerings, and services to address these needs. The

study highlights the potential value of e-Portfolios as a tool for assessment of learning that can support pedagogical improvement.

Conclusion

The Grand Challenges Project has created a repository of strategies to guide improvement that requires collaboration between assessment professionals, educational developers, and faculty members to increase equity, measure learning, and rapidly improve pedagogy (Singer-Freeman & Robinson, 2020a, 2020b). By leveraging our respective expertise, we can integrate principles of equity into assessment design, promote inclusive language strategies and unbiased assessment practices, disaggregate data to uncover hidden inequities, help faculty identify needed rapid and structural changes to the course, leverage technology, and implement powerful measures of learning using student self-assessment and ePortfolios. Fruitful collaboration can foster accurate tracking of changes in student knowledge over time and data-driven instructional interventions. Through collaboration, assessment professionals, educational developers, and faculty members can harness the power of assessment to drive meaningful change in higher education, ensuring that all students have access to equitable and effective learning experiences.

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