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Grand Challenges Initiative:

Producing Actionable and Accessible Results that Drive Innovation and Improvement

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Abstract: To produce actionable and accessible assessment findings that drive innovation and improvement, strategies should be implemented at the national and local level throughout each stage of the assessment process. Fostering these findings is the need to authentically engage stakeholders throughout the assessment process. Done well, the engagement of stakeholders' aids in the creation of relevant outcomes, and, importantly, sharing results using strong data visualization techniques with data storytelling elements. This paper is a summary of the strategies and tactics compiled to address the Grand Challenges in Assessment initiative. The authors listed in this project contributed many hours of discussion, literature review, professional scholarship, and shared personal experiences at their institutions. The product is a collaboration that cannot be attributed to one person or to rank the efforts of team member contributions. The first two listed authors co-chaired the group, and the team members are listed as authors in alphabetical order.

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Introduction

In the grand challenges facing assessment, a portion of the strategic plan focuses on “*producing actionable and visible assessment findings that drive innovation and improvement*” (Singer-Freeman & Robinson, 2020). This paper will summarize the work of higher education professionals from across the United States seeking to create a strategic plan capturing how national and local entities could advance the field of assessment by producing actionable and visible findings. For the purpose of this article, the strategies outlined to produce actionable and visible results will be categorized into the stages of the assessment process and grouped into generic categories: planning, collecting, and reporting.

Assessment Process

The role of assessment in higher education has grown significantly since the 1980s due to the

importance associated with the practice in accreditation compliance reports and the call for increased accountability in higher education from the Spellings Commission. Many institutions began institution-wide assessment processes to maintain compliance with accreditors. Over time, institutional leaders began to see the power of assessment as an institutional effectiveness tool, as well as an instrument to guide curriculum development and make data-informed decisions to improve student learning and student experiences. More recently, as the field has matured, outcomes have become more relevant, and the value of assessment has shifted from being compliance-driven toward sustainable institutional effectiveness processes producing relevant findings guiding innovative learning improvement and informed decision making (Blaich & Wise, 2018; Pasquerella, 2018).

Basis for Assessment Findings in Higher Education

To effectively drive innovation and improvements, assessment work must progress through multiple stages of continuous quality improvement where one would identify the causes of gaps in student learning and success, identify evidence-informed solutions, determine whether selected interventions are implemented correctly, and measure the extent to which the interventions drive improvements (Eubanks, 2017; Fulcher, Smith, et al, 2017). These steps happen in a cyclical assessment cycle of planning, data collection, and reporting as illustrated in *Figure 1* which begins with identification of outcomes to be assessed in an

initial “planning phase.” During this phase, outcomes are identified aligning with program outcomes with means of assessment designed to assess the outcome. In the “collecting phase,” implementation fidelity of outcomes is collected with the actual results of the measured outcome. In the “reporting phase,” the analysis of data compared to current and prior year assessments is conducted and shared with relevant stakeholders. James Madison University’s (JMU) seven-stage continuous assessment cycle is used as the outer ring of the assessment model in *Figure 1*. For ease of discussion, the authors of this article grouped JMU’s model of assessment into three main phases of assessment: planning, collecting, and reporting.

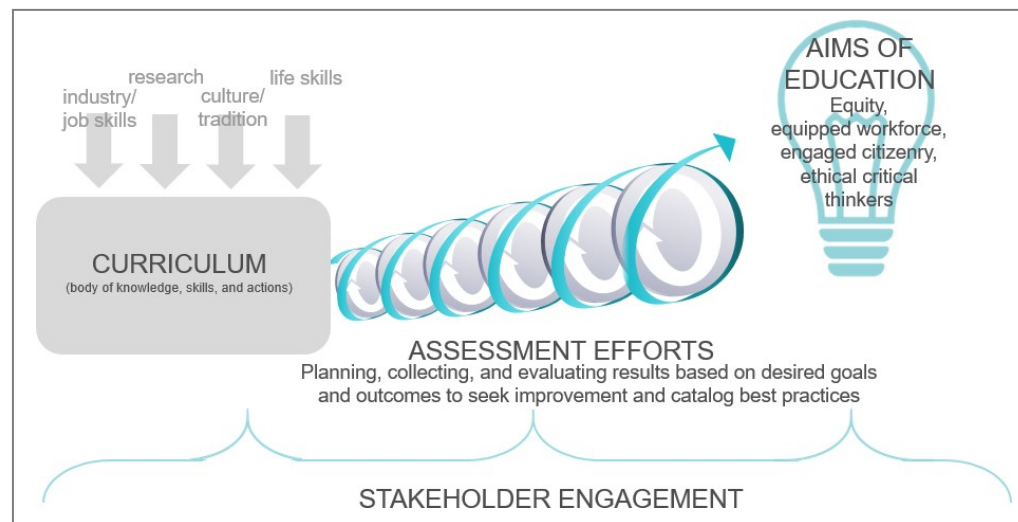
Figure 1

Program-level Assessment Cycle in Higher Education, based on an assessment model from James Madison University



This assessment cycle occurs on a regular basis to construct longitudinal data. In each cycle, reflection on results from current and prior year performance drives planning of the next years’ processes that will remain or change. This recurring cyclical process is illustrated in *Figure 2* as a spiral. The continuous quality improvement spiral of program-level assessment efforts repetitively measure performance of stated outcomes based on the curriculum in higher education as represented in the middle of *Figure 2*.

One assessment cycle as seen in *Figure 1*—planning assessments, collecting data, analyzing and reporting outcome performance—happens in one circle of the spiral. The spiral continues to get larger representing improvements implemented from data-informed, actionable, results-driven plans. The result of continuous quality improvement in program-level assessment is the attainment of a few of the aims of higher education: equity, equipped workforce, engaged citizenry, and ethical critical thinkers. Stakeholder engagement is critical throughout the entire process.

Figure 2*Role of Program-level Assessment in Higher Education***Curriculum**

The left side of *Figure 2* labeled “curriculum” represents the basis for assessed outcomes. For instructional programs, the effectiveness of curriculum is measured at the program level using *program learning outcomes* or at the course or student level using *student learning outcomes*. Instructional program review processes measure success across operational outcomes of performance using metrics such as retention rate, completion rate (graduation rate or average time to degree), job placement rate, licensure/certification rate, or publication rate. For academic support services, student support services, or other administrative units, measuring effectiveness the “curriculum” of units encompass effectiveness, efficiency, and quality metrics which may include the number of students served, the amount of loan aid dispersed, the average time to process a transcript request, or the level of student satisfaction with a service.

Assessment Spiral of Continuous Quality Improvement

Assessment efforts are repeatedly measured to present a longitudinal analysis of results in order to confirm findings. Each assessment cycle of the assessment spiral (in the middle of *Figure 2*) identifies expected outcomes, assesses the extent

to which the outcomes were achieved, reflects on the analysis of the results compared to previous years, and either documents best practices eliciting excellent results or records action plans designed to make improvements for the future. The purpose of assessment is to hold higher education accountable to the overall desired outcome of higher education: equity, equipped workforces, engaged citizenry, and ethical critical thinkers (right side of *Figure 2*).

Authentic Stakeholder Engagement

Underlying and informing the entire assessment spectrum in *Figure 2* is authentic stakeholder engagement. Stakeholders should be engaged in the curriculum development phase, assessment process, and reporting of results. Stakeholders include internal and external constituents. Internal stakeholders include higher education professionals (faculty, staff, and administrators) and students (current and alumni). External stakeholders may include industry representatives, programmatic accreditors, community members, and parents.

Producing findings that drive innovation and improvement requires a focus on authentic stakeholder involvement (Moreno & Song, 2021). It is precisely through gaining different perspectives on student learning and experience from a variety of stakeholders that some assessment findings

come to life. Faculty and administrators are indeed important stakeholders, yet faculty alone cannot assess the effectiveness of student learning beyond the classroom experience without engaging additional stakeholders to help gather assessment evidence. To have authentic stakeholder involvement, you must identify and include those who are impacted in various ways by the teaching in higher education institutions: employers; potential, current, and past students; advisory boards/industry leaders; customers served by skilled students; policy-makers; education funders; education-related entities; departmental peers/support staff; etc.

Stakeholders can provide insightful observations, additional data, or simply ask relevant questions. Because of the life engagement with learners inside and outside of educational institutions, stakeholders can be one of the keys to driving innovation and improvements through the whole assessment cycle. External stakeholders can share the future desired outcomes of a respective industry toward creating/revising outcomes, introduce technologies that can be integrated into the curriculum, offer new ways of delivering new content, share best practices from the field/industry, and help identify gaps exposed by assessment data (Moreno & Song, 2021).

Goal 1: Make Assessment Findings More Actionable

The strategies related to making assessment findings more actionable in order to produce innovations and improvements in higher education entail ensuring conditions which foster equitable participation, carefully selecting data and evidence to present for analysis, and making sure the correct stakeholders are engaged in decision-making and result-sharing.

Improve Quality of Assessment Data

The first objective is to make assessment findings more actionable is to improve the quality of assessment data throughout the institution and amidst all stages of the assessment cycle: planning, collecting, and reporting. At the beginning of the assessment cycle, planning occurs by determining the assessed outcomes and identifying the means of

measuring the outcomes. During the “planning” phase, authentically engaging with stakeholders is important to make sure outcomes are relevant and aligned with the curriculum and will support the aims of education. Outcomes should be developed in relevant categories such as effectiveness, efficiency, and quality (Dear, 2020).

Effectiveness measures in instructional programs encompass performance on student learning outcomes and operational measures such as completion rates. In student support service areas or administrative units, effectiveness measures may include the number of services provided or the number of students served. Efficiency measures incorporate financial metrics to demonstrate the cost per student served, the number of staff per student, or the amount of time to process a service. Quality metrics contain information related to student perceptions of satisfaction or qualitative feedback on the value of the service provided. Quality metrics may include student evaluations of courses or faculty or student satisfaction with services.

Also, within the “planning” phase of the assessment process, improving the quality of assessment data at the institutional-level involves data governance processes ensuring gathered and reported data accurate. Having consistent data definitions and validated data sources justifies the reliability of data used in reports.

During the “collecting” phase of the assessment cycle, assessment results should be collected using the means of assessment outlined in the planning phase. Additionally, the extent to which the outcome was implemented should also be collected. This process of determining how well an outcome was implemented is called ‘implementation fidelity.’ Generally explained, if results for an outcome are weak because a teaching strategy was unsuccessful with students, then revise the strategy; however, if the strategy was not implemented appropriately, then the strategy should be reassessed with a different implementation plan.

Implementation fidelity describes the extent to which educational interventions are executed as intended (Smith, et al, 2017). Knowledge of how well an objective was implemented equips educators and practitioners to understand why improvement efforts did not work. Although fidelity data are imperative for assessment best practices, the collection, analysis, and integration of implementation fidelity data are completely absent from most institutional and programmatic assessment cycles and their assessment story (Smith, et al, 2017).

During the “reporting” phase of the assessment process, engaged stakeholders should receive results in a clear and accessible manner. The data can be communicated via traditional reports, data dashboards, data storytelling, or data visualizations in an attempt to democratize access and understanding of the data.

Encourage Subject-matter-expert Reviews of Assessment Outcomes

Peer subject matter experts from the same field at like institutions should be used to evaluate the appropriateness of outcomes, measures, and targets. For example, a student financial aid office should have program outcomes evaluated by a peer subject matter expert in the field of financial aid every 3 to 5 years to ensure outcomes are relevant and appropriate to the field. Many administrators or assessment personnel do not have individual unit expertise to realize whether an outcome or measurement is appropriate. Institutions unable to collaborate with peers in a field outside of the institution are encouraged to seek resources like the Council for the Advancement of Standards in Higher Education which recommends common measurements appropriate for academic and student support service units.

Brave and safe spaces to collect and use data

Another tactic to create actionable data, is to design “brave and safe spaces” for faculty to experiment and try out teaching strategies, course structures, and new assignments without fear of negative consequences for early efforts that do not work perfectly or do not work at all (Tucker & Stanny,

2021). At the local level, institutions can enact policies allowing flexibility within promotion and tenure processes that accommodate potential changes in performance scores related to implementing innovative changes within a course. Institutions might consider including notes in the promotion and tenure process related to trying new processes within a course and institutional policies may consider adding additional points for trying new methods or allowing faculty members to redact performance scores for a course under trial methods for one semester. The allotment of notes or scores noting trial processes could help faculty realize administrators are providing a safe zone for exploration of new curriculum and teaching models.

Institutions must create times and places where faculty can gather and engage in unguarded reflection on the strengths and weaknesses in academic programs, if assessment work is to drive incremental improvement in academic programs, teaching, and learning. Assessment evidence can help faculty identify strong performance areas within programs: what students are currently learning and achieving in an academic program (strengths) and where students struggle where concepts and skills representing bottlenecks to learning that delay or derail progression through degree programs (Middendorf, 2017). Higher education personnel wary of how assessment findings may impact performance evaluations can be especially prone to perfectionism. Additionally, some institutional leaders prefer to post successful assessment results in accreditation documentation.

Both processes can lead to artificial use of data collection and analysis of results. Frank discussions about areas in which students encounter challenges (and teaching and learning strategies do not help them overcome these challenges) feel threatening, even more so to faculty who hold high standards for themselves as well as their students. Institutions must create spaces in which faculty can leave their ego at the door and bravely examine programs that are less than perfect (even the most prestigious programs are less than perfect), brainstorm about alternate strategies that aim to help students achieve program learning goals, and develop

platforms for faculty to share failed learning experiences.

Reporting Assessment Findings in Safe Spaces

During the “reporting” phase of assessment, the way the data is analyzed and shared affects future improvements within the program. The way the data is presented and the stakeholders with whom the data is shared can impact the results of other units as well. Sharing successes and failures can help other units learn and replicate success or avoid failures.

Moving from safe spaces to brave spaces is a framework used in social justice facilitation to encourage authenticity in challenging dialogue (Arao & Clemmons, 2013). Assessment work can borrow from this social justice approach by examining how we provide environments which stimulate reflection on promising failure. The term “promising failures” for the purposes of this proposal are those failures that through reflective practice provide rich lessons for teaching, learning, assessment, scholarship and professional development. Failures provide space for innovation better than successes.

Assessment results should be presented in a way to capture the full story of the success or failure of the intended outcome. By telling a story, instead of recording only numeric values, faculty members capture the “why” of what happened in the implementation of the strategy. These stories help capture whether the initiative was successful or not because of the commitment to the initiative (implementation fidelity) or from another reason. When telling “assessment stories” or “data stories,” adding context to the data through the use of descriptive titles and narratives explaining the data makes the data actionable by leading viewers to the message of the data story (Phillips & Horowitz, 2017).

At the national level, the strategic plan asks organizations to support awards for “promising failure stories” to encourage sharing of what colleagues can learn from others’ failure stories during poster presentations.

Goal 2: Make Assessment Findings More Visible

Presenting visually appealing assessment findings in a shared space leads to innovation and improvements in higher education. If assessment findings are only shared with an assessment director or a dean, then the data does not impact other programs or service units at the institution. Colleagues should learn from each other’s successes and “promising failures” and implement the lessons learned into their own practices (Tucker & Stanny, 2021). The strategic plan calls for national organizations and local institutions to provide resources on data visualization and data storytelling techniques to share best practices of how to better communicate with data.

Data Visualization

Data visualization is a way to present data using pictures, graphs, charts, and tables to communicate the message behind numbers. Data presented without visualization is just a series of numbers. Once analysis of data is performed, the key messages from the data should be highlighted using colors, fonts, or graphics to guide viewers quickly through the presentation of the facts (Evergreen, 2017). Many professional resources are already available to institutions about effective data visualization techniques, yet resources like institutional fact books largely remain unedited and lack strong data visualization practices. The strategic plan asks national organizations and regional/state affiliates to promote data visualization strategies in annual meetings and webinars as well as hosting awards and venues within traditional poster presentation space to exhibit examples of strong data visualizations.

Data Storytelling

Telling stories has been a powerful communication tool for centuries as stories are less intimidating than raw facts or themed messages. Children’s literature is particularly powerful because there is a clear theme presented to an audience packaged in a relatable and non-threatening story accompanied with pretty pictures further illustrating a message. Brent Dykes, in his book *Effective Data Storytelling* (2019), explains how narratives, visuals, and data

together can lead to change. Combining the elements of data storytelling together in different combinations produces different effects as illustrated in Dykes' model of effective storytelling.

In the book, *Storytelling with Data*, Cole Knafl (2015) outlines some strategies in effective data storytelling where he asserts data storytellers should combine powerful data visualizations with strong narratives to communicate a data story: understand the context, choose appropriate visual display, eliminate clutter, focus attention on the message, think like a designer, and tell a story. The book contains practical visualization techniques and examples to transform data into powerful data stories.

Venues for Data Visualization and Storytelling Efforts. Effective data visualizations and storytelling narratives can be shared at the national and local level to increase data use and demonstrate superior data communication techniques. At the national level, the strategic plan calls for organizations to present awards for categories such as: "Best Data Visualization," "Best Data Story," "Best Use of Color in a Data Viz," "Best Use of Narrative," and "Best Redesigned Data Element" to encourage institutional research, institutional effectiveness, and assessment professionals to share examples of data communication efforts.

At the local level, institutions should seek to publish data visualizations around campus throughout the

year to tell stories informing students, faculty, staff, and visitors of information needing to be communicated. For example, following a student satisfaction survey, institutions should publish pieces of results presented in visualizations and stories across campus. By presenting different data elements from the same project across campus at the same time, the data is fresh and relevant to viewers.

Another strategy at the national level to encourage data storytelling efforts is to sponsor an "Assessment Week" or "Learning Improvement Week" where schools are encouraged to participate locally and share results nationally via social media and national assessment organization websites. Institutions could produce posters, mini-posters between 1-2 feet wide by 2-3 feet tall, containing stories of learning improvements or promising failures that occurred during the year.

Accomplishing the Aims of Education

Through the strategies and tactics outlined in the grand challenges work on "producing actionable and visible data that leads to innovation and improvement," the writing team hopes to increase the aims of education included in *Figure 2*: equity, equipped workforce, engaged citizenry, and ethical critical thinkers. As assessment professionals seek to improve the effectiveness, efficiency, and quality of education, the student experience and outcomes of education will continuously innovate and improve.

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References:

- Arao, B. & Clemens, K. (2013). From safe spaces to brave spaces: A new way to frame dialogue around diversity and social justice. (135–150) *The Art of Effective Facilitation*, edited by Landreman, Lisa M. Sterling, VA: Stylus Publishing.
- Blaich, C. F., & Wise, K. S. (2011). From gathering to using assessment results: Lessons from the Wabash National Study (Occasional Paper No.8). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Center for Applied Linguistics (2017). Module 5: Impact Stakeholders.

Dear, C.P. (2020, June 8). *Effectiveness, efficiency, and quality of programs and institutions*. [Webinar]

Association for the Assessment of Learning in Higher Education.

https://us02web.zoom.us/j/3UYOEYNHCK9APte6AiM_GMSB3H4NTjw_gTbFHx3NakVzYYCuZ4bgALzkZsb2Kj2f.8WA6Ys_QS8l8QZrf?startTime=1591367235000

Dykes, B. (2019). *Effective data storytelling*. Wiley.

Eubanks, D. (2017). A guide for the perplexed. *Intersection: A Journal at the Intersection of Assessment and Learning*, 4-13.

Evergreen, S. (2017). *Effective data visualization: The right chart for the right data*. Los Angeles: Sage.

Fulcher, K. H., Smith, K. L., Sanchez, E. R. H., Ames, A. J., & Meixner, C. (2017). Return of the pig: Standards for learning improvement. *Research & Practice in Assessment* 11, 10-40.

Knafllic, C.N. (2015). *Storytelling with data: A data visualization guide for business professionals*. John Wiley & Sons.

Middendorf, J. & Shopkow, L. (2017). *Overcoming student learning bottlenecks: Decode the critical thinking of your discipline*. Stylus.

Moreno, K. & Song, X. (2021). Intentional stakeholder engagement that drives innovation and equity. *Intersection: A Journal at the Intersection of Assessment and Learning*, 2(3)

Pasquerella, L. (2018). Planning for America's future: Educating for democracy. *Liberal Education*, 104(1).

Phillips, B.C., & Horowitz, J.E. (2017). *Creating a data-informed culture in community colleges: A new model for educators*. Harvard Education Press.

Singer-Freeman, K., & Robinson, C. (2020, November). *Grand challenges in assessment: Collective issues in need of solutions* (Occasional Paper No. 47). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Smith, K. L., Finney, S. J., Fulcher, K. H. (2017). Actionable steps for engaging assessment practitioners and faculty in implementation fidelity research. *Research and Practice in Assessment*, 12, 71- 86.

Tucker, C.R. & Stanny, C. (In press). Promising failure: Driving innovation by exposing imperfection. *AALHE Intersection*. <http://www.aalhe.org/page/Intersection>

Understanding the assessment cycle. (2021). James Madison University.

<https://www.jmu.edu/studentaffairs/staff-resources/saac/assessment-cycle.shtml>

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