Abstract

Faculty engagement in assessment processes is critical but remains limited, especially in public doctoral research universities. In this article, we propose an engaged assessment model that emerged from our work at a leading doctoral university. Through the engaged assessment process, faculty members are involved throughout, centering on student learning. Using the assessment process of the institution's quality enhancement plan as an example, we detail how the engaged assessment model can be implemented through faculty learning communities. We also elaborate on core activities where faculty members explored assessment design, examined assessment data, and celebrated assessment as scholarship.

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Faculty Engagement in Student Learning Outcome Assessment

The importance of faculty engagement in the assessment of student learning has been widely discussed (Ewell, 2009; Hutchings, 2010; 2016; Jankowski & Marshall, 2017; Middaugh, 2010; Reder & Crimmins, 2018). Kinzie et al. (2019) described the potential of greater integration of assessment and faculty development efforts in promoting a shared institutional commitment to student learning. There is also evidence that higher education institutional assessment is moving beyond the compliance-oriented approach to a more classroom-centered embedded approach (Hutchings, 2010; Kinzie et al., 2019). Instead of centering assessment on institutional compliance of external accountability measures, the classroom-centered embedded assessment approach offers the potential of faculty members being more engaged in institutional assessment design and implementation, as well as involved in using assessment data for curriculum improvement to support student learning.

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However, even while there are more efforts toward classroom-centered assessment, faculty engagement in assessment processes is still limited, especially in public doctoral research universities (Grunwald & Peterson, 2003; Jankowski et al., 2018; Kuh & Ikenberry, 2009; Kuh et al., 2014). Based on a survey involving provosts and chief academic officers at U.S. higher education institutions about assessment activities and how assessment results are used at their institutions, Kuh and Ikenberry (2009) found that four-fifths of provosts of doctoral research universities report greater faculty engagement with assessment of student learning as their leading challenge. Similarly, Kuh et al. (2014) surveyed provosts or their designates at 1,202 institutions regarding assessment activities and how their institutions

use assessment results. Their findings reiterated the importance of faculty's role in assessment and reported public institutions' expressed needs to have more faculty involvement in assessment, increase the use of assessment results, and have more professional development for faculty and staff. A 2018 National Institute for Learning Outcomes Assessment (NILOA) survey also confirmed that provosts of doctoral institutions were more likely to express a desire for increased faculty engagement in assessment than their peers at other types of institutions (Jankowski et al., 2018).

In this article, we propose an engaged assessment model that emerged from our work at a leading doctoral university. We describe the components of the model and provide an example of how this model can be implemented in the higher education context.

"Engaged Assessment challenges traditionally-defined boundaries between instruction and assessment, emphasizing the importance of faculty involvement and design thinking in collecting and analyzing assessment data."

Engaged Assessment

Even though faculty members design and implement the curriculum to support students in achieving specified learning outcomes, not all of them perceive engagement in the institutional assessment process as an integral aspect of their primary responsibilities (Banta & Blaich, 2011). If institutions adopt a traditional assessment model that centers on assessment reporting rather than learning improvement (Hundley & Kahn, 2019), faculty members and assessment professionals may work in isolation and the engagement of faculty in the assessment process may be peripheral and limited.

The ideal assessment process requires expanded faculty engagement and ownership. Inasmuch as assessment informs teaching and curriculum (Angelo & Cross, 1993; Maki, 2010; Suskie, 2014), faculty members have an incentive to be engaged in discussions about assessment. Their experience with evaluating student mastery of content is invaluable in determining methods and criteria for measuring student learning, while their research backgrounds and expertise can be leveraged to promote the scholarship of assessment (AAHE, 1992; Arum & Roksa, 2011; Metzler & Kurz, 2018).

An engaged assessment model challenges the traditionally-defined boundaries between instruction and assessment. Assessment professionals with expertise in assessment design and measurement work collaboratively with faculty members with expertise in the content area and pedagogy throughout the assessment process. Together they engage in ongoing dialogs to negotiate the assessment designs, instruments, and protocols to collect and analyze assessment data. Applying design thinking in the process (Benson & Dresdow, 2014; Brown, 2008), they engage in iterative assessment cycles to not only modify instruction and curriculum based on assessment data but also make assessment adaptations. Through the engaged assessment model, faculty members and assessment professionals develop deeper understandings of the assessment process and outcomes and continue to increase the institutional capacity for assessment and instruction. Table 1 provides a summary that highlights the features of the engaged assessment process.

Table 1
Features of Engaged Assessment

Structure - Boundary	Boundary crossing is encouraged based on individuals' backgrounds, experiences, and interests
Process - Design	Dialog space is created to negotiate meanings among team members
	Assessment designs, instruments, and protocols are emerging and adaptable
Product - Data Use	Iterative assessment circles - Immediate interpretation and use of data directly for program/curriculum and assessment adaptations
	Summative reporting reflects more nuanced contextualized interpretation for program improvement
Sustainability - Mutual Learning	Boundary crossing dialogs provide learning opportunities and capacity building

In this section, we provide the program context and elaborate on the intentionality, process, product, and sustainability of the engaged assessment process at University of North Carolina at Chapel Hill (UNC). We describe core activities where faculty members explored the assessment design, examined assessment data, and celebrated assessment as scholarship through the assessment efforts for the implementation of course-based undergraduate research experiences or "CUREs" as part of the quality enhancement plan (QEP) at the university.

QEP Context

A key component of the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) reaccreditation requirements, the QEP is a plan of action that addresses an "issue that the institution considers important to improving student learning outcomes and/or student success" (SACSCOC, 2020, p. 1). As a leading research university, UNC identified providing meaningful research experiences to undergraduates as a student learning priority (Sathy et al., 2020; 2021).

The QEP and its assessment have been central to transforming undergraduate education at UNC to the point that the effort has been sustained by incorporating many of the findings into the new general education curriculum. UNC's QEP comprises four programs: integrated curricula (co-taught first-year seminars that integrate the arts and humanities with the sciences and support other interdisciplinary connections across campus), Makerspace (engaging students in the design and creation of physical objects to promote creativity, problem-solving, research, and entrepreneurship), research exposure opportunities (building support and infrastructure and learning opportunities to ensure research experiences for all students) and course-based undergraduate experiences or "CUREs" (an introduction to research that engages an entire class in a semester-long, hypothesis-driven research problem). We focus our discussion on the assessment of CUREs in this article.

Structure – Professional Learning Communities

Faculty members from diverse disciplines collaborate in a faculty professional learning community to enhance teaching and learning through the implementation and assessment of course-based undergraduate research experiences (CUREs).

One of the key structures that needs to be in place to support the engaged assessment process is a space where faculty from a variety of disciplinary traditions and assessment professionals with expertise in documenting and reporting student learning can share and collaborate in meaningful ways. Instead of working in separate communities first and then sharing research and assessment outcomes at the end of the process, it is critical that the engagement of all partners is integrated throughout program and assessment discussions.

Building upon the principles of communities of practice (Wenger et al., 2002), a faculty professional learning community (FLC) was formed at UNC focusing on the implementation and assessment of CUREs. An FLC is a variety of community of practice; that is, a group of individuals who share a concern or a passion for an area of practice and learn how to do it better through regular interaction (Cox, 2003; Wenger, 1998). Through FLCs, a group of faculty members engage in a collaborative and sustained program of exploration that enhances the quality of teaching and learning (Cox, 2003; Cox & Richlin, 2004; Huber, 2008; Hutson & Downs, 2015). Participation in FLCs has been associated with faculty becoming more aware and respectful of others' viewpoints, cultures, and learning preferences, as well as increased research and publication in the scholarship of teaching and learning (Cox, 2003).

The FLC for CUREs at UNC included faculty members with differing content and professional expertise. Reflecting the CURE model's origin in the sciences (Corwin et al., 2015), several faculty members from various science disciplines joined the FLC. For example, FLC participants included biology faculty members who designed a seafood forensic lab course to support students' inquiries focusing on food mislabeling (Korzik et al., 2020; Spencer et al., 2020) and chemistry faculty who taught a large-enrollment introductory organic chemistry CURE course (Cruz et al., 2020). In addition, faculty members from the humanities also developed CURE courses and participated in the FLC. For example, a digital humanities CURE course was developed to engage students in converting life histories from the Federal Writers' Project into data to make text within the documents machine-readable and therefore easily searchable for future research (Rivard, 2019; Rivard et al., 2019). A law and literature CURE course supported students to read and analyze landmark court decisions alongside plays that were written in response to those cases (Larson & Rivard, 2018). Through the FLC,

faculty members from different disciplinary traditions had the opportunity to share their expertise and ways they adapt assessment measures and interpret assessment outcomes to enhance student learning in their respective courses.

Different from sporadic professional development sessions, an FLC has a coherent focus and typically leads to a shared product or outcome. At UNC, faculty members would like to increase the number of CURE courses to maximize student participation in these experiences and support students in developing research identities and become more empowered and capable of conducting research. Even though the content of the CURE courses may vary, the shared goals among faculty members include enhancing retention and graduation rates, increasing the inclusion and diversity of the research community, and expanding the number of research experiences in undergraduate education (University of North Carolina at Chapel Hill, 2017). The FLC discussions regarding program innovations and the assessment process centered on these shared goals and assessment resources were shared to support all faculty members for their CURE implementation.

Design thinking offers a solution to the assessment challenges of CUREs by integrating inspiration, ideation, and implementation in the assessment process, allowing for the measurement of the complex and evolving teaching and learning process.

Process – Design Thinking

CUREs offer a scalable and accessible research experience occurring within the context of a credit-bearing course, providing undergraduate students, regardless of past research experience, an opportunity to participate in an authentic research project (compared to simply enrolling in a regular course or lab). These courses offer students opportunities to develop and test their own hypotheses, collect their own data, experience iteration and failure, and potentially achieve discoveries that are new to the field (Sathy et al., 2020; 2021). This offers unique challenges for assessment since opportunities for applied research skill development may take priority over reviewing content and the outcomes of student work are not known ahead of time. The innovative and emergent nature of CUREs necessitates the integration of design thinking not only in curriculum and pedagogy (Koh et al., 2015; Wrigley & Straker, 2017), but also in the assessment process (Benson & Dresdow, 2014). As Brown (2008) stated, the design process is "a system of spaces rather than a predefined series of orderly steps" (p. 4). Integrating design thinking in the assessment process makes it possible to measure the complex and evolving process in teaching and learning and to inform decision-making in the process (Benson & Dresdow, 2014; Wehlburg, 2008).

To explore the assessment design for CUREs, FLCs engage in core design thinking activities including inspiration (surfacing problems and innovative solutions through interdisciplinary dialogs and collaborations), ideation (engaging in iterations of assessment process generation, prototyping, and experimentation), and implementation (conducting the assessment plan and sharing learning to further enhance instruction and the assessment process). One of the key challenges to the engaged assessment process is to integrate the assessment process in the least obstructive ways through instruction. With faculty members engaged in CUREs from different disciplinary areas, divergent ideas and perspectives emerged when discussing assessment design. These ideas contributed to the emergent design of the QEP assessment process and were implemented with the support of multiple stakeholders. Table 2 includes sample questions we used in FLC discussions to explore outcomes and measures, data collection and interpretation, and data use for program improvement.

As a result of these discussions, one of the CURE assessment measures, the Laboratory Course Assessment Survey (LCAS, Corwin et al., 2015) was adapted and used across CURE courses. The LCAS is a 17-item instrument used to differentiate CUREs from other courses by measuring student perceptions of the level of collaboration, discovery and relevance, and iteration that occurred within a given class. The instrument is comprised of three subscales: 1) collaboration; 2) discovery and relevance; and 3) iteration. Table 3 details each subscale and response options.

The instrument was originally piloted in biology labs with small enrollments (Corwin et al., 2015). Validation of the instrument followed Benson's (1998) three-stage process to specify the dimensionality, reliability, and validity. The three subscales on the 17-item instrument were established and confirmed through multiple iterations of exploratory factor analysis. The reliability of the instrument was measured using Cronbach's alpha. For traditional student

Table 2
Sample Assessment Discussion Questions

	Questions
Outcomes and Measures	How are course student learning outcomes aligned with program goals and the institutional mission? What are the direct and indirect measures embedded in the course design? What are the ideal measures that can be integrated in a meaningful way to measure student learning?
Data Collection and Interpretation	How can assessment data collection be least obstructive and most supportive of course delivery and program implementation? What assumptions and contexts do we need to consider when analyzing the data and interpreting the results?
Data Use for Program Improvement	How can data be used immediately for course or program improvement? How can data be used for long-term program improvement and development?

Table 3
Laboratory Course Assessment Survey (LCAS, Corwin et al., 2015)

Subscale	Focus	Number of Items	Response Options
Collaboration	student perceptions of how frequently they were encouraged to work together and share feedback, as well as their sense of developing metacognition toward research	6 items	1 = never, 2 = one or two times, 3 = monthly, or 4 = weekly
Discovery & Relevance	the degree to which students perceive themselves as having opportunities to create novel knowledge in the discipline and provide support for their findings	5 items	1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, and 6 = strongly agree
Iteration	students' perceptions of having opportunities to revise or repeat their work as problems or questions that arise in their research	6 items	1 = strongly disagree, 2 =disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, and 6 = strongly agree

groups, the Cronbach's alpha was 0.83 for collaboration, 0.84 for discovery / relevance and 0.90 for iteration (Corwin et al., 2015).

As CURE courses expanded across the sciences, social sciences, and arts and humanities, faculty members from different disciplinary areas contributed to the adaptation of the instrument so that we can use the instrument to explore how CURE features vary across disciplines and course sizes. In fact, much of what we have learned about how well the instrument performs in these new contexts has originated in engaged collaboration among faculty, assessment staff, and students (Sathy et al., 2020; 2021).

Product – Data Use

The integration of design thinking allowed us to adapt the assessment measures for local use and provided more meaningful data discussion. The use of the LCAS as a common measure made it possible for FLC members to explore the relationship between student characteristics and LCAS data to draw implications for CURE instruction at the university level.

In addition to collecting student LCAS data, faculty also completed a somewhat modified version of the LCAS instrument that asked respondents to what degree they perceived their students as having experienced collaboration, discovery and relevance, and iteration in their classes. Asking faculty to answer questions aligned to the student LCAS questions provides faculty data about whether students experience the course the way they planned (Hogan et al., 2019). Discrepancies between student and faculty perceptions help faculty fine tune design, instructor talk, and teaching assistant training. Differences in faculty and student responses of sample courses are reflected in Table 4. Negative scores represent when the instructor's LCAS score was greater than the student's score, whereas positive scores represent when the student's LCAS score was greater than the instructor's LCAS score.

Table 4
Differences between faculty and student responses in sample courses

	Enrolled Students	Survey Respondents	Collaboration	Discovery & Relevance	Iteration
Polymer Chemistry	6	6	+0.33	-1.17	-3.50
Astronomy	12	8	-1.12	-2.5	-.87
Analytical Chemistry	16	10	+1.20	-6.3	-2.50
Statistics in Psychology	220	186	+3.69	-7.24	+5.49
Organic Chemistry	411	313	-5.52	-4.47	-6.97

In reviewing findings, faculty reacted to those comparisons. When examining the difference between faculty and student responses on iteration, a genetics instructor noted that the time constraints in the course led to limitations in the ability for students to repeat experiments:

> I would have liked to allow students more control in choosing experimental methods to use. However, students are presented with a novel problem in genetics. This means that it is not easy to determine how to solve that problem. It would take more than one semester to teach them all the potential methods before they have to choose some to use to solve the research problem.

In Statistics in Psychology–a large enrollment course–the instructor reflected on the difference in student and faculty scores on discovery and relevance, saying "I suspect the larger class size limited the perception of discovery in some aspects of formulating hypotheses because of the consensus approach we took with hypothesis generation." What this instructor learned led them to reframe how the discussion around hypothesis formulation occurred.

The use of design thinking and LCAS as a common measure allowed for meaningful data discussion and exploring the relationship between student characteristics and CURE instruction.

In the Organic Chemistry class, senior graduate teaching assistants, known as Graduate Research Consultants (GRCs), designed procedures and materials for the lab course and, in partnership with the lead instructor, transitioned the course from a traditionally structured lab to a CURE. When reviewing and discussing the LCAS assessment data, the lead instructor noted "I'd be curious to see how my TAs answered these questions. I'd like to think more about TA training in the future and how the TAs communicate with students about the process of

science." As answering one question often leads to many more new questions, the instructor engaged the GRCs in the assessment process to develop measures of student learning for the new CURE course and collected and analyzed student response data on the LCAS as well as measures of student project ownership and self-efficacy. The GRCs evidentially published a Scholarship of Teaching and Learning (SoTL) article describing how they transformed the course and delineating their assessment efforts (Cruz et al., 2020). The Organic Chemistry course exemplifies how the engaged assessment model may broaden opportunities to include other stakeholders, inform instructional decisions, and expand program-specific assessment efforts.

Sustainability – Assessment as Scholarship

Engaged assessment reframes assessment as scholarship, expanding opportunities for discipline experts to contribute to SoTL through collaborative dialogues and enhanced assessment capacity.

The engaged assessment effort offered an opportunity to reframe assessment as scholarship by supporting faculty members and GRCs in reframing the common measures used to better reflect their discipline. In addition to using assessment reports and outcomes to inform institution-specific program innovations, the enhanced assessment capacity and the collaborative dialogues also made it possible for discipline experts to contribute to SoTL through the engaged assessment process.

As Hutchings et al. (2011) note, assessment resembles the scholarship of teaching and learning in that they share "a focus on student learning, a more systematic evidence-based approach to educational quality, and a commitment to being more public about what and how well students are learning in college and university classrooms" (p. 6). However, SoTL inquiries generally originate in faculty interest in the impact of classroom practices while assessment has been associated with external and internal concerns about institutional effectiveness. That is, the scholarship of teaching and learning has tended to be a more decentralized, grassroots, classroom-centered effort by faculty while assessment has been seen as a centralized, directed initiative originating with the administration (Hutchings et al., 2011). Hutchings et al. (2011) noted that in the past, "assessment and the scholarship of teaching and learning have proceeded on more or less separate tracks—with their different histories, methods, and champions—each somewhat wary of the other." However, there is evidence that this perception is changing with the connection between the assessment of student learning and the scholarship of teaching and learning becoming increasingly apparent (Beach et al., 2016; Hutchings et al., 2011; Jankowski et al., 2018).

Through the engaged assessment process at UNC, content area experts expanded their collaborations among themselves and with the assessment team to share their insights through SoTL. For example, two faculty members from the English department considered the question of how CUREs–an instructional approach originating in the sciences–would differ when implemented in the humanities (Larson & Rivard, 2018). In addition to creating direct measures to reflect the CURE approach implemented in their classes, these faculty reviewed and modified the LCAS to reflect the nomenclature and practices found in a humanities classroom, collected data across their classes, and worked with the QEP assessment team to analyze data and review their findings. Two SoTL articles (Rivard, 2019; Rivard et al., 2019) have already been published, and other work is pending. Several other SoTL publications using the assessment data have been published, including two studies related to adapting the CURE model to psychology (Sathy et al., 2020; 2021) and a study led by a group of graduate students examining scaling up CUREs to high enrollment chemistry courses (Cruz et al., 2020).

Discussion and Implications

As we illustrated through the assessment process regarding the implementation the CUREs at UNC, the engaged assessment process differs from traditional institutional assessment models in terms of the structure, process, product, and sustainability (see Table 5). The monthly professional learning community meetings offered a platform to engage faculty from different disciplinary backgrounds in dialogues with the assessment team. With a focus on shared student learning outcomes at the institutional level, individuals crossed traditional disciplinary boundaries to engage in discussions regarding program innovations and the assessment process. Following the design-thinking principles, the engaged assessment process emphasized the iterative nature of assessment generation, adaptation, and validation.

The collaboration also made it possible to embed the assessment process in program implementation, instead of having it as a separate, add-on component. Ongoing dialogues centering on the interpretation and use of the data provided immediate input to inform program improvement and assessment enhancement. These discussions also contributed to assessment capacity building at the institution. With the development of assessment capacity and growing ownership of the assessment data, it was very encouraging for us to report the contribution to SoTL building upon the assessment data in this engaged process.

Table 5
Engaged Assessment Activities

	Activities	**Outcomes**
Structure -Boundary	Monthly professional learning community meetings Participation of faculty across disciplinary areas and assessment professionals	Program innovation and assessment focusing on shared student learning outcomes
Process - Design	Inspiration - surfacing problems and innovative solutions through interdisciplinary dialogs and collaborations Ideation - engaging in iterations of assessment process generation, prototyping, and experimentation Implementation - conducting the assessment plan and sharing learning to further enhance instruction and the assessment process	Identification, adaptation, and validation of common assessment measures Collaborations on data collection processes
Product - Data Use	Dialogues centering on interpretation and use of data to inform program innovations and assessment adaptations	Program improvement Instructor development Assessment enhancement
Sustainability - Mutual Learning	Contribution to the Scholarship of Teaching and Learning (SoTL)	Enhanced collaborative assessment capacity Generative impact through SoTL

What we learned from our experience with the engaged assessment process may also offer further implications for institutional leaders, assessment professionals, and faculty and teaching assistants who are interested in contributing to SoTL through the engaged assessment process.

The engaged assessment process offers implications for institutional leaders, assessment professionals, and faculty and teaching assistants interested in contributing to SoTL.

At the institution level, the creation of professional learning communities, or FLCs on our campus, offers the platform for cross-disciplinary collaborations centering on shared goals. At UNC, faculty members were incentivized to participate in these learning opportunities through FLCs, develop and implement assessment measures in their courses, share the results, and make their assessment tools available for other faculty members to adapt. In addition, a research summit offering a forum for faculty to share their research findings based on their teaching and to co-present with their students was held every fall. These engagement opportunities expand the dialogs campus-wide, augmenting faculty discussions about improving student learning, and supporting the assessment capacity building across units on campus.

Further, assessment professionals have a key role to play in the engaged assessment process. In addition to assisting faculty members with adapting common measures or identifying new ones, our assessment team engages in individual and group discussions with faculty members, tracks changes to the instruments over time, maintains the data collected across all courses, and provides the overall analysis of the outcomes and impact of CURE courses. Through this collaboration, the assessment team also developed its capacity to offer

Dialogs and collaborations among faculty members across disciplinary areas enriched the assessment discussions and augmented the use of assessment for program improvement.

more contextualized data collection, analysis, and reporting support to extend the use of assessment data beyond summative reporting that captures program effectiveness and impact. Instead of serving as a silent observer walking alongside faculty members implementing the curriculum innovations, the assessment team and faculty members negotiated the directions and methods throughout the program implementation journey and had more opportunities to offer just-in-time assessment support to inform program decision making.

Finally, our engaged assessment experiences through CUREs also led to faculty members and TAs' scholarly development, especially in terms of the collaborative contribution to the SoTL research regarding CUREs. The use of the common measure across disciplinary areas allowed the team to contribute to the larger research agenda regarding the expansion of CUREs in higher education settings in a more systematic manner. This type of interactions and scholarly engagement can be especially beneficial for future faculty who are developing their professional network and connections in an interdisciplinary manner.

Conclusion

Faculty engagement is critical in student learning outcome assessment in higher education settings. The engaged assessment model at UNC exemplified the potential of faculty engagement at a leading doctoral university. FLCs offered space for the exploration of assessment designs, the examination of assessment data, and the celebration of assessment as scholarship. Dialogs and collaborations among faculty members across disciplinary areas enriched the assessment discussions and augmented the use of assessment for program improvement. As CUREs were integrated into the new general education requirements, the assessment activities were also carried over. To sustain and further expand the engaged assessment model at the institution, the assessment leadership team plans to continue these FLC discussions. This offers continued opportunities for faculty members to have a central role in assessment of general education, collaborating with the assessment team to identify appropriate measures and designs to illustrate the impact of the new general education curriculum on student learning. In addition to meeting accountability requirements, the design thinking activities of inspiration, ideation, and implementation are integrated into instructional practices to normalize the engaged assessment model to support curriculum innovation and program improvement.

Future collaborations with other stakeholders, including students and community partners, in the engaged assessment process could further strengthen and realize the implementation of transformative assessment to enhance teaching and learning. We have already observed the positive impact of students becoming involved in assessment activities, including serving on general education committees and working groups, and participating in internships with the assessment team in which they took responsibility for identifying assessment tools and collecting data. Student involvement in these efforts have deepened our understanding of student perceptions of how they are assessed, and how they use the information they receive through assessment processes. Extending the engaged assessment model to include students in collaboration and dialog with faculty members and assessment staff may prove to be the next stage in promoting a more holistic and empowering approach to assessing student learning at our university.

References

American Association for Higher Education (AAHE). (1992). *Principles of good practice for assessing student learning*. American Association for Higher Education.

Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). Jossey-Bass.

Arum, R., & Roksa, J. (2011). Limited learning on college campuses. *Society*, *48*(3), 203-207.

Banta, T. W., & Blaich, C. (2011). Closing the assessment loop. *Change: The Magazine of Higher Learning*, *43*(1), 22-27.

Beach, A. L., Sorcinelli, M. D., Austin, A. E., & Rivard, J. K. (2016). *Faculty development in the age of evidence: Current practices, future imperatives*. Stylus.

Benson, J. (1998). Developing a strong program of construct validation: A test anxiety example. *Educational Measurement: Issues and Practice*, *17*, 10-17.

Benson, J., & Dresdow, S. (2014). Design thinking: A fresh approach for transformative assessment practice. *Journal of Management Education*, *38*(3), 436-461. https://doi.org/10.1177/1052562913507571

Brown, T. (2008). Design thinking. *Harvard Business Review*, *86*(6), 84-92.

Corwin, L. A., Runyon, C., Robinson, A., & Dolan, E. L. (2015). The Laboratory Course Assessment Survey: A tool to measure three dimensions of research-course design. *CBE Life Sciences Education*, *14*(4), ar37. https://doi.org/10.1187/cbe.15-03-0073

Cox, M. D. (2003). Fostering the scholarship of teaching through faculty learning communities. *Journal on Excellence in College Teaching*, *14*(2/3), 161-198.

Cox, M. D., & Richlin, L. (Eds.). (2004). *Building faculty learning communities*. Jossey-Bass.

Cruz, C. L., Holmberg-Douglas, N., Onuska, N. P. R., McManus, J.B., MacKenzie, I.A., Hutson, B.L., Eskew, N. A., & Nicewicz, D.A. (2020). Development of a large-enrollment course-based research experience in an undergraduate organic chemistry laboratory: Structure–function relationships in pyrylium photoredox catalysts. *Journal of Chemical Education*, *97* (6), 1572-1578. https://doi.org/10.1021/acs.jchemed.9b00786

Ewell, P. T. (2009, November). *Assessment, accountability, and improvement: Revisiting the tension* (NILOA Occasional Paper No. 1). Urbana, IL: University of Illinois and Indiana University, National Institute of Learning Outcomes Assessment.

Grunwald, H., & Peterson, M. W. (2003) Factors that promote faculty involvement in and satisfaction with institutional and classroom student assessment. *Research in Higher Education*, *44*, 173-204. https://doi.org/10.1023/A:1022051728874

Hogan, K. A., Bruno, J. F., Steinwand, B. J., Sathy, V., Robertson, S., Nasiri, M., Strauss, C., and Hutson, B. L. (2019, July). *Do faculty in a college-wide CURE program achieve the design goals they planned via a year-long faculty learning community?* Poster presented at The Society for the Advancement of Biology Education Research (SABER), Twin Cities, MN.

Huber, M. T. (2008). *The promise of faculty inquiry for teaching and learning basic skills*. The Carnegie Foundation for the Advancement of Teaching.

Hutchings, P. (2010). *Opening doors to faculty involvement in assessment*. (NILOA Occasional Paper No. 4). University of Illinois and Indiana University, National Institute of Learning Outcomes Assessment.

Hutchings, P. (2016, January). Aligning educational outcomes and practices. (Occasional Paper No. 26). University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Hutchings, P., Huber, M. T., & Ciccone, A. (2011). Getting there: An integrative vision of the scholarship of teaching and learning. *International Journal of the Scholarship of Teaching and Learning*, *5*(1). https://doi.org/10.20429/ijsotl.2011.050131.

Hutson, B. L., & Downs, H. (2015). The College STAR faculty learning community: Promoting learning for all students through faculty collaboration. *Journal of Faculty Development*, *29*(1), 25-32.

Hundley, S. P., & Kahn, S. (2019). *Trends in assessment: Ideas, opportunities, and issues for higher education*. Stylus Publishing.

Jankowski, N. A., & Marshall, D. W. (2017). *Degrees that matter: Moving higher education to a learning systems paradigm*. Stylus Publishing.

Jankowski, N. A., Timmer, J. D., Kinzie, J., & Kuh, G. D. (2018). *Assessment that matters: Trending toward practices that document authentic student learning*. University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Kinzie, J., Landy, K., Sorcinelli, M. D., & Hutchings, P. (2019). Better together: How faculty development and assessment can join forces to improve student learning. *Change: The Magazine of Higher Learning*, *51*, 46-54. https://doi.org/10.1080/00091383.2019.1652076

Koh, J. H. L., Chai, C. S., Wong, B., & Hong, H.-Y. (2015). *Design thinking for education: Conceptions and applications in teaching and learning*. Springer. https://doi.org/10.1007/978-981-287-444-3

Korzik, M. L., Austin, H. M., Cooper, B., Japerse, C., Tan, G., Richards, E., Spencer, E. T., Steinwand, B., Fodrie, J., & Bruno, J. F. (2020). Marketplace shrimp mislabeling in North Carolina. *PLoS ONE 15*(3): e0229512. https://doi.org/10.1371/journal.pone.0229512

Kuh, G. D., & Ikenberry, S. O. (2009, October). *More than you think, less than we need: Learning outcomes assessment in American higher education*. University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Kuh, G. D., Jankowski, N., Ikenberry, S. O., & Kinzie, J. (2014, January). *Knowing what students know and can do: The current state of learning outcomes assessment at U.S. colleges and universities*. University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Larson, J., & Rivard, C. (2018, March). Creating course based undergraduate research experiences (CUREs) in the humanities. UNC System-Wide Undergraduate Research Development Summit, Greensboro, NC, United States.

Maki, P. L. (2010). *Assessing for learning: Building a sustainable commitment across the institution* (2nd ed.). Stylus.

Metzler, E. T., & Kurz, L. (2018). Assessment 2.0: An organic supplement to standard assessment procedure. Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment.

Middaugh, M. F. (2010). *Planning and assessment in higher education: Demonstrating institutional effectiveness*. Jossey-Bass.

Reder, M., & Crimmins, C. (2018). Why assessment and faculty development need each other: Notes on using evidence to improve student learning. *Research & Practice in Assessment*, *13*, 15-19.

Rivard, C. (2019) Turning archives into data: Archival rhetorics and digital literacy in the composition classroom. *College Composition and Communication*, *70*(4), 527-559.

Rivard, C., Arnold, T., & Tilton, L. (2019). Building pedagogy into project development: Making data construction visible in digital projects. *Digital Humanities Quarterly*, *13*(2). http://www.digitalhumanities.org/dhq/vol/13/2/000419/000419.html

Sathy, V., Nasiri, M., Strauss, C., & Hutson. B. (2020). The CURE for broadening participation in undergraduate teaching. In T. M. Ober, E. Che, J. E. Brodsky, C. Raffaele, & P. J. Brooks (Eds.). *How we teach now: The GSTA guide to transformative teaching* (pp. 429-444). Society for the Teaching of Psychology. http://teachpsych.org/ebooks/howweteachnow-transformative

Sathy, V., Strauss, C. L., Nasiri, M., Panter, A. T., Hogan, K. A., & Hutson, B. L. (2021). Cultivating inclusive research experiences through course-based curriculum. *Scholarship of Teaching and Learning in Psychology*, *7*(4), 312-322. https://doi.org/10.1037/stl0000215

Southern Association of Colleges and Schools, Commission on Colleges (SACSCOC). (2020). *The Quality Enhancement Plan*. Available at: https://sacscoc.org/app/uploads/2020/01/Quality-Enhancement-Plan-1.pdf

Spencer, E. T., Richards, E., Steinwand, B., Clemons, J., Dahringer, J., Desai, P., Fisher, M., Fussell, S., Gorman, O., Jones, D., Le, A., Long, K., McMahan, C., Moscarito, C., Pelay, C., Price, E., Smith, A., VanSant, A., & Bruno, J. F. (2020) A high proportion of red snapper sold in North Carolina is mislabeled. *PeerJ 8*:e9218 https://doi.org/10.7717/peerj.9218

Suskie, L. (2014). *Five dimensions of quality: A common sense guide to accreditation and accountability*. Jossey-Bass/Wiley.

University of North Carolina at Chapel Hill (2017). *Quality Enhancement Plan: Creating Scientists – learning by connecting, doing, and making*. University of North Carolina.

Wehlburg, C. M. (2008). *Promoting integrated and transformative assessment: A deeper focus on student learning*. Wiley.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press. https://doi.org/10.1017/CBO9780511803932

Wenger, E., McDermott, R., & Snyder, W. M. (2002). Seven principles for cultivating communities of practice. In E. Wenger, R. McDermott, & W. M. Snyder (Eds.), *Cultivating communities of practice: A guide to managing knowledge* (pp. 49-64). Harvard Business School Press.

Wrigley, C., & Straker, K. (2017). Design thinking pedagogy: The educational design ladder. *Innovations in Education and Teaching International*, *54*(4), 374-385. https://doi.org/10.1080/14703297.2015.1108214