Recognizing and Valuing the Mentoring of Undergraduate Research, Scholarship, and Creative Activity by Faculty Members: Workload, Tenure, Promotion, and Award Systems

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About the cover: University of Michigan student Malika Malik (class of 2017, foreground) with her mentor, Ariella Shikanov, UM associate professor of biomedical engineering. Malik is now enrolled in the UM dental school. Photo courtesy Sandra R. Gregerman.

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Table of Contents

Abstract

To increase faculty participation and to recognize the strategic educational position held by undergraduate research, scholarship, and creative activities (URSCA) in many institutions, faculty mentorship of undergraduate students needs to be valued as a standard component of workload and formally included in activity reports and evaluations, including those that lead to reappointment, tenure, and promotion. This white paper presents the need for recognition of faculty mentorship of URSCA, recommends best practices for institutions to adopt, offers a selection of case studies that features some of these practices, and summarizes upcoming challenges.

Introduction

Over the past quarter century, undergraduate research has been increasingly recognized as one of the most influential high-impact practices (HIPs) in higher education (Kilgo, Sheets, and Pascarella 2015). As this has happened, there have been significant expansions in both the venues in which undergraduate research, scholarship, and creativity activity (URSCA) occurs and the forms that it takes (Blanton 2008). Originally mostly the practice of predominantly undergraduate institutions, particularly the private liberal arts sector, URSCA has now developed a strong presence among research universities (following the 1998 Boyer Commission Report); comprehensive universities; and, most recently, two-year institutions. Simultaneously, it has evolved from its origins in one-on-one apprentice model research projects, often taking the form of a senior thesis, and become ever more integrated into the curricula of a wide variety of majors—as seen most notably in the recent emergence of course-based undergraduate research experiences (CUREs). Whatever the institutional type or form of the research experience, however, URSCA rests foundationally upon strong faculty mentorship. To increase faculty

participation and to recognize the strategic educational position now held by URSCA in many institutions, faculty mentorship of undergraduate students needs to be valued as a standard component of workload and formally included in activity reports and evaluations, including those that lead to reappointment, tenure, and promotion. Explicit reporting of mentoring activities also facilitates data gathering regarding URSCA participation and effectiveness, and it provides additional evidence for institutional investment in the practice. Indeed, support for faculty as mentors is a key characteristic of excellence in undergraduate research, as defined by the Council on Undergraduate Research (Rowlett, Blockus, and Larson 2012). In this white paper, the authors present the need for recognition of faculty mentorship of URSCA, recommend best practices for institutions to adopt, offer a selection of case studies where some of these practices are already established, and summarize the common challenges ahead for this crucial next phase in the support and expansion of URSCA.

The Need

(1) **The value of URSCA is well recognized.** A large number of studies have demonstrated essential student outcomes from URSCA such as better analytic and critical thinking, increased academic achievement and retention, clarification of choice of academic major, and future enrollment in graduate school (e.g., reviewed in Webber, Laird, and BrckaLorenz 2013). It also builds identity related to the research discipline and develops strong ties to a faculty mentor (Hunter, Laursen, and Seymour 2007; Palmer et al. 2018). Additionally, many students are able to be authors on published or presented work, thereby developing high-level writing and communication skills and contributing to their resumes. Engaging in URSCA can be especially important for students from marginalized groups (Kuh 2008; O'Donnell et al. 2015), so access to these experiences is an important element of efforts to increase equity and

diversify the workforce (Hernandez et al. 2018). The literature also shows that faculty mentors recognize benefits. Mentors indicate that working with undergraduate collaborators in the apprenticeship model of mentoring can move their scholarly/creative programs forward (Adedokun et al. 2010; Morrison et al. 2018; Zydney et al. 2002), as can CUREs (Shortlidge, Bangera, and Brownell 2017). Mentoring undergraduates also provides satisfaction in their working lives (Bauer and Bennett 2008; Chopin 2002; Hu et al. 2008; Webber at al. 2013; Zydney et al. 2002). The many benefits of URSCA have led to its tremendous growth nationally; it is now a featured HIP at many institutions. Notably, it is a HIP that can provide benefits to both students and the faculty while contributing to the scholarly goal of producing new knowledge.

(2) **Institutions typically invest in URSCA because they recognize its benefits to students and to the institution itself, in the form of marketing and recruitment and as a target of grant funding.** Common investments may include small student research grants, summer stipends and housing for a summer research program, academic course credit, student travel to conferences, supply budgets for new CUREs, and some form of administrative structure ranging from a full office of undergraduate research or a faculty director with partial reassigned time. This focus on support of student work is appropriate and necessary; however, URSCA is completely reliant on faculty work, which also needs adequate support. In the apprenticeship model, substantial faculty time is required for both one-on-one, whole-person mentoring, often over multiple semesters, and for developing and leading student peer-to-peer mentoring systems (Stefanucci 2019). Working with undergraduates in a collaborative scholarly capacity requires repeated training of novices, who frequently make errors, and may therefore slow down progress in the faculty members' research program

(O'Connell and Morrison 2018). URSCA can also be achieved via CUREs, which are an important complement to the apprenticeship model, as a general best-practice pedagogy and a way to more equitably provide research experiences for all students (Awong-Taylor et al. 2016), but they also require substantial faculty work. As departments transition to more research-infused curricula, considerable faculty time is required to redesign courses and train and supervise colleagues who implement the changes (such as graduate teaching assistants, adjunct instructors, and faculty members new to CUREs).

(3) **Investment in and valuation of faculty work related to URSCA has lagged far behind its growth.** Many institutions now have established URSCA programs but have not adopted policies that adequately support faculty mentors for their increased workload. Research on faculty attitudes consistently shows that many faculty members choose to become involved in URSCA, mostly for the students sake and for their own personal satisfaction, but there are many barriers, and participation rates vary (Buddie and Collins 2011; Magee 2014; Morrison et al. 2018), which can directly affect the level of student participation in URSCA (Webber et al. 2013). Time is the most frequently noted barrier. Faculty members often mentor student researchers on top of everything else they do, as an add-on to their normal teaching, service, and growing research expectations (Kierniesky 2005; Malachowski 2006; O'Meara and Braskamp 2005). This is a particular problem at four-year higher education institutions that have retained their high teaching loads while ratcheting up expectations for research, often done with undergraduates (Prince, Felder, and Brent 2007; Sharobeam and Howard 2002). Too often this work is not counted in-load (Katkin 2003), even though it is particularly time consuming to teach novices in a research setting. When mentoring URSCA is built into faculty workload, participation rates can increase dramatically (Wayment and Dickson 2008).

In addition, there often is no targeted reassigned time for developing a CURE-based curriculum.

Another commonly cited barrier is the belief by faculty members that doing research with undergraduates will hinder their own research program (Laursen, Seymour, and Hunter 2012) or that it is just not possible to productively collaborate with undergraduates (Morrison et al. 2018). A lack of formal recognition for engaging in URSCA can therefore lead faculty members to make other choices when prioritizing their work, especially if it is not clearly valued for tenure and/or promotion relative to other forms of scholarship/creative activity (Baker et al. 2017; Magee 2014). In addition, other institution-wide recognition structures are often missing or inadequate such as the absence of undergraduate research mentoring in mission/vision statements or the lack of any URSCA mentoring awards.

Financial resources that support faculty work in URSCA also are less common than those that directly support students. There may be inadequacies in summer stipends for the faculty in summer research programs, in internal faculty grants for faculty-student collaborations, in support for faculty travel with students to conferences, and in support for page charges for faculty-student coauthored publications.

Finally, many faculty members receive little to no training on how to mentor undergraduates in research, especially in terms of how to do so in a manner that maintains scholarly productivity (Reddick 2011; Morales, Grineski, and Collins 2017; Stefanucci 2019). A key aspect of incorporating best practices for URSCA at an institution is to create access to conferences and other networking opportunities for faculty members, since skills such as mentoring are difficult and benefit from training (Johnson 2002). As administrative leadership encourages such

practices, a culture can begin to develop that reinforces the institutional goals and objectives aligned with them (Springer et al. 2018; Webber et al. 2013).

Overall, inadequate valuation and support for the faculty members upon whom successful URSCA relies results in faculty burnout and reluctance to participate. These are key barriers to wider, universal adoption of URSCA (Eagan et al. 2011; National Research Council 2017).

Recommendations

Due to the extreme value of URSCA for high-impact learning experienced by students, their connection to faculty mentors, and the potential benefit to scholarly productivity, institutions must value and invest in all aspects of URSCA so that offerings of these faculty-led research opportunities can be continued and expanded. This includes investment in faculty mentors and their work. To sustain URSCA, the following measures are recommended:

(1) **Add valuation of URSCA mentoring and CURE development into mission statements and strategic plans**. To illustrate support of the value of URSCA mentoring and CURE development, institutions must specifically mention and implement these high-impact practices in their mission statements and strategic plans. In doing so, institutions will call out URSCA as a "signature experience" that emphasizes faculty-led experiential learning, resulting in increased financial support for URSCA and targeted recruiting of faculty members and administrators who will build a culture of URSCA on their campuses.

(2) **Build mentoring of URSCA apprentices into workload—not overload/pay supplement.** To recognize and value the time that the faculty devotes to URSCA, institutions must consider URSCA part of a faculty member's workload rather than as an

"add-on" to a normal teaching load. Without this recognition, faculty members will be reluctant to participate in URSCA, and burnout will be high, while faculty morale will decline. Key to this recognition is having an accurate way to record and evaluate workload through a clear process for faculty activity reporting and evaluation.

(3) **Rewrite tenure, promotion, and other review documents to clearly value mentoring and CURE development.** Institutions must explicitly state in their tenure and promotion guidelines, as well as in faculty handbooks and annual review materials, that mentoring of URSCA will be evaluated with regard to teaching, scholarship, and/or service, as specific to each school/college. Alternatively, a new, fourth category of "research mentoring" could be included, as it uniquely combines aspects of all three traditional faculty activities.

(4) **Honor faculty-student collaboration with internal, targeted research funds.** Institutions that value and recognize faculty-led URSCA must provide the funding necessary to support and sustain it. Support will include, but is not limited to, adequate stipends for the faculty and students, supply monies, funding for research courses and their development, and travel funds.

(5) **Provide reassigned time for research-based curricular revision.** Institutions will offer faculty members the opportunity and support (stipend and course release) to revise/create courses in which undergraduate students learn about URSCA and its role in the academy as a high-impact educational experience.

(6) Establish prominent awards/chairs to honor mentoring. To show their support for faculty who mentor students in URSCA, institutions will create awards to honor undergraduate research student mentoring.

(7) Institutionalize best practices in training, mentoring, and CUREs (for example, send people to CUR events). To establish best practices for URSCA, institutions will be involved in the following (not an exhaustive list): become institutional members of CUR, support travel by faculty and student researchers to conferences (especially CUR events), provide the faculty with mentor training, and support development of CUREs.

Case Studies of Selected Institutions

The following case studies—representing only a few examples from CUR's extensive membership—illustrate the white paper's recommendations. The practices at these colleges and universities offer models for other institutions.

(1) Add valuation of URSCA mentoring and CURE development into mission statements and strategic plans.

Denison University has guiding principles that emphasize faculty partnerships with undergraduate students in original, independent research. They maintain a low student/faculty ratio to facilitate URSCA mentoring. It is a four-year undergraduate institution with a focus on the arts and sciences, located in Granville, OH.

The 2014–2024 strategic plan of ***George Mason University*** has innovation learning as its top goal. Within the strategy for completing this goal is research opportunities for undergraduate students. George Mason is a doctoral, research-intensive institution in Fairfax, VA, with a strong commitment to student learning.

The ***University of Wisconsin–Eau Claire*** is addressing its university mission, in part, by providing high-quality student-faculty research and scholarship that enhances teaching and experiential learning. It is a master's-level university in Eau Claire, WI, with undergraduate students composing a very large proportion of the student body.

(2) Build mentoring of URSCA apprentices into workload—not overload/pay supplement.

The College of New Jersey has redefined faculty workload so that nine of the traditional 12 hours per semester are contact teaching hours, thus allowing faculty time to engage in scholarship, typically with undergraduates. Many majors also allow mentored research to count within the nine in-load teaching credits such as faculty members who mentor six students in a semester or three students in each of two semesters receive three teaching credits. Three teaching credits is the maximum allowed in each academic year. Faculty members also can apply to an internal committee for a course reassignment to pursue their research/creative activity agenda, to achieve 9/6 contact hours of classroom and mentoring/teaching. The institution is a four-year, public comprehensive college in Ewing, NJ.

Chapman University has instituted a policy that equates 24 accrued student research credits for a one-course reduction in teaching in a future semester. It is a four-year private, master's university located in Orange, CA.

(3) Rewrite tenure, promotion, and other review documents to clearly value mentoring and CURE development.

The faculty handbook of ***Allegheny College*** explicitly states that the mentoring of undergraduate students in research is one of the teaching practices used to evaluate teaching

for tenure and promotion. Its faculty handbook also states that URSCA may be considered as a criterion for the evaluation of research. The institution is a four-year, private liberal arts college in Meadville, PA.

At ***Florida Atlantic University*** (FAU), URSCA is included in its written promotion standards in all three categories. Criteria for tenure and promotion in instruction include mentoring graduate students in thesis or dissertation preparation and mentoring undergraduates in directed independent study or other discipline-appropriate formats. URSCA also may meet the criteria for the categories of research, scholarship, and other creative activity, as well as for service. FAU is a public, doctoral university in Boca Raton, FL.

At ***Elizabethtown College***, mentoring of undergraduate students is explicitly valued at the departmental level through standard professional expectations (SPEs). In the Department of Biology, for example, supervision of student research is included under expectations in teaching and advising and under scholarship and professional development. The institution is a four-year, private baccalaureate college in Elizabethtown, PA.

(4) Honor faculty-student collaboration with internal, targeted research funds.
The Outstanding Scholars program at the ***University of Windsor*** provides paid research opportunities to selected undergraduate students. This funds the program at the university level and does not affect departmental budgets. Faculty members benefit from the scholar's assistance with research without the need of using grant money but are not financially compensated for mentoring. The institution is a public, comprehensive, and research university located in Windsor, Ontario, Canada.

Many institutions have internal support for summer research experiences. The Mentored Undergraduate Summer Experience (MUSE) at ***The College of New Jersey*** funds 60–70 undergraduate students per summer for an eight-week collaboration with a faculty mentor. Students receive housing and a $3,000 stipend. Faculty mentors receive a $1,250 honorarium and $500 in funds for research or creative activity.

The Center for Research, Experiential, Artistic & Transformative Education (CREATE) at ***Austin College*** oversees research opportunities for undergraduates. It has two internal research programs. The Scarborough Research Program promotes student research in the humanities and social sciences through a 10-week summer research project. Students receive a $3,000 stipend and $500 for research-related expenses. Students in STEM fields may apply for a Sciences Summer Research Program. Austin College is a private liberal arts college in Sherman, TX.

(5) Provide reassigned time for research-based curricular revision.

The Curriculum Grants Program at ***Florida Atlantic University*** provides support for faculty members wishing to incorporate research and inquiry into undergraduate courses. This competitive program allows expenses for faculty stipends and course release, as well as research assistants who are graduate and undergraduate students.

The School of Science at ***The College of New Jersey*** provides reassigned time to tenure-track faculty members for course redesign, including incorporation of student research. With support from the Howard Hughes Medical Institute, the college hires PhD-level Teacher-Scholar Fellows to assume those reassigned teaching responsibilities.

(6) Establish prominent awards/chairs to honor mentoring.

Several schools have created awards to honor mentoring of student research. These include the following:

- Bonar Family Mentorship and Teaching Excellence Award at ***Denison University***
- The Distinguished Undergraduate Research and Inquiry Undergraduate Research Mentor of the Year Award at ***Florida Atlantic University***
- The Office of Student Scholarship, Creative Activities, and Research (OSCAR) Mentoring Excellence Award at ***George Mason University***
- The Phil and Mary Bradley Award for Mentoring in Creative Inquiry at ***Clemson University***
- The Polanowski Prize for Excellence in Faculty-Student Advising and Mentorship at ***Elizabethtown College***

The College of New Jersey has the endowed Barbara Meyers Pelson (’59) Chair in Faculty-Student Engagement. It rotates to a different faculty member every three years.

(7) Build in-house capacity for best practices in mentoring URSCA.

The ***University of Wisconsin–Madison*** created the Center for the Improvement of Mentored Experiences in Research (CIMER), with the mission to “improve the research mentoring relationships for mentees and mentors at all career stages through the development, implementation and study of evidence-based and culturally-responsive interventions.” CIMER assists with in-house training of faculty members and, through a partnership with the National Research Mentoring Network, training and consulting with faculties across the country.

Faculty members at ***The College of New Jersey*** have brought the skills and knowledge obtained in CIMER's facilitator training ("train the trainer") workshop back to TCNJ. These trained faculty members lead the Entering Mentoring program for the School of Science.

The ***University at Buffalo–SUNY*** has extensive mentoring resources in its Center for Undergraduate Research & Creative Activities.

Common Challenges

Institutions may encounter four common sets of challenges in seeking to improve how the mentoring of URSCA is valued in faculty workload, tenure, promotion, and other reward structures. An important strategy for implementation is to recognize these challenges and work to reduce or remove them as barriers prior to or during changes to institutional structures and policies. Although the challenges for faculty mentors have been apparent for many years (see, for example, Evans 2010), they remain even as URSCA itself has dramatically expanded.

(1) Reaching agreement that mentored collaborative research and creative activity with undergraduates is valuable enough to warrant deep recognition. Among faculty members, it will be important to highlight both student and faculty gains in research/creative progress and skill development that occur through working with undergraduates—for example, increases in conference presentations and the other benefits as previously discussed. Real differences may exist among an institution's faculty about how much to value scholarly work that is done with undergraduates. For example, in a three-institution survey, faculty members who had participated in URSCA mentoring were more likely than nonparticipants to think that their scholarly work with undergraduates should count in tenure and promotion; and nonquantitative scholars were less likely to be mentors than those who

use quantitative methods (Morrison et al. 2018). Work will be needed to reach agreement among diverse faculties before institution-wide policies and practices can be implemented. Among deans and provosts, a key emphasis should be that mentoring undergraduates has been consistently associated with increased quality of the work life of faculty members (Bauer and Bennett 2008; Hu et al. 2008) and recognition that it can positively affect work satisfaction and prevent faculty turnover (Webber et al. 2013).

(2) Reaching agreement on how to "count" it for the faculty. Variation exists among and within institutions in how URSCA mentoring is valued as faculty work, which is a barrier to implementation (Brew and Mantai 2017). Is it teaching, research, service, or all three? (Ronnenberg and Sadowski 2011). How should it be credited in tenure and promotion materials and workload? Should such mentoring perhaps be a new, valued category of its own, as at Purdue University (Jaschik 2015), since it shares features with all three traditional components of faculty work? An institution needs to come to agreement on this question and then agree on a clear faculty activity reporting and evaluation process. Among faculty members, providing researched models from the literature of various methods of counting this work should provide the baseline for such discussions (e.g., Barthell et al. 2013; CUR 2019; Metzker and LeMaster 2014; Metzker, Mills, and Richards 2015; Osborn and Morrison 2008). Reviewing successful methods at comparable institutions provides evidence of counting URSCA mentoring that should help drive consensus toward a workable solution for a campus. Among deans and provosts, it will be important to realize that a one-size-fits-all model does not exist and that, even among programs at one institution, different solutions of counting URSCA mentoring as research, teaching, service, or a new designation may be

needed. Furthermore, since time is the consistent top barrier cited by faculty members to engagement in URSCA, administrators need to work toward solutions that help their faculty members balance their time.

(3) Adjusting curriculum. When creating a system in which mentoring URSCA counts in the regular faculty workload, it will be important to ensure that a balance and breadth of other courses is maintained. Considerations may include layering URSCA experiences into existing courses through CUREs (Hester et al. 2018; National Research Council 2017), well planned timing and organization of teaching-credit banking systems, or capping of in-load teaching credit, so that individual URSCA experiences do not overtake the teaching load of any given faculty member (Kim, Leahy, and Kendrick 2017). Building a research-for-all curriculum takes departmental buy-in, so providing support for developing a scaffolded curriculum that builds from the first year to a capstone or fourth-year thesis experience is an important part of successful, curriculum-wide URSCA incorporation. The faculty and administrators should consider the use of external resources to build the needed buy-in and guide program development. The CUR Transformations Project (CUR n.d.) provides models for such support.

(4) Considering budgetary constraints. Some of the recommendations listed here are revenue neutral (such as tenure and promotion recognition; some awards), but others require resources. As institutions develop approaches for including mentorship of undergraduates in workload, evaluation, tenure, and promotion, they also will need to address associated budgetary issues. Key among these is the question of whether the inclusion of mentorship in workload will require additional faculty (full-time or adjunct) to cover courses. There are

creative ways to think about curricular design that can assist with addressing this issue. For example, inclusion of mentored research courses toward major requirements allows for both scaffolding of the research process in a curriculum and for inclusion of hours in traditional faculty course loads. Programs can also evaluate current course requirements and offerings, asking two key questions:

(1) Do all current course offerings align with program mission and needs?

(2) Could more courses be offered on a rotating schedule?

The use of curriculum maps can help both academic advisers and students align schedules with when and how often required and elective courses are offered and can provide greater flexibility to departments in sequencing of courses and in research-based opportunities for students and mentors. More important, investment in mentorship of undergraduates can have important institutional benefits. In addition to beneficial effects on undergraduate researchers, including improved critical thinking skills, academic achievement, and increased retention, faculty members have reported increased satisfaction with work life when involved in undergraduate research (Webber et al. 2013), which can in turn enhance faculty recruitment and retention. Not surprisingly, research by Webber and colleagues (2013) and others (see, for example, Johnson et al. 2015) also show that institutional recognition of the value of mentorship through provision of resources and time increases the likelihood of faculty mentorship efforts.

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