GRADUATE students will be unprepared to address complex societal and environmental challenges without exposure to knowledge, skills, and experiences in engaged research [1, 2]. In other words, they will become specialists without perspective, technical experts who lack an awareness of broader contexts [3]. Graduate programs need to provide training in community engagement, cultural competency, conflict management, and relationship building if institutional commitments to both students and engaged research are to be realized [4–8]. Even interdisciplinary courses and degree programs often fall short when it comes to preparing students to navigate partnerships outside academia and to become the next generation of engaged scholars and effective agents of change.

Today’s forward-thinking academic mentors and graduate program leaders no longer ask students to check their identities and values at the door, but encourage them to explore the tensions between academic research and advocacy. Universities and departments are working to model effective community engagement, incentivize the production of public-facing knowledge products, and provide the institutional support and structures to facilitate external partnerships.

BUILD INDIVIDUAL COMPETENCIES

Most graduate programs prioritize the skills that graduates will need in order to compete for increasingly scarce academic positions [9–12]. Professor KerryAnn O’Meara, former President of the Association for the Study of Higher Education, notes “graduate students across disciplines have said that they want to be prepared for work that connects their intellectual passions with the needs of society but feel unprepared to do so” [13]. O’Meara recommends building graduate students’ individual competencies toward community-engaged scholarship through [13]:

- Exposure to research methods appropriate to engaged work in their discipline, including...
Student training for engagement with non-academic societal actors requires facilitation at three levels:

- To build individual competencies for boundary-spanning research and effective, ethical engagement
- To cultivate enabling relationships through mentorship and inclusive communities of practice
- To create supportive, validating institutional structures and cultures

strategies and ethics related to participatory action and community-based research.

- Reflection on issues of differential power and privilege between university actors and external partners. Students should learn and acknowledge their institution’s history of community engagement, including its mistakes, such as past exploitation of community members. Mentors should facilitate these conversations whenever possible and not expect students to navigate complex university legacies without guidance.

- Experience developing different types of knowledge products, such as policy briefs, websites, blog posts, and non-academic grant proposals.

- Finding and participating in professional communities related to engaged work.

- Training in theories of change (see glossary) including the social and political dimensions of science-policy translation.

- Practice in boundary-spanning skills such as strategic thinking, co-development, problem-solving, decision-making, and policy implementation.

MENTORSHIP FOR ENGAGED SCHOLARS

Faculty mentors and directors of graduate programs play important roles in establishing norms and expectations for engaged scholarship [14]. Because graduate education occurs mainly within disciplinary departments, effective socialization for community engagement must be embedded within the courses, programs of study, and mentorship experiences of all students, regardless of program affiliation [15]. Effective mentors will emphasize collaborative research and co-production as standard parts of graduate training. Engaged scholars also benefit from
networks of mentors, including faculty, research staff, student peers, and external stakeholders, who can model effective partnerships, help students navigate the inevitable conflicts of engagement, and support the formulation of their professional identities as engaged scholars. Ideally, departments will orient toward:

- Assisting students in developing mentorship networks instead of traditional dyadic and top-down mentor relationships [16].
- Encouraging students to seek out academic mentors who self-identify as engaged scholars or serve as members of external organizations or community groups that share common social or environmental values [16].
- Advocating for students to think creatively about their research, make connections to their non-academic interests, and formulate their identities as scholars and advocates [17].
- Offering to co-author or become co-investigators on engaged projects so that students get first-hand experience alongside their mentors.
- Reinforcing graduate students’ professional identities as engaged scholars by nominating them for awards, sharing positive recommendations, and introducing them to colleagues with similar values [13].
- Supporting students through some of the unfamiliar aspects of engaged scholarship, including uncertain timelines, moments when the expectations of academic and non-academic partners diverge, and concerns about intellectual property and co-produced research [18].
- Combating negative narratives about interdisciplinary and engaged scholarship by highlighting examples of successful engagement leaders inside and outside academia, particularly examples close to home.

"Among the factors that influence graduate student academic development and learning experiences (e.g., collegiality and curriculum), research has consistently shown that advising is one of the most significant variables associated with academic success."

Jaeger, Sandmann & Kim, 2011 [14]

CREATE SUPPORTIVE INSTITUTIONAL STRUCTURES AND CULTURES

Just as there are barriers to engaged scholarship for tenure-track faculty members, there are barriers to students’ embrace of the same. For example, restrictive thesis and dissertation committee membership rules prevent advisory collaboration with non-academic partners. Requirements that dissertations be presented in the form of discrete, peer-reviewed manuscript drafts limit students’ ability to produce policy documents, business proposals, communication strategies, or educational materials. In many cases, these outdated rules rob students (and their advisors!) of valuable opportunities to collaboratively produce action-oriented outputs that address pressing real-world problems. Institutional leaders and program directors who are strongly committed to engaged graduate
training can support students via innovative cohort programs, training and mentoring programs, changing institutional norms and rules, and providing dedicated funding to support engagement activities. Supportive institutional structures for graduate students include the following:

- Allocating resources for dedicated staff, interdisciplinary centers, workshops, externships, capstone projects, and other mechanisms that facilitate collaboration between students and partners external to the university.
- Allowing community members or external stakeholders to serve on graduate advisory committees.
- Providing training for advisors and committee members in evaluating engaged research [19].
- Expanding coursework to include content on responsive and ethical community engagement [14].
- Highlighting departmental or campus commitments to engagement and integrating engagement opportunities into recruitment and orientation materials for prospective graduate students [13].
- Valorizing and rewarding pluralistic forms of scholarship as legitimate, rigorous, and desirable.
- Hiring program representatives who advocate for students seeking opportunities to conduct engaged scholarship, including choosing supportive mentors for thesis and dissertation committees.
- Providing dedicated funding in the form of ongoing grant or fellowship programs to support engaged and applied student research [20].
- Developing “digital badges” or other credential programs that students can use to showcase their engagement skills for future employers [21, 22].
- Allowing teams of graduate students to pursue collaborative, even cross-disciplinary PhD projects regarding issues too unwieldy for a single researcher or research field [23, 24].
- Fostering experiential learning by expanding internship opportunities beyond the campus [25].

Innovative universities have embraced a number of these ideas to great effect. For instance, Duke University’s Bass Connections brings together students and faculty to co-investigate complex societal problems [26]. At Arizona State University, the Graduate Certificate in Environmental Communication and Leadership program offers graduate students in science-based fields training in co-production and communication with public audiences and decision-makers, as well as strategic leadership development. Another graduate certification, Michigan State University’s Certificate in Community Engagement, “is designed to help graduate and professional students develop systemic, scholarly, and respectful approaches to their community-engaged work” [3]. The program works to provide the necessary support and structure to strengthen graduate students’ skills toward successful community partnerships. And, in the same vein, the University of Georgia made it a priority “to provide a more formal support structure for graduate students” [3] and created graduate coursework and a noncredit portfolio program that both empower students to develop their effectiveness as engaged scholars.
ANGLES NETWORK

ANGLES (A Network for Graduate Leadership in Sustainability) is a collaborative network of university leaders seeking to improve training and resources for leadership development among graduate students. ANGLES developed a searchable database of programs and workshops in the United States and Canada that teach essential sustainability leadership skills across seven key aptitudes [27]:

1. Fostering Justice, Equity, Diversity & Inclusion
2. Building Emotional Intelligence
3. Collaborating for Impact
4. Communicating and Engaging
5. Strategic Thinking & Planning
6. Working Productively & Efficiently
7. Making Your Work Matter

Building individual competencies in these areas is critical for engaged scholars.

In 2019, the network published the book Developing Change Agents: Innovative Practices for Sustainability Leadership [28]. The book describes models of graduate leadership education, policy engagement, competencies for transdisciplinary graduate research, and curricular reforms designed to institutionalize engagement and boundary-spanning work by graduate students.
COHORT TRAINING MODEL

The CREATE Scholars Program at the University of Minnesota serves graduate students interested in community-engaged research at the intersection of the environment and equity [18, 29]. Graduate students from any discipline can apply to the 12-month program that includes a semester-long practicum course, a funded externship with a community partner, cohort-building activities, and professional development training. Within the practicum, they receive training in co-problem formulation, cultural competency, community-engaged research, and the science of collaboration. In the externship portion, faculty and community mentors supervise teams of students paid to work on applied problems. The program helps to normalize and institutionalize engaged scholarship by mentoring students as they find their own identities as engaged scholars, articulate how their engagement skills align with their professional goals, and enter a supportive community of practice.

<table>
<thead>
<tr>
<th>RESEARCH PHASES</th>
<th>PROGRAM COMPONENT</th>
<th>SKILLS &amp; CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish relationships &amp; build trust</td>
<td>Practicum Seminar</td>
<td>Analyzing power &amp; privilege</td>
</tr>
<tr>
<td>Researchers</td>
<td>Co-develop research questions</td>
<td>Reflective boundary spanning Design thinking Community engaged research</td>
</tr>
<tr>
<td>Community Members</td>
<td>Apply interdisciplinary methods</td>
<td>Spacial analysis Data visualization Data processing Collaborative research Science communication</td>
</tr>
<tr>
<td>Summer Externship</td>
<td>Assess accountability &amp; research outcomes</td>
<td>Historical analysis Decision analysis Systems thinking Project management</td>
</tr>
<tr>
<td>Fall Reflection</td>
<td></td>
<td>Program evaluation Reflection</td>
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<td></td>
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<td>Impact assessment Outreach &amp; communication</td>
</tr>
</tbody>
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Recreated from Figure 1 from Keeler, B. L. et al. Community-Engaged Scholarship for Graduate Students: Insights from the CREATE Scholars Program. Journal of Higher Education Outreach and Engagement 26, 125-137 (2022).
CONCLUDING THOUGHTS

Providing graduate students with adequate training in engaged scholarship is crucial for developing future change leaders who are able not only to bring attention to but to actually address complex challenges. Key guidance for departments, programs, and institutions includes aligning all levels of the academic system behind the institutional priority of engaged scholarship, building students’ individual competencies in various aspects of applied study, cultivating collaborative relationships with mentors and communities of practice, and backing it all up with supportive institutional structures and cultural messaging. Students will leave their graduate programs ready to both pursue and model engaged scholarship as they move into teaching, research, and leadership positions throughout society.

REFERENCES


IMAGE REFERENCES

1. Images for the figure on page 63 were downloaded from vecteezy.com.