INTERNATIONAL YEAR OF
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Strategies for Tomorrow's Quantum Workforce

Executive Summary for the 2025 Quantum Education & Policy Summit

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CHICAGO QUANTUM EXCHANGE

Institute for Robust Quantum Simulation

Executive Summary

Quantum information science and technology has become a national priority, bringing increased focus to the education and workforce systems required to sustain and grow the field. While national initiatives have helped to develop and implement programs to meet the growing need for talent, efforts remain regionally siloed and continue to draw heavily on research-intensive universities that serve a small portion of the available talent nationwide.

To support stronger collaboration across a wider range of institutions, personnel from the National Science Foundation's Quantum Leap Challenge Institutes and the Chicago Quantum Exchange organized the 2025 Quantum Education and Policy Summit with support from the National Science Foundation and QED-C, in partnership with Elevate Quantum and South Carolina Quantum.

The two-day event brought together nearly 50 educators and professionals from 20 states, including 23 attendees from community colleges and teaching-focused institutions. In addition to intensive breakout discussions organized around regions, institution types, and specific workforce initiatives, QEPS included a panel on community and technical college efforts, a keynote presentation Jobs for the Future, and resource presentations by quantum education field leaders.

// Participants for QEPS 2025 ranged from across the country and included leaders from all five NSF QLCIs //

Key Themes From Participant Discussion

Lack of large-scale coordination: Participants described frequent struggles with regional isolation, lack of awareness of what other educators were building, and even a sense of competition within the field. Whether at large, well-resourced institutions or smaller or rural institutions, participants expressed dissatisfaction with the level of coordination they perceived in national efforts to build the quantum workforce.

Problems with systemic support and access: Participants consistently expressed a desire for more access to support in their education and workforce development efforts, identifying curriculum sharing, support from institutional administrators, and more well-defined paths and outcomes for community and technical college students. Attendees questioned both the "how" and "why" of building quantum education initiatives in what occasionally appeared to be a resource or support vacuum, even in well-resourced regions.

The role of external partners and regionalism: Although recognizing the importance of engaging industry partners, participants often expressed frustration at the ad-hoc nature of these partnerships and the challenges of building systematized relationships for student support. Regional organizations were identified as resources and roadblocks to connection educators with industry partners.

These themes emerged from participant discourse and represent the most-discussed ideas and concerns of QEPS 2025 attendees.

// Participant discussion drove the strategic and tactical findings of QEPS 2025 //

Recommendations

Support cross-cutting initiatives that empower and inform non-R1 institutions: Targeted initiatives should support non-R1 and two-year institutions in developing quantum workforce programs aligned with industry skill needs. Clearer workforce guidance, equipment access, and grant support would enable these institutions to launch programs and significantly expand the quantum talent pipeline.

Centralize and offer resources for quantum education, particularly for institutional administration: A centralized, national repository of quantum education and workforce development resources should be created to make curricula, program models, partnerships, and implementation guidance easy for educators and institutions to find and use. A shared platform would reduce duplication of effort, accelerate new program development, and strengthen collaboration and partnerships across the quantum education ecosystem.

Incentivize cross regional partnerships and initiatives: Federal agencies, funders, and ecosystem leaders should incentivize cross-regional quantum workforce initiatives that promote knowledge sharing, coordination, and collaboration across regional hubs. Strengthening connections between regions would accelerate national workforce development and ensure smaller or emerging ecosystems can participate in building the quantum talent pipeline.

These recommendations represent **large-scale priorities** toward which the quantum education and workforce development community may direct its efforts in order to reduce duplication of effort and create broad collaboration toward the creation of a holistic quantum workforce.

"A successful event gathering the right people to discuss the right issues at the right time, and the right place!

QEPS 2025 Participant

Event Context and Organization

The global quantum enterprise is entering what is widely described as the *second quantum revolution*: a transition from a century of theory development, beginning in the 1920s, to large-scale technological application and commercialization in the 2020s [1-3]. This shift, recognized internationally through initiatives such as the International Year of Quantum Science and Technology, marks a turning point in which quantum technologies are moving out of the laboratory and into industry, government, and society at large. As a result, the emerging quantum economy will require a more rapid expansion of the workforce than the field has historically supported.

In the United States, building this workforce has been identified as a strategic national priority. [4] Federal planning documents emphasize both the scale and breadth of the need, including the expectation that roughly half of future quantum-related jobs will not require a graduate or even four-year degree [5]. Yet, the current quantum education and training ecosystem is not currently well aligned with this objective. Research-intensive universities primarily train undergraduates and graduate-level talent, while collaborations with the institutions that educate the majority of non-specialist and technician-level workers remains limited. At the same time, uneven levels of quantum education infrastructure across regions hinder the sharing of talent, models, and best practices, making sustained cross-regional collaboration difficult.

To address these challenges, the NSF Quantum Leap Challenge Institutes for Quantum Systems through Entangled Science and Engineering (NSF Q-SEnSE), Robust Quantum Simulations (RQS), Hybrid Quantum Architectures and Networks (HQAN), and the Chicago Quantum Exchange (CQE) convened a collaborative workshop, the Quantum Education & Policy Summit (QEPS), in partnership with the Quantum Economic Development Consortium (QED-C), and support from the National Science Foundation. Building on existing convening efforts in quantum education and workforce development (EWD), QEPS added a novel, explicit focus on connecting leaders across the full quantum EWD landscape.

Participants attended from a range of institution types, geographic regions, and sectors, including education, industry, and funding organizations, drawing on all five NSF-funded Quantum Leap Challenge Institutes as well as faculty and staff from a range of institutions across the country. This report collects and presents major conference themes and feedback from QEPS attendees; participants' discussions inform both key themes and attendant recommendations for strengthening coordination and collaboration across the entire field as it scales to meet national workforce needs.

Current Efforts in Quantum EWD

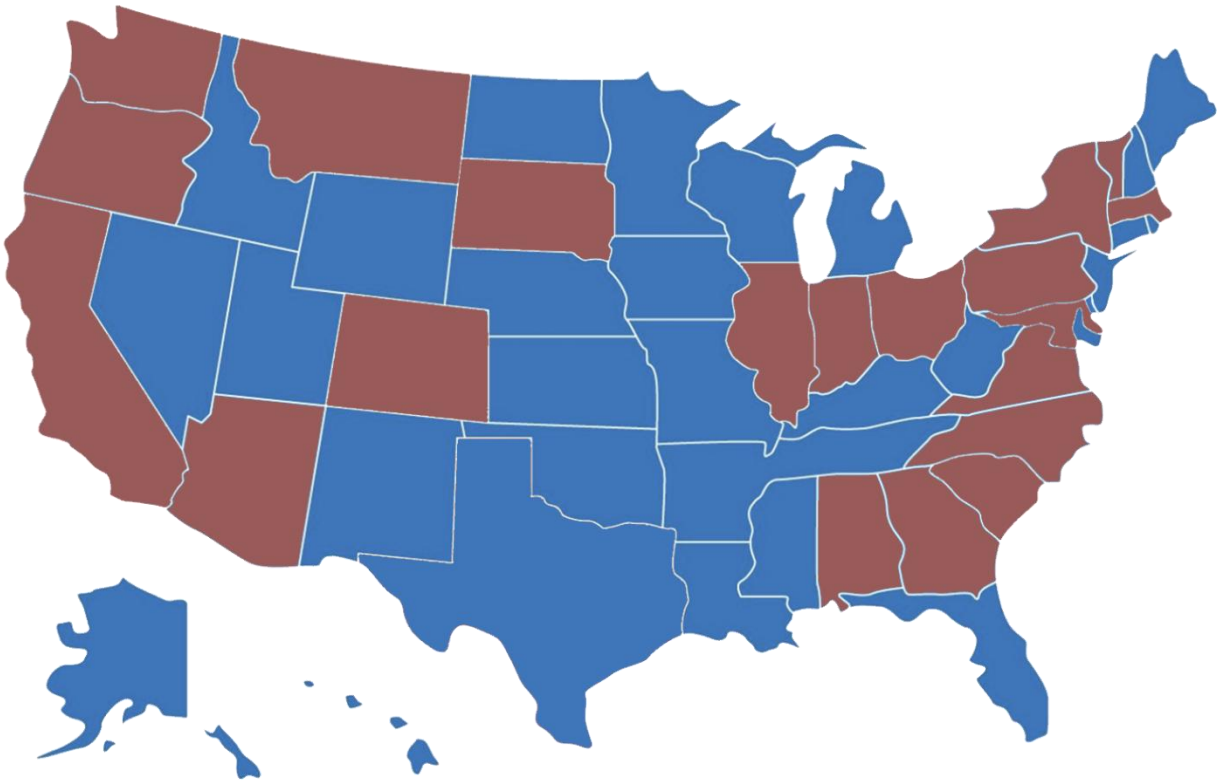
Recent research into the needs of quantum industries has demonstrated a broad need of the workers with a range of educational credentials [6,7] and has documented the efforts of higher education to meet those needs [8-11]. As mentioned above, studies have highlighted industry demand for skilled STEM workers with technical and analytical competency, but *not* necessarily with quantum science specialty training [cite]. However, much of the work remains primarily focused on coursework and initiatives at research-intensive institutions. **The QEPS was designed to bridge the gap between institutions currently leading quantum education research and the institutions who will train the estimated 50% of workers who will not need a four-year degree**.

In addition to the foundation of quantum education research and university education, QEPS also builds upon a number of other convenings and gatherings. Large scale gatherings such as Quantum World Congress, QED-C's Quantum Summit, and IEEE Quantum Week [12-14] have included discussions on how to expand quantum workforce development initiatives. In 2022 and 2023, a pair of workshops was convened to spotlight the role of minority-serving institutions (MSIs) in building the quantum workforce and to help prescribe a strategy for broader participation [15,16]. In 2024, faculty from the University of Colorado Boulder and Duke University hosted a workshop on the topic of building a national quantum center [17], highlighting the need for greater centralization of quantum education efforts and resources. Later in 2024, the QED-C Workforce Technical Advisory Committee presented on the idea of QEPS at the QED-C annual meeting [18].

Event Design and Implementation

Building on these prior initiatives, the QEPS aimed to provide a platform for education and workforce leaders across a wider range of institution types to document the unique needs and interests driving quantum education and workforce development across the country and build connections between those leaders and their initiatives. The event aimed to solicit feedback from individuals and groups with an overall goal of developing recommendations to improve collaboration within and across regional ecosystems.

The QEPS was organized as a collaborative effort across three NSF-funded Quantum Leap Challenge Institutes, NSF Q-SEnSE, RQS, and HQAN, and the Chicago Quantum Exchange. In addition to organizing, NSF Q-SEnSE, RQS, and CQE provided funding, along with the Quantum Economic Development Consortium (QED-C) and the National Science Foundation (NSF). All organizations provided recommendations on invitees, along with other regional quantum hubs including the Bloch, Elevate Quantum, and South Carolina Quantum.



// A map of United States showing in red the home states of QEPS 2026 participants. //

The QEPS hosted 44 attendees at the University of Maryland campus on October 23 and 24, 2025, with the majority of attendees coming from higher education institutions. Faculty, staff (including both educational staff and university admin), industry representatives, and workforce professionals attended from 20 states and Washington, DC. **Of the faculty and staff participants from higher education, 23 were from non-R1 institutions, including representatives from two-year and technical colleges.** Representatives from several federal agencies including the NSF, Department of Energy, and Department of Defense registered but were not able to attend due to the federal government shutdown.

The two-day agenda focused intentionally on providing discussion opportunities as opposed to keynotes and presentations. The first day brought attendees together first by region and then by institutional classification for strategic discussions about the quantum education field. Regional breakouts grouped attendees from the West Coast (CA, OR, WA), Mountain West (AZ, CO, MT), Midwest (SD, IL, OH, IN), DMV (DC, MD, VA), Northeast (PA, MA, VT, NY), and South & Southwest (NC, SC, GA, AR). Institutional breakouts drew on the Carnegie Classifications, organizing attendees by institution size and access, as defined by the number of Pell Grant eligible students and historically underrepresented students at an institution. In the breakouts, participants were invited to share challenges, strengths, opportunities and accomplishments unique to their region or institution type. The Day 1 agenda also included feedback sessions with industry partners hosting

educational and workforce activities and a panel of community college leaders to discuss questions of access and program design focused on the needs of non-expert quantum workers.

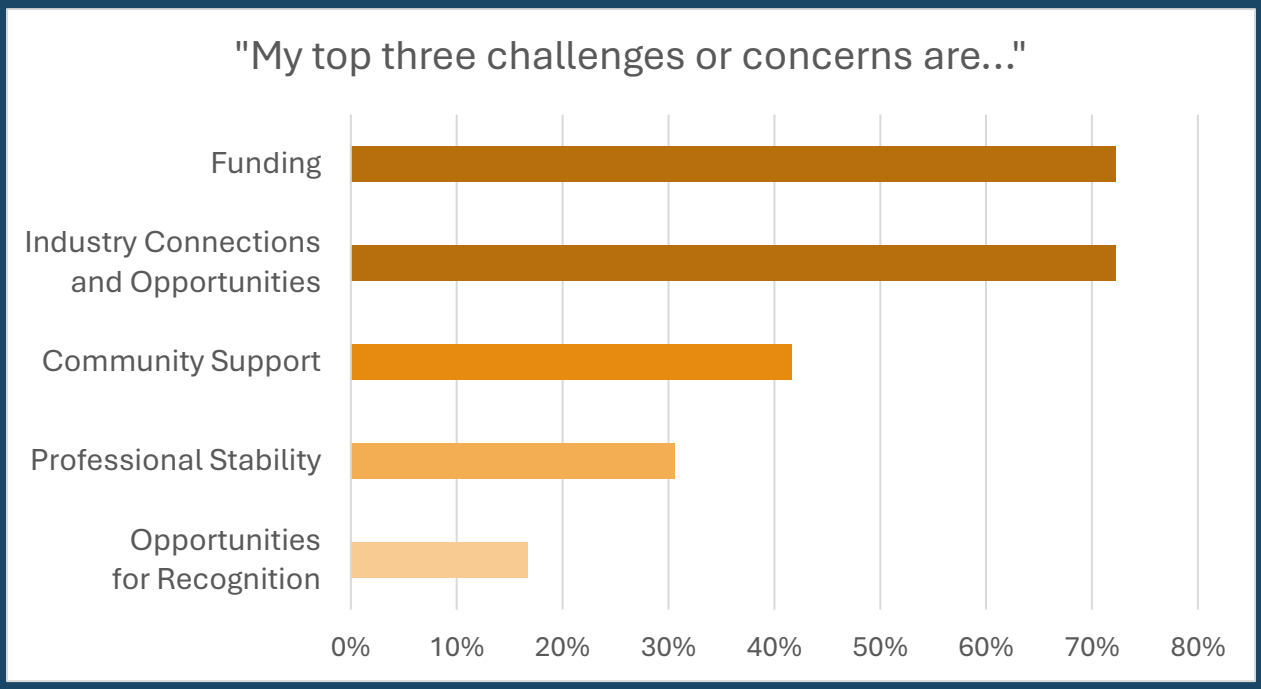
The workshop's second day focused on moving from strategy to tactics and featured a keynote presentation with small group discussions facilitated by speakers from the national workforce nonprofit Jobs for the Future. The keynote highlighted sectors with similar growth trajectories to quantum (e.g., climate, energy, semiconductors) that have benefited from national workforce initiatives with discussions focused on how quantum workforce efforts might build on or borrow successful strategies from other sectors. Following this keynote, participants joined breakouts focused on the four strategies presented by the JFF speakers: industry private-public partnerships, work-based learning and apprenticeships, integration with K-12 and postsecondary pathways, and skill-based practices. To ensure that participants left the Summit aware of existing initiatives in quantum education, the second day closed with presentations of current efforts and resources focused on K-12 education, industry needs and trends, and undergraduate education.

// Speakers from the Jobs for the Future NPO discussed successful models for sustainable growth of the field //

Collecting & Analyzing Participant Discussion

Pre-Summit Survey Responses

To capture the interests, needs, and concerns of QEPS participants, organizers surveyed participants before and after the event. Surveys were designed by an external evaluator who was not a member of the project team and completed anonymously without any demographic or identifying questions. The pre-event survey asked for participants' objectives for participation in the QEPS, their regional or institutional goals for quantum education and workforce, and their top three challenges for realizing those goals. The post-event survey invited feedback about the event and asked how the Summit changed the participants' approach to their quantum EWD goals. Approximately 75% of participants filled out the pre-Summit survey, and about 25% of participants filled out the post-Summit survey.



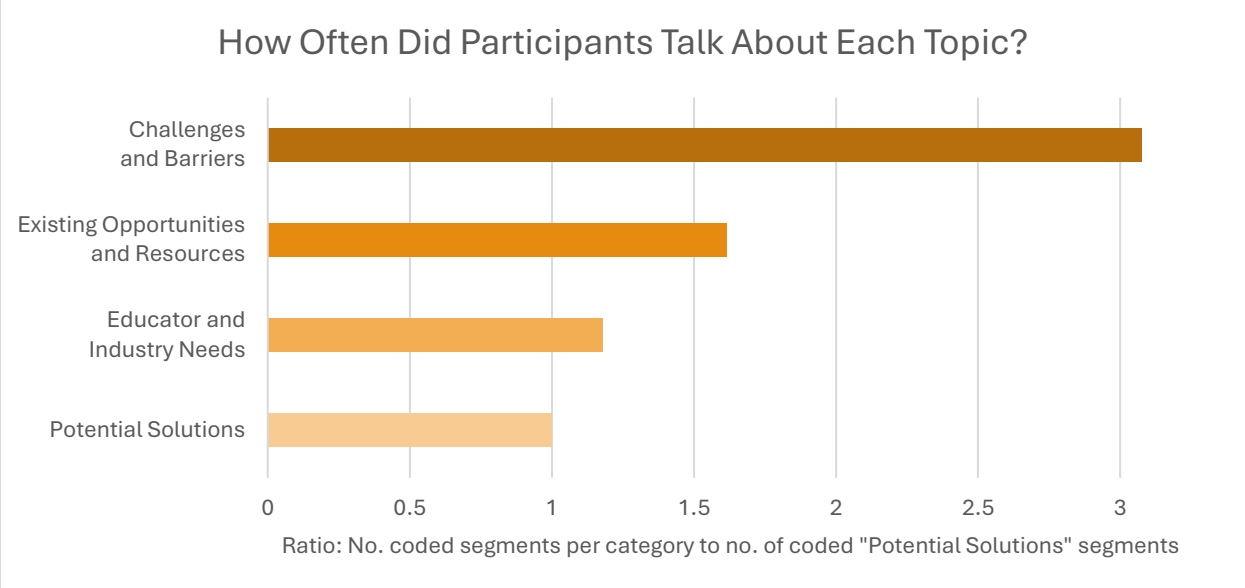
In the pre-Summit survey, 36 of 44 attendees responded, indicating their top three challenges, with the most frequent responses including funding (72%), industry connections and opportunities (72%), community support (42%), and professional stability (31%). In a free-response question asking what participants hoped to gain from the Summit, a majority of responses indicated interest in the connective elements of the event: respondents expressed a desire to learn more about successful programs, build relationships with peers and leaders in the quantum EWD space, and find opportunities to collaborate on nationwide initiatives.

Post-Summit Survey Responses and Participant Feedback

The post-workshop survey asked participants how the conference impacted their approach to their quantum workforce goals and for any general feedback. Responses, even those that offered criticism or ways to improve the event, were uniformly positive. Impact-focused comments described increased understanding of the quantum landscape, improved connection to other EWD practitioners, and broadening conceptions of the role of strategic collaboration in building the quantum workforce. A few comments suggested alternative formats for Summit activities to better meet participants' needs, but, by and large, feedback praised the Summit for being timely, relevant, and impactful.

Discussion Capture During the Summit

Notetakers attended each session, recording feedback in a series of session-specific Google Docs which were made available to all attendees to view and provide feedback on. After the QEPS, note files were imported into a database and analyzed using MaxQDA qualitative data analysis software. A simple codebook was built emergently from codes based on frequency of particular keywords or specific topics in participant discussion. **These codes were organized into four categories: "Challenges and Barriers," "Existing Opportunities and Resources," "Potential Solutions," and "Educator and Industry Needs."** Finally, we analyzed across codes and categories for conceptual and topical commonalities; these commonalities became the three key themes below. That is, **the discussion themes presented here should be understood to be those ideas and topics that participants both discussed the frequently and discussed across conversational contexts.**



As shown in the above graph, participants discussed challenges and barriers over 3 times as often as they discussed potential solutions to the issues facing the field.

Key Discussion Themes

Theme: Lack of Large-Scale Coordination.

The single most-discussed topic across all breakouts was the challenges associated with poor large-scale coordination and the need to address this challenge. Discussion of coordination challenges cut across both regional and institutional breakouts, including feedback on individual and systemic challenges. Often, participants would tie this struggle to successful activity at their institution or within their region. For example, one participant acknowledged that individual institutions have their own strengths (e.g., serving specific demographics), acknowledging that "there is room for all" but raised the question, "how do we coordinate [efficiently]?" Participants also acknowledged the sheer magnitude of quantum efforts throughout the country, even using terms like "saturated" to describe the landscape, but often tied that awareness directly to frustration with feeling the lack of coordination at the cross-regional and cross-institutional scale.

"How do we coordinate all of our efforts across institutions? Everyone wants to do intro courses, degrees, curriculum – but how do we develop a complementary approach? It's not that everyone is doing the same thing but we need to join forces."

- QEPS attendee during breakout session

Multiple participants also expressed frustration with competing for resources or connections. Participants brought up that concentrated quantum workforce efforts are often focused around large-scale grants that, without explicit, intentional efforts to increase participation, do not include rural and smaller institutions; larger metropolitan hubs and well-funded institutions are often better positioned to compete for funding opportunities. **However, participants hailing from larger institutions or in regions of high quantum activity also expressed dissatisfaction with the level of coordination they perceived in the current quantum EWD landscape.**

Discussion notes indicate that participants were largely displeased with the level of connection available to them regardless of who they were discussing as the connected entity and without a clear point of view on who or what organization is responsible for coordination. One participant from a less-developed state expressed disappointment that "states with smaller budgets can't match the scale of other states," while multiple participants from a region with heavier government investment lamented that "industry in [our region] is not connected the way we see in other

ecosystems." Even in regions with high government and industry involvement, educators still felt constrained by the lack of consistency in coursework or degree requirements across institutions.

Participants did raise several potential solutions to increase access and connection, including more frequent regional meetings like the QEPS, shared laboratory or training facilities for educators, and opportunities to streamline student transfer agreements. A key element discussed on the subject of improved coordination was the importance of coordination with industry partners and regional "hub" organizations such as the Chicago Quantum Exchange in the Midwest and the Mountain West area's Elevate Quantum. Participants touched on relationships with these organizations, and with industry, in discussing both large-scale coordination and general systemic support and access (theme 2) and the role of these organizations (theme 3).

Theme: Problems with Systemic Support and Access

"Systemic support" in this report refers to the resources, personnel, and investment that allow for sustainable activity in quantum EWD beyond that of an individual's own efforts. While participants readily discussed their own efforts or those of their peers, these discussions were contrasted with, or even described as in spite of, problems with navigating institutional structures to attain adequate support, challenges to implementing activity sustainably beyond a single institution, or an overall lack of resources. **Access challenges were reported at multiple levels including individual classrooms, departments, universities and institutions, and regions. Participants consistently expressed a strong interest in "more" and "better" access to quantum EWD support, especially for smaller institutions and less-developed regions.**

At the institutional level, participants named a number of logistical challenges prohibiting the full uptake of quantum education activity, including organizational barriers to inter-departmental collaboration, challenges with designing credentialing systems, lack of buy-in from institutional executive leaders, accreditation and curriculum challenges, and barriers to cross-institutional initiatives. Participants most frequently noted the lack of standard language, curricula, or organizational structure when discussing cross-institutional access challenges. For example, one participant noted the lack of a defined pathway for community-college students interested in quantum, which prevents students from transferring into a four-year degree program. Other support and access challenges included lack of sufficient faculty expertise in quantum to feel comfortable building or teaching quantum curricula, struggles connecting with other institutions to gain support or resources for building or teaching, and lack of awareness on "what to teach" in a quantum class or program.

One institution-level challenge that stood out among two-year and technical college participants was the challenge of adequately creating credentialing programs without clear knowledge of the skills actually needed by industry and lack of certainty that students receiving credentialing in any particular program would actually be able to secure jobs. Even in contexts where connections to industry were relatively strong, participants at two-year and technical institutions expressed a strong desire for more clarity from and collaboration with industry partners to determine how to allocate resources for building programs and how to clearly communicate job prospects available to students after completing those programs.

"Our concern is to have a lot of students prepared for jobs that don't exist."
- QEPS attendee

At the regional level, some participants cited challenges arising from a general lack of awareness of or investment in quantum, especially in less developed regions. Participants also raised concerns about regional or national standards, for example pointing to the inconsistent adoption of Next Generation Science Standards (NGSS) across states and the lack of quantum-specific standards.

// Participants discuss strategies for growing the quantum workforce during the JFF keynote. //

Theme: The Role of External Partners and Regionalism

Participants noted the importance of "external partners" as well, referring to individuals and organizations who are external to academia, including companies, non-profits, funders, and regional organizations. Participants tended to talk about external engagement largely in the context of their own region, for example discussing attempts to develop or sustain partnerships with specific companies; multiple participants, largely from developed regions, described ongoing initiatives in partnership with industry leaders such as Northrop Grumman, EeroQ, or Lockheed Martin.

However, participants also described connecting with industry partners as challenging. Participants highlighted the different goals for industry, who often communicate a need for return on investment that prevent companies from taking risks on education initiatives that are ancillary to their main objectives. Participants also expressed frustration at the lack of general awareness of systematized ways to interact with industry. Many participants acknowledged that educational partnerships with industry members were born largely from their own personal connections with individuals now at specific companies and that maintaining those institutional ties was dependent upon their own individual efforts to maintain the relationships that allowed those ties in the first place.

In discussing realizable outcomes, participants expressed a desire for more explicit or concrete communication from industry partners about actual, near-term job opportunities and skills needs, as opposed to 5- to 10-year projections, which participants expressed skepticism in. Participants also suggested that industry-created student resources on these topics could help shape curricula and facilitate better student outcomes. Academic and industry participants acknowledged the challenges of realizing internships for students in terms of overhead and company interest in training. Finally, participants expressed frustration at what appeared to be a nomenclature mismatch on the role of "technicians" in the quantum industry. **Multiple participants pointed out that, while schools that prepare students for "technician" roles (e.g., HVAC, electrical) are often two-year colleges, almost all industry hiring right now for "technician" roles requires a four-year bachelor's degree.** Overall, participants expressed a strong need for better and more specific engagement from industry, with more clearly defined, consistent professional outcomes for students.

Participants praised regional organizations (e.g., Chicago Quantum Exchange, Elevate Quantum) for their ability to facilitate connections across academy, industry, and other external partners, as well as the tremendous boon these organizations can provide in navigating the funding landscape, especially for smaller institutions that lack dedicated research administration teams. Participants also acknowledged the benefit these organizations can have in brokering connections with industry in such a way as to limit "outreach fatigue" and duplication of efforts. However, some participants

also described regional organizations as "protecting industry" rather than fostering connection, and the level of "ownership" of these organizations over regional quantum ecosystems was raised as a concern as well. **Participants acknowledged that regional organizations can work preferentially with certain institutions, leaving open the question of equitable access for the full regional education community.** Overall, however, participants expressed seeing ecosystem development organizations as net positives, multiple participants from regions without a regional actor raised the formation of such an organization as a potential solution to regional disconnectedness.

"The people who were in the original proposal, they get funding, but it's challenging to send funding to people who weren't already on the grant.

- QEPS attendee

The final issue participants raised with respect to regional actors was the question of competition. Despite the unprecedented investment in quantum at the federal level, some participants still expressed feeling like they, their institutions, or their regions were having to compete for resources, inhibiting a broader collaborative education enterprise.

// QEPS 2025 attendees during one of the plenary sessions. //

Recommendations

This report is not intended to provide a universal, generalizable solution to the problems facing quantum education and workforce development in the United States. QEPS 2025, while an important step toward addressing the issue of disconnectedness in quantum EWD, did not assemble a fully national slate of perspectives. Nevertheless, based on the strong emergence of the key themes discussed above, the following recommendations are likely to be useful in targeting strategic areas of development for quantum EWD in the near future. In particular these suggestions are aimed at providing broad guidance to funders and policymakers as effective ways to offer top-down support of a broader, more collaborative national quantum education and workforce ecosystem.

Recommendation: Support More Cross-Cutting Initiatives that Empower and Inform Non-R1 Institutions

As early as 2020, a common refrain in research publications on quantum education and workforce development has been the increasing need for workers able to leverage general STEM and laboratory skills without the years of investment required to obtain an advanced, quantum-specific degree. However, recent research [19,20] has shown that quantum education programs are disproportionately concentrated at institutions with existing PhD programs, seemingly undercutting the professed need for non-specialist workers. The disparity may also work against non-R1 institutions trying to "break into" the quantum education landscape. As described above, many smaller institutions expressed concerns over their ability to adequately design and maintain quantum programs.

Two-year and technical colleges more frequently rely on evidencing clear, near-term professional outcomes for students to introduce new curriculum; unclear or imprecise messaging on actual industry skill and job needs can inhibit institutions' investment in to introduce quantum education programs. Support for development of a common professional language around quantum skills and roles is crucial. Many smaller schools also rely on their connection to R1s for access to quantum education expertise, meaning that they must operate on the timeline of research-intensive institutions, even as the field claims it needs non-research institutions' work to fully fill out the quantum workforce.

To address this issue, the quantum education community, including funders and local governments, should increase support initiatives with an explicit emphasis on empowering and informing non-R1 institutions in building quantum preparation programs that tailor specifically to their and their students' needs. Programs such as NSF's ExpandQISE program and regional initiatives tied to organizations like Elevate Quantum or the Chicago Quantum Exchange

offer some opportunities, but, QEPS 2025 participants' expressed challenges and needs, indicate there is more to be done.

Participants also highlighted the need for initiatives that specifically fund equipment purchases or access. Examples of potential programs included offering incentives for companies to provide older or used equipment for common usage among educators, developing shared quantum "education accelerator" spaces that enable students to earn hands-on experience at shared facilities, or having senior students complete an industry-designed project or challenge. In addition to experience, shared initiatives like these facilitate connections for students, faculty, and institutions. Initiatives like the NSF's recent National Quantum and Nanotechnology Infrastructure program offers a strong step towards established facilities that will improve access to equipment.

Smaller institutions also highlighted a need for support to apply for funding, noting the lack of resources to apply for funding results in a lack of funding. While this issue is beyond the scope of this report or QEPS itself, one solution would be for larger institutions to support and assist with grants that put smaller institutions in control of funded programs to ensure that non-R1 institutions are made more than token partners in larger schools' quantum education endeavors.

Recommendation: Centralize and Offer Resources for Quantum Education, Particularly for Institutional Administration

Part of empowering institutions and regions to build their own quantum education and workforce initiatives without having to reinvent the wheel is ensuring that quantum EWD resources are easy to locate and use for educators across the country. **As more and more resources are created, including curricula, programs and program design plans, industry partner initiatives and schema, and more, the field risks duplication of effort if those resources cannot be connected to one another.**

A central repository of quantum EWD resources would accomplish a number of objectives relevant to the themes shared during QEPS 2025. First, providing a place for educators to store and share materials would improve collaboration and allow those just starting to build quantum initiatives to take advantage of prior work, reducing the time and effort required to bring new programs to fruition. Second, a platform for sharing resources would facilitate communication between educators, assisting with efforts to cross-pollinate quantum activity and helping to alleviate the siloing effect of overly regional focus. A centralized database of quantum institutions looking for partnership would accelerate efforts to address Recommendation 1 above, giving institutions with

new, developing, or under-resourced quantum programs agency in the ways they build partnerships and connections. Third, such a platform could provide a curated set of resources designed for administrators, who can become powerful allies in unlocking quantum investment on the scale of departments, colleges, universities, and local governments.

The need for a centralized platform for quantum education was the key focus of a 2024 workshop on a national center for quantum education [17]. Similar platforms also already exist for K-12 activities and resources through the National Q-12 Education Partnership [21], as well as other fields in science education, for example the REVISE Center (formerly CAISE) [22], which serves as a central, NSF-funded hub for informal science education or NIST's National Semiconductor Technology Center. A similar platform for quantum education and workforce resources for post-secondary institutions could help ensure timely dissemination of advancements in education practices and provide support, guidance, and connection to new practitioners in quantum education and workforce development and would be especially useful in ensuring that the various top-level agencies with quantum strategies (NSF, NIST, DOE, etc.) are able to communicate in concert with researchers and workforce development practitioners.

Recommendation: Incentivize Cross-Regional Partnerships and Initiatives

Regional quantum ecosystems play an important role in developing the workforce, but participant discussions at QEPS 2025 also highlighted the risks of focusing too strongly on regional identity and prestige, especially as it could prevent larger scale national progress. While some degree of competition drives innovation, an increased focus on coordinated, cross-regional initiatives stands to complement the incredible output achieved by regional efforts and accelerate progress towards the shared, national goal to build a strong, vibrant quantum workforce that ensures the US maintains leadership in quantum technologies. **Cross-regional initiatives must go beyond simply facilitating partnership between single institutions. Emphasis should be placed, as appropriate, on efforts that facilitate sharing knowledge, expertise, and strategies for success across the entire quantum EWD ecosystem.**

This recommendation may seem at odds with the goals of regional economic development or difficult to implement in a national ecosystem that thrives in part because of regional competitive advantages, and within which entire regional ecosystems have been grown through large-scale competition. However, while resources and funding are finite, the field cannot develop to meet national strategic quantum workforce goals without a coherent, interconnected quantum workforce development ecosystem at the national level. Regional investment allows regions to play to their strengths and develop local opportunities for economic advancement, but an over-focus on regional "rivalries" and an attitude of scarcity both inhibit the ability of less-developed regions to

participate fully in training quantum workers. Bringing QEPS participants together highlighted the opportunity and need for improved knowledge and data sharing across regions to ensure a nationally inclusive workforce strategy that ensures all areas, including smaller and rural communities, benefit alongside urban peers.

Key Themes

Lack of Large-Scale Coordination

Problems with Systemic Support and Access

The Role of External Partners and Regionalism

Recommendations

Support Cross-Cutting Initiatives that Empower and Inform Non-R1 Institutions

Centralize and Offer Resources for Quantum Education, Particularly for Institutional Administration

Incentivize Cross-Regional Partnerships and Initiatives

Final Word

The QEPS report reflects the input of a wide variety of quantum educators and workforce development practitioners from across the country and from across the educational space, and the resulting recommendations aim to provide broadly applicable guidance on how to develop a more nationally coordinated approach to developing the quantum workforce. Future events like this would benefit from increased participation, specifically from federal agencies and more institutions interested in developing quantum education and workforce initiatives. 2025 participants' feedback on the importance of industry connections also provides a compelling rationale to include more company representatives, both to provide insight into emerging workforce trends and share their own approaches to workforce development; QED-C will remain an important partner to expand industry presence and connections for QEPS participants. The importance of including a range of institutions cannot be overstated and future events will continue to prioritize and connect perspectives from community, technical, and teaching-focused institutions, helping to build connections that support a more nationally coordinated effort that leverages the full range of talent across the US.

"I knew many of the people in the room, having seen them individually in separate conferences, collaborating, reading their work, visiting their labs, or them visiting mine, but I had never seen all of us in the same room. That made a difference in terms of the depth and reach that we were able to achieve. I hope we keep meeting like this in the future."

- QEPS attendee via the post-Summit questionnaire

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