




Report: Grand Challenges in Instructional Design and Technology—Coordinating Research and Development on Significant Problems of Practice

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Abstract

This white paper reports on the OTESSA Santa Fe Colloquium, a two-day scholarly convening held in June 2025 as part of the OTESSA 2025 Congress. Designed as a pilot for a collaborative, problem-centered model of inquiry, the colloquium brought together researchers, instructional designers, faculty, and journal editors to shift attention from educational technologies toward significant problems of practice in instructional design and technology (IDT). Through structured activities, including a World Café dialogue model and a Grand Challenges workshop, participants collectively identified, refined, and prioritized pressing challenges facing the field. Three priority grand challenges emerged: considering the whole human in education, supporting learner mental wellness, and redefining the purposes and structures of education. This paper synthesizes key insights from conference activities and post-colloquium reflection papers, highlighting shared themes, areas of alignment, and opportunities for coordination. Rather than presenting empirical findings, the report offers a practice-oriented synthesis intended to inform strategic planning, future convenings, and coordinated research and practice efforts within OTESSA and the broader IDT community.

Keywords: instructional design and technology, grand challenges, problem-centered research, human-centered education, collaborative inquiry



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Introduction

This special issue is the result of the OTESSA Santa Fe Colloquium that took place June 5–6, 2025, as part of the broader OTESSA 2025 Congress, which included both virtual and in-person gatherings across multiple sites. While the main Congress ran virtually from June 2–6 and included on-site meetings in Toronto and Victoria, the Santa Fe event served as a dedicated, in-person scholarly colloquium hosted at the Museum of Indian Arts & Culture in Santa Fe, New Mexico.

The Santa Fe convening was organized by Stephanie Moore (University of New Mexico), Matthew Schmidt (University of Georgia), and Jason McDonald (Brigham Young University). It brought together sixteen invited participants, selected through a competitive call for proposals. Attendees represented a mix of faculty, instructional designers, researchers, and doctoral students from institutions including the University of New Mexico, University of Georgia, Brigham Young University, University of Minnesota, The George Washington University, Loyola Marymount University, University of Idaho, and Texas Tech University. Several journal editors also participated, representing *Contemporary Issues in Technology and Teacher Education*, *OTESSA Journal*, *Journal of Computing in Higher Education*, and *Journal of Applied Instructional Design*.

This was the first convening of its kind for OTESSA, designed to pilot a model of scholarly colloquia centered on Grand Challenges in instructional design and technology (IDT). Inspired by similar initiatives in other fields, the colloquium's purpose was to shift the focus of IDT research and practice away from specific technologies and toward complex, global problems that require coordinated, interdisciplinary approaches.

Format and Activities

The two-day program combined plenary sessions, workshops, and collaborative “World Café” discussions. The World Café model is a structured small group dialogue process in which participants rotate among tables for timed rounds of discussion, each centered on a focused question or artifact. In each round, a table host briefly orients new participants, after which the group engages in collaborative meaning making, building on insights accumulated across prior rounds. This approach leverages distributed expertise, promotes cumulative sense making, and creates conditions for generative critique that is both dialogic and action oriented (Hokanson, 2023).

Participants were expected to arrive well-prepared, having read and reviewed all accepted draft papers in advance. Each participant brought questions, feedback, and ideas for how papers might connect to broader grand challenges in the field.

- Day One opened with a keynote from Brad Hokanson (University of Minnesota) on the importance of finding and framing problems in design research. The day also featured the first Grand Challenges Hands-on Workshop, led by Drs. Moore, Milman, and Huff, which guided participants through structured brainstorming and prioritization exercises. Using sticky notes, colored stickers, and group huddles, attendees identified and refined possible grand challenges in IDT. In the afternoon, participants engaged in World Café Sessions, small-group roundtables where authors presented their work, received

structured peer feedback, and collectively identified themes, which were later synthesized on a shared Miro board.

- Day Two began with a live-streamed Presidential Address from OTESSA leaders Valerie Irvine and Stephanie Moore, situating the colloquium's work within the broader international mission of OTESSA. The day also included a Publication Pathways session with OTESSA Journal editors, additional World Café rounds, and a continuation of the Grand Challenges Workshop, where groups elaborated on top-rated problems by answering guiding questions such as: *What is the problem? Who is affected? What has been tried? What evidence is needed? What networks or policies might help?*

Both days featured catered lunches at the Museum Hill Café, which extended opportunities for informal dialogue and networking. The colloquium concluded with an action-planning roundtable and synthesis session, where participants identified opportunities for collaboration and committed to next steps, including preparing a 500-word reflection paper and, for presenting authors, revising their manuscripts for possible publication in the *OTESSA Journal*.

Significance of the Convening

By design, the Santa Fe colloquium moved beyond traditional conference presentations to emphasize small-group, interactive, problem-centered dialogue. The structured World Café and workshop models enabled participants to both critique and contribute to one another's work while collaboratively framing the grand challenges that will guide future OTESSA initiatives. Participants also provided written reflections and feedback, ensuring that the outcomes of this first colloquium will inform the design of future convenings.

The Santa Fe event demonstrated the value of blending rigorous scholarly exchange with collaborative, strategic planning. It set the stage for what OTESSA envisions as an ongoing initiative: building networks of researchers and practitioners who can collectively address the grand challenges facing instructional design and educational technology in the years ahead.

Identified Grand Challenges

Through a structured workshop process, participants identified an initial list of 15 potential grand challenges in instructional design and technology. These included: demonstrating education; learning and healthcare; forgiving; human–technology partnerships; anti-technorationalism; human(e) education; inclusive education; redefining education; linguistic justice; mental health; rapidly adaptive technology learning; equal/equitable opportunity and closing the digital divide; quality of instruction in K–12; considering the whole student rather than only aspects that serve institutional agendas; and strategies, guidelines, and pedagogy for the responsible use of AI.

Following group review and voting, participants consolidated these into three priority grand challenges for deeper discussion:

1. Considering the Whole Human

- *Problem identified:* “Currently education requires you to fit to education instead of education fitting to you. We need to go beyond intellectual capital and address the whole human.”

- *Why it matters:* Participants highlighted that learners bring with them mental health needs, disabilities, international status, family responsibilities, cultural and linguistic differences, and other realities often overlooked by institutions. Without addressing these, education risks neglecting students as full humans.

2. Mental Wellness of Learners

- *Problem identified:* “The mental health crisis affects everything including learning, perseverance, and suicide prevention. Faculty, staff, and designers are not trained to support this.”
- *Why it matters:* Thriving learners require environments that attend to wellness as a foundation for learning. Participants noted that without explicit attention to this challenge, both individual learners and the broader educational system will continue to decline.

3. Redefining Education

- *Problem identified:* “Education is too focused on solutionism, technology, and production.”
- *Why it matters:* Current systems emphasize serving the economy rather than helping learners flourish. Addressing this challenge means questioning assumptions about education’s purpose and shifting toward human-centered, flourishing-focused models.

These challenges were captured on large sticky notes during huddle sessions and represent draft phrasing to be refined over time. After the group reconvened, the challenges were reviewed, narrowed, and consolidated through rounds of voting. Participants emphasized that focusing on *problems*—rather than technologies or solutions—was a necessary shift for the field. While connections to frameworks such as the UNESCO Sustainable Development Goals (UNESCO, n.d.) were left implicit, many of the accepted papers explicitly drew such links.

The final output of the colloquium was a preliminary list of identified grand challenges, with shared notes on potential avenues for coordination and collaboration. This list was intended as a starting point. Participants were then tasked with writing a 500-word reflection paper to further clarify and refine these challenges in the weeks following the event.

Key Findings from Conference Activities

The Santa Fe colloquium confirmed that format matters: structure and intentional design can transform scholarly exchange into strategic collaboration. The World Café model was repeatedly highlighted as an invaluable experience, creating the conditions for rigorous yet empathetic dialogue that deepened both the critique of individual papers and the collective framing of grand challenges. Participants emphasized that this structure, including its small group and interactive organization, allowed them to move past defensiveness and surface more candid, actionable insights.

Human-Centered Engagement

One of the strongest findings was the power of human-centered design in academic convenings. Participants described the experience as intellectually energizing and emotionally grounding—rare in typical conference environments where it seems the emphasis is on checking the box to add a presentation to one’s cv and not meaningful interactions, collaboration, critique, or deep sharing of scholarship. This reinforced a broader theme of the colloquium: if education must be redefined to consider the whole human, so too must scholarly gatherings.

Strategic Value of Grand Challenges Framing

The integration of grand challenges elevated discussions from project-specific details to system-level priorities, encouraging participants to think in terms of long-term, cross-contextual impact. While some sought more clarity about what qualifies as a grand challenge, most agreed that the framework was essential for aligning research with pressing global needs and for situating work within international agendas such as the UNESCO Sustainable Development Goals.

Positive Signals

Participants saw Santa Fe as a model for:

- Deep over broad: engaging more meaningfully with fewer papers rather than skimming many.
- Listening as practice: structuring dialogue so authors first absorb before responding.
- Constructive critique: cultivating critique and different perspectives was welcome, including between well-established and new, emerging scholars.
- Balancing inclusiveness and care: creating space for welcoming all participants within a collegial environment that was not hierarchical, unlike most other academic meetings.
- Network-building: generating momentum for collaborations across institutions, journals, and contexts, including early career scholars to be.

Challenges to Address

At the same time, participants identified key barriers to effectiveness that should be strategically addressed in future convenings:

- Infrastructure: poor audio quality and room layout undermined hybrid participation.
- Reach: participants wanted mechanisms to ensure broader exposure to all papers.
- Continuity: clearer post-event pathways for collaboration are needed to maintain momentum.

Implications for OTESSA

These findings suggest that OTESSA can claim a distinctive space by redefining what academic convenings look like. By designing events that are structured, problem-centered, and human-focused, OTESSA not only surfaces research but also builds collective capacity to address grand challenges. At the same time, addressing practical barriers (technical, structural, logistical) will be crucial for scaling this model and ensuring equitable participation across diverse sites and modalities.

Key Findings from the Participants' Papers

Importance of Grand Challenges

Across the participants' 500-word reflection papers, authors endorsed grand challenges as a clarifying way to coordinate efforts on issues that are bigger than any single course or tool. Contributors repeatedly framed the problems as systemic, implicating policy, incentives, and the purposes of education, while also cautioning that challenges must be scoped tightly enough to act on. As one writer put it, they left with "a sense of raised awareness," alongside an "alarm" that demanded sharper focus; another noted that the frame "raised questions about the very purpose and design of education itself."

Specific Challenges Developed

Across the reflection papers, three grand challenge areas surfaced most often: reimagining education's aims beyond compliance, considering the whole human in learning design, and supporting mental health and wellbeing, especially in online contexts. Participants often linked these concerns to crisis responsive and systemic design. They described converging threads across groups: "different approaches that nonetheless converged around the need to attend to the whole student (belonging, mental health, anxiety), and systemic or crisis responsive design," and a shared shortlist emerging in the workshop that included "Wellness of the Online Learner" and "Redefining Education."

Connection to Own Work

Moving from priorities to practice, many authors described immediate shifts in how they position their projects, from reframing questions to committing to specific next steps. Several expressed a desire to align ongoing studies with one of the identified grand challenges and to continue reflecting on the implications for method and audience. One participant wrote, "I feel an urge to better situate my work within a grand challenge... not only from a pragmatic perspective but also intellectually honest," while another reported already moving to application: "At my institution I've already begun... to situate everyday decisions within a broader social and educational context."

Influence on Paper Thinking

Extending those adjustments into writing, the colloquium clarified how papers connect to grand challenges, generated new ideas, and exposed productive gaps, with several noting helpful, actionable feedback. For some, the effect was confirmatory; for others, it prompted substantive reframing and scope shifts beyond the course level. As one contributor explained, the conversations "pushed me to... revise the paper so that it also considers the whole faculty," and another noted that their work "recognize[s] learners as whole human beings, not just as people engaging with content or technology."

Colloquium Feedback

Finally, participants credited the event's design with enabling rapid sense making and momentum. The World Café surfaced shared patterns efficiently; plenaries and presentations provided conceptual anchors; preparation helped people arrive ready; and Miro harvesting made collective thinking visible. Setting also mattered, with the Santa Fe setting described as conducive to deep dialogue. One author wrote, "The world café model peer discussion helped surface common themes..." while another highlighted that there was "something powerful about

being able to watch in real time as reflections and thematic patterns emerged visually on the board.” Several offered practical ideas for future colloquia to extend post event continuity and time for deeper dives.

Overlapping and Reinforced Findings

Taken together, the live activities and the written submissions tell a coherent story. What surfaced in the room largely reappears on the page, with participants naming similar priorities, using similar language, and moving from ideas to concrete next steps. Some overlapping findings include:

1. **Systemic lens, shared purpose.**

In both settings, people looked beyond individual classes to the larger problems shaping education. They reported “a sense of raised awareness” and “alarm,” and pressed on what education is for and how it is designed. This shared framing points to system-level responses rather than isolated interventions.

2. **Whole human and well-being as a throughline.**

Building on that, both in-person conversations and reflection papers centered belonging, anxiety, and care as essential to meaningful learning. As one summary put it, groups “converged around the need to attend to the whole student (belonging, mental health, anxiety), and systemic or crisis responsive design.” The papers then carried this emphasis forward, especially for online learners.

3. **Event structure leading to reframing and application.**

The format seemed to do more than collect ideas. It prompted shifts that the writing then documented. Authors reported being internally “pushed... to revise the paper” and expressed “an urge to better situate my work within a grand challenge,” with some already taking steps to “situate everyday decisions within a broader social and educational context.”

4. **Rapid synthesis reinforced by visible harvesting.**

Rotating dialogue paired with shared capture tools produced quick pattern recognition that persisted into the manuscripts. Participants noted that “the world café model peer discussion helped surface common themes,” and that it was “powerful” to watch patterns emerge “in real time.” The written submissions reflect those same clusters.

5. **Anchoring concepts enabling depth.**

Plenary ideas and presentations provided conceptual scaffolds that showed up in the papers as tools that clarified alignment, new connections, and a widened scope. One participant appreciated a posture of being “curious and open rather than trying to control every outcome,” a stance mirrored in the manuscripts.

6. **Preparation and setting amplifying contributions.**

Finally, participants credited pre-colloquium reading work and the Santa Fe setting with enabling focus and candid exchange. That preparation is visible in the manuscripts as clearer alignment statements, more specific problem definitions, and tighter rationales for why a grand-challenge lens fits their work.

In sum, the live activities catalyzed synthesis and momentum, and the papers captured that momentum as shared language, clarified purpose, and actionable pathways for continued collaboration.

Strategic Implications and Next Steps

This section turns the shared findings into concrete moves the community can take now.

- 1. Publish toward the grand challenges**
Journal editors and conference chairs should issue themed calls that require a short alignment statement, so new work advances the selected challenges.
- 2. Secure a planning grant**
Apply for a small planning grant that funds coordination, cross-site convenings, a shared repository, pilot seeding, and light evaluation.
- 3. Build a cross-sector, international community of practice**
Create a network that links K–12, community colleges, and universities with adjacent fields to inform instruction, policy, teaching, and infrastructure.
- 4. Run small pilots that create usable evidence**
Launch short, scoped pilots tied to specific challenges and share brief case write-ups and artifacts others can adopt.
- 5. Provide simple tools people can use tomorrow**
Release a one-paragraph alignment box for manuscripts and proposals and a short well-being and belonging checklist for courses and programs.
- 6. Connect research to leadership decisions**
Prepare a two-page brief for deans and program heads that states why the challenges matter now and asks for one concrete support action.
- 7. Track a few shared indicators**
Agree on three easy measures such as pilots launched and completed, courses using the checklist, and a short belonging or anxiety item.
- 8. Keep an open channel for critique**
Invite counterpoints and refinements through a simple form and publish responses so the challenge set remains focused and useful.
- 9. Map scholarship to international frameworks**
Conduct a systematic literature review that maps existing working to international frameworks such as UNESCO's SDGs. Encourage authors and journals to "tag" an SDG by incorporating relevant SDGs into the article's keywords list.

Conclusion

This first OTESSA colloquium accomplished what was hoped. It brought people together to name a focused set of grand challenges, link those challenges to ongoing research and work, and use thoughtful event structures that can move ideas into action. Across the live sessions and the papers, participants focused on problems rather than solutions, the need to support the whole human, and clear ways to carry the work forward.

The path ahead is to keep attention on the challenges, seek planning funds to support coordination where possible, and continue building a cross-sector community that includes K–12, community colleges, universities, and relevant partner fields. Publishing toward the challenges and aligning future convenings will help sustain momentum.

We invite continued dialogue through publications, future convenings, and shared resources that speak directly to these challenges. This white paper is a reference point for that ongoing conversation and a guide for practical next steps.

Author's Contributions

S.M., M.S., and J.M. co-conceived and co-designed the OTESSA Santa Fe Colloquium, with S.M. providing overall leadership for the convening. S.M., N.M., and T.H. co-led the Grand Challenges workshop; M.S. led and coordinated the World Café Sessions and coordinated the synthesis of colloquium activities and participant reflections. All authors contributed to facilitation of conference sessions; T.H. analyzed reflections for themes and strategic framing of findings and drafted the manuscript; All authors reviewed, revised, and approved the final version. All authors have read and approved the final manuscript.

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Ethics Statement

This paper reports on a scholarly convening and synthesizes themes from collaborative discussions and voluntary post-conference reflections. No human subjects research was conducted, and no institutional ethics approval was required.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability Statement

No datasets were generated or analyzed as part of this practice-oriented work.

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