

Pressing Problems of Practice Facing US Education

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The FAS Education Fellows in Residency took on the challenge of identifying the “Most Pressing Problems of Practice” facing the US Education system today. Across a series of three workshops, the fellows ideated, grouped, and validated a list of serious issues facing our education system. Through discussion it became clear that many of these issues are symptoms of how the complex systems and policies within education interact.

The resulting 66 problems of practice fall across a handful of topic areas, namely: high quality instruction, educational technologies, assessment and data systems, teaching as a profession, student health and wellbeing, school culture, post-Secondary career & society preparedness, early childhood education, and community and informal education.

Pressing Problems of Practice Facing US Education

High Quality Instruction

- 1) Lack of access to effective, up-to-date, and usable curricular materials across subjects and grade levels.
- 2) Insufficient teacher capacity and time to appropriately adapt instructional materials to meet the real-time needs of their students while maintaining grade-level content.
- 3) Limited availability of training and professional development to support

high-quality curriculum implementation.

- 4) Lack of real-time assessment tools to understand and respond to current student progress and needs.
- 5) Unclear guidance on the effective selection and integration of technology into instructional content and materials.
- 6) Inconsistent teacher preparation in evidence-based instructional practices and deep content knowledge.
- 7) Challenges in navigating remote and blended learning environments to leveraging high quality instructional opportunities.
- 8) Limited access to instructional materials that support differentiated instruction for students with diverse learning needs (e.g. students with disabilities, English Language Learners, gifted and talented students).
- 9) Need for more inclusive, culturally relevant, and trauma-informed instructional practices to serve diverse student populations.
- 10) Persistent disparities in academic achievement across racial and socioeconomic lines.
- 11) Unresolved tensions in balancing the benefits and drawbacks of homework assignments.
- 12) Ongoing challenges in fostering an inclusive and equitable environment that respects the diverse backgrounds and perspectives in school environments.
- 13) Teachers' limited time and insufficient tools for effective classroom and data management (e.g. student attendance, grades, IEP requirements).
- 14) Inequitable access to advanced coursework, enrichment, and out-of-school learning opportunities.
- 15) Lack of scalable methods and tools for timely, effective family engagement in student learning.

EdTech

- 16) Fragmented integration of educational technology platforms limits instructional coherence and utility.

- 17) Inconsistent design quality of edtech tools undermines their effectiveness in supporting learning.
- 18) Persistent inequities in access to educational technology among students and schools.
- 19) Insufficient protections for student data privacy in digital learning environments.
- 20) Lack of interoperability across student data systems hinders instructional decision-making.
- 21) Limited teacher preparation and support for effective edtech use in classrooms.

Data & Assessment Systems

- 22) Ongoing debate and overreliance on standardized tests for high-stakes decisions in education.
- 23) Lack of timely and actionable assessment data to inform instruction and improve learning.
- 24) Misalignment of layered assessments leads to redundancy and limited instructional value.
- 25) Bias and inequality persist in current student assessments, affecting fairness and outcomes.
- 26) Traditional testing methods limit innovation in measuring student learning and growth.
- 27) Underdevelopment of performance assessments that align with deeper learning objectives (e.g., research papers, presentations, community-connected learning, portfolios, project-based learning opportunities).
- 28) Need for new assessments aligned to relevant, valid, and future-ready knowledge and skills taxonomies.

Teaching as a Profession

- 29) Insufficient implementation of strategies to expand the pipeline of qualified educators, such as service scholarships, loan forgiveness programs, improved school climates, better principal support, and increased compensation.

- 30) Widespread teacher shortages in high-need subjects and underserved geographic areas.
- 31) High rates of teacher attrition threaten instructional quality and school stability.
- 32) Underrepresentation of teachers of color contributes to disparities in student outcomes.
- 33) Limited access to high-quality, ongoing professional development for educators.
- 34) Uncompetitive and inequitable compensation structures impact teacher recruitment and retention.
- 35) Poor school working conditions contribute to teacher burnout and turnover.
- 36) Excessive paperwork and administrative demands burden teacher workload and reduce teachers' time for instruction.
- 37) Uneven implementation of fair, growth-oriented teacher evaluation systems that drive instructional improvement.
- 38) Insufficient development and support structures for effective school leadership.

SUPPORTING SYSTEMS

- 39) Lack of state and local data to understand and respond to teacher supply, turnover, and demand.

Student Health & Wellbeing

- 40) Low student motivation and limited sense of belonging hinder positive learner identity development and sustained engagement in learning.
- 41) Inadequate school environments that do not support healthy bodies (e.g. nutrition, air quality, exercise, etc) compromise students' physical health, focus, and readiness to learn.
- 42) Limited integration of social and emotional learning across curricula and school practices.
- 43) Insufficient access to school-based mental health supports for students and staff.
- 44) High rates of chronic absenteeism disrupt student progress and school

accountability.

- 45) Persistent dropout rates continue to affect student life outcomes and equity.
- 46) Lack of sustained support for students with frequent school changes due to housing instability, resulting in disrupted student learning continuity.
- 47) Disproportionate disciplinary policies contribute to the school-to-prison pipeline.

SUPPORTING SYSTEMS

- 48) School data systems fail to capture meaningful indicators of student health and wellbeing.
- 49) Lack of disaggregated student data masks disparities in educational access and support.

School Culture

- 50) Challenges in fostering positive, inclusive, and identity-safe school climates.
- 51) Teachers need greater support in managing diverse, high-need classroom environments.
- 52) Limited engagement and communication between schools and families hinders student success.
- 53) Parents lack adequate support to serve as effective partners in student learning.
- 54) Bullying in schools undermines physical and emotional safety for students.
- 55) School environments lack consistent and proactive approaches to physical and emotional safety.
- 56) Disciplinary practices often lack restorative approaches and reinforce inequity.

SUPPORTING SYSTEMS

- 57) Inequality in school funding between affluent and low-income communities contributes to disparities in resources and learning opportunities.
- 58) Deferred maintenance in school facilities creates unsafe and unhealthy learning environments.

Post-Secondary, Career & Society Preparedness

- 59) Many students are underprepared for college enrollment, persistence, and success.
- 60) Rising higher education costs limit access and increase student financial burden.
- 61) Mismatch between higher education experiences and career readiness outcomes.
- 62) Insufficient development of high-quality career and technical education and middle-skills job pipelines.
- 63) Educational pathways are misaligned with labor market needs and evolving job demands.
- 64) Traditional curriculum fails to integrate essential 21st-century life skills (e.g. data science, financial literacy, SEL).

Early Childhood Education

- 65) Limited access to high-quality early childhood education hinders school readiness.

Community & Informal Ed

- 66) Fragmented integration of community-based resources limits equitable learning opportunities.

Background

The Federation of American Scientists (FAS) recruits and deploys scientific and technical talent to Federal service roles, and has a commitment to supporting innovation in education. In Fall 2023, a cohort of FAS Education Impact Fellows convened and engaged in preparatory thought work together before deployment to the US Department of Education. The Learning Innovation Impact Fellows, Dr. Katherine McEldoon and Dr. Alex Resch, were tasked with leveraging this group's expertise to identify the most pressing problems of practice currently facing US education. The goal was to surface a list of issues that can be addressed through education research & development (Ed R&D) efforts. **Problems of Practice** were defined as a focus area of learning and teaching where the way forward is unknown; leaders and teachers are aware that improvement is needed, but are unclear about what is limiting progress. Through a series of design thinking workshops, ideation, network checks, and field scans, the cohort of 11 FAS Education Impact Fellows compiled a final list of 66 Pressing Problems of Practices.

Methodology

Workshop 1: Brainstorming Problems of Practice

In early October 2023, Workshop 1 kicked off cohort ideation on pressing educational problems of practice (PoPs). The goal of this two hour long workshop was to generate a prioritized list of major problems of practice, some initial thinking about how to unpack them into subproblems. Participants were grounded in current thinking on Educational R&D through pre-reading and workshop presentation, and were asked to reflect on identifying problems of practice (PoPs) prior to the workshop.

Ideation

This workshop consisted of three rounds of facilitated brainstorming. In all cases, participants were asked to **think expansively**. In particular, participants were asked to consider PoPs that (1) impact student learning outcomes, (2) range from pre-k to career, (3) are amenable to an R&D approach, which might entail a technology innovation or this might be focused, practitioner-led continuous improvement, and (4) add clarifying questions at any time. Brainstorming took place on a virtual whiteboard.

To get started, brainstorm 1 asked participants to generate PoPs that were immediately top of mind. This served as a warm up activity to get ideas flowing. The organizers began to group these ideas on the virtual white board and asked the group if anything big was missing. From there, brainstorm 2 was an individual brainstorm anchored on their areas of experience and expertise. After the ideation session, the organizers grouped these new ideas while the group shared their ideas out. The third and final brainstorm asked participants to review other's ideas, and brainstorm additional PoPs that are connected to these existing ideas or that are completely new. Participants were encouraged to add clarifying questions if needed. After this review round, there was a group reflection on which seem most important, which seem most amenable to an Ed R&D approach, and

which feel out of scope and why. Determining the appropriate grain size for these PoPs was a continual point of discussion across the workshop series.



Figure 1. Results of FAS Impact Fellows' brainstorming in Workshop 1

Prioritization

The next step was to prioritize the PoPs through a voting exercise. The goal was to narrow to a smaller set of problems that are the highest priority to address. This prioritization process was acknowledged as subjective, and participants were asked to use their best professional judgement. Participants were asked to consider if (1) there was wide agreement that this problem needs attention (buy-in), (2) solving this problem have a large impact on student learning (impact), and (3) this problem applicable across the education system or focused narrowly (scale). The voting results were compiled and the top 8 were selected.

At the end of Workshop One, the top PoP topics were:

1. Well being, mental health, SEL
2. Supporting continuous learning at school/system level
3. High Quality Instruction
4. Leveraging AI/tech to support best work of humans
5. Building Resilient ed system
6. Time/ schedules
7. Teacher pipeline + retention
8. Data

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Vote: Which problems are most pressing to address?

Looking at the set of problems in the box to the right, vote for the 5 that you believe to be most pressing to address. You vote by clicking on one of the sticksies and you can remove your voice with shift + click.

Consider:

- Is there wide agreement that this is a problem that needs attention?
- Would solving this problem have a large impact on student learning?
- Is this problem applicable across the education system or focused narrowly?

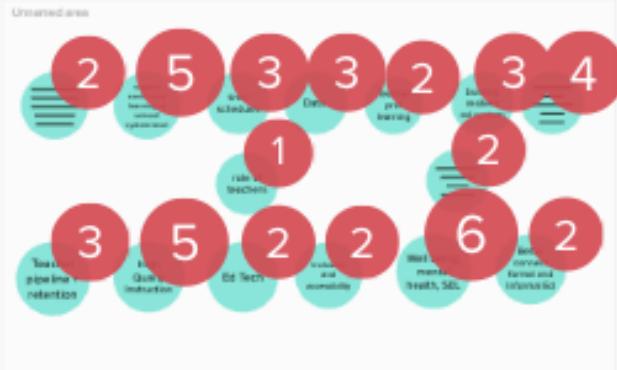


Figure 2. Prioritization Results from Workshop 1

Identify Sub-Problems

These prioritized 8 PoPs were then unpacked into subproblems. The hypothesis was that many challenges in education are complex and multifaceted, and therefore need to be broken down into subproblems in order to develop targeted solutions to address them. In small groups, the participants were prompted to (1) describe the problem in a few sentences, (2) attempt to break the problem down into components or sub-problems, and (3) surface any potential root causes for the problem. Additionally, participants were asked to consider who is centered in the problem or sub-problems (e.g. students, teachers), who would need to do something different if the problem were to be resolved, and if there are any existing solutions or if new solutions would need to be developed.

Workshop 2: Unpacking the Subproblems

Prework: Validate PoPs with your networks, review draft of unpacked subproblems
Outcome: Refined Problems and Subproblems of Practice

After Workshop 1, the organizers compiled and synthesized a list all of the PoPs surfaced on the virtual whiteboards, prioritized problems and subproblems. This resulted in a list of 44 potential PoPs grouped across 10 topic areas. The ten topic areas include: teaching as a profession, student wellbeing, school culture, career & society preparedness, higher education, community and informal education, and early childhood education.

As a confirmatory activity, the organizers leveraged ChatGPT 3.5 in October 2023, providing the team's definition of a PoP and querying "Given this definition, what are the most pressing problems of practice facing US education today? Please provide sources or references". The generative AI results included 35 potential PoPs as well as 10 potential reputable sources (e.g. US Dept of Ed, Brookings, EdWeek) to draw from. These 35 PoPs

were added to the evolving list and cross-walked with existing PoPs. Unsurprisingly, many of the problems identified by generative AI were duplicative or similar to the list generated by the group of expert education fellows, and served as a confirmatory validation check.

Prior to Workshop 2, participants were asked to review this list and conduct a validation check with their networks. Given the high impact careers Impact Fellows come with, we were confident that this group and their respective networks would provide a comprehensive coverage check of these PoPs. This list was also reviewed with FAS Education Policy staff.

Workshop 2 took place in late October 2023. During the workshop, participants made suggestions and additions to the work-in-progress PoP list that incorporated their learnings from their network validation. The group also surfaced additional field scan resources for a further validation check, which was subsequently completed by the organizers prior to Workshop 3.

Lastly, the participants workshopped problem statement framing. The group discussed pros and cons of symptom-focused framing (e.g. teacher shortages) and headline-focused framing (e.g. Schools are scrambling to fill teacher positions. Can the education sector survive without teachers?). Ultimately, the group decided the most useful framing was similar to a grant application title. During ideation in Workshop 2, participants were asked to generate problem-focused “grant application title” versions of the PoPs.

Workshop 3: Final Validation & Ed R&D Exploration

Prior to Workshop 3, the organizers synthesized and refined the list of PoPs, and conducted field scans using the resources surfaced by the participants for further validation.

Conducted in November 2023, the goal of Workshop 3 was to conduct a final validation check of this list, and to stress test the framing that solving these pressing problems of practice requires an Ed R&D solution. Time was provided for participants to review the list and iterate with further comments. Consensus was reached that the list was comprehensive, well-scoped, and not missing any major areas of concern. The second half of the workshop introduced an exploratory framework for evaluating if a problem was amenable to an Ed R&D approach. Participants evaluated PoPs using this framework.