

Research Digest

Themes in Developing and Studying Interventions in Adult Foundational Education

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To support the effectiveness of adult education, federal policy encourages the use of evidence-based strategies (Workforce Innovation and Opportunity Act, 2014). Limitations of the research base make it difficult, however, for policymakers and providers to identify which programmatic and instructional approaches reliably improve learner outcomes (Borradaile et al., 2021). This knowledge gap is persistent and well-documented (e.g., see Comings & Soricone, 2007; Kruidenier et al., 2010), indicating a clear need to prioritize support for additional research and consider approaches to maximizing the usefulness of any research conducted.

One recent initiative seeking to expand the research base on effective approaches to adult education is the CREATE Adult Skills Network.¹ The goal of CREATE is to build and share knowledge on technology-enabled instruction and assessment for adult learners using a collaborative approach that includes the end users of research. CREATE also intends to spur a growing research base in adult education by engaging and

supporting up-and-coming researchers and those currently working in adjacent fields or relevant methodologies. To this end, we are producing a handbook to inform researchers on major themes in developing instructional interventions and studying their effectiveness in the adult foundational skills context. The handbook will also provide examples of challenges and strategies in doing research in this context, as shared by members of the CREATE network.

This digest describes the themes highlighted in the upcoming handbook and shares examples of associated guidance. The themes are organized by topic:

- Establishing and sustaining effective partnerships
- Designing the intervention
- Implementing the intervention
- Considering the context in study design, methods, and analyses
- Communicating effectively about research progress and findings

Establishing and Sustaining Effective Partnerships

Strong partnerships are the foundation of effective development research in adult foundational education (AFE). Building trust and alignment with states, programs, and other stakeholders is critical for launching projects,

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sustaining buy-in, and ensuring that research remains relevant and grounded in practice (Adam et al., 2022; Tseng & Bednarek, 2019). Selecting partners whose goals align with the intervention helps establish the conditions for meaningful and productive collaboration.

Sustaining buy-in requires ongoing, collaborative engagement throughout the research process. Involving partners in co-developing theories of change, shaping research questions, interpreting findings, and sharing results promotes feasibility, relevance, and shared ownership of the work (Alamprese, 2025; Soricone, 2025; Coburn et al., 2013).

Designing the Intervention

To create adaptable instruction that supports both effective implementation and long-term impact, it is important to consider the needs of the setting, potential barriers, and how to plan for sustainability (Roschelle & Penuel, 2006; Damschroder et al., 2009). Given the variability that defines adult education contexts, researchers must design for heterogeneity rather than ideal conditions. This includes systematically documenting implementation and adaptation and anticipating challenges early, like high variability and mobility. In addition, educator capacity is a central dimension in AFE, where instructors' preparation, digital readiness, and access to professional learning vary widely. These differences shape how interventions are taken up, adapted, and sustained over time (Vanek & Harris, 2020; Belzer et al., 2022). Implementation research consistently shows that interventions are more feasible when they align with local capacity, organizational routines, and available supports, rather than assuming uniform conditions across settings (Durlak & DuPre, 2008).

Planning for sustainability begins at the design stage rather than after implementation has begun. Research emphasizes the importance of iterative testing; co-designing with practitioners; and identifying user needs, contextual constraints, and likely points of breakdown through data collection across development, pilot, and refinement phases (ISO, 2019; Roschelle & Penuel, 2006; Penuel et al., 2011; McKenney & Reeves, 2018). In addition, it is important to make decisions about infrastructure, ownership, and long-term support early

in the design process (Coburn, 2003; Fixsen et al., 2005; Century & Cassata, 2016). In the context of rapid technological change, sustainability also depends on adaptability. Research on technology-based educational innovations indicates that interventions dependent on rigid or proprietary tools without plans for updates or partnerships are especially vulnerable over time. In contrast, designing for flexibility, leveraging widely supported or open-access technologies, and building educator capacity can extend longevity across changing conditions (Dede et al., 2009; Wiley & Hilton III, 2018; Dede & Richards, 2020). Continued funding, institutional commitment, and professional visibility further function as enabling conditions that support promising interventions beyond the initial project period (Coburn et al., 2012).

Implementing the Intervention

Implementation is an iterative process that requires flexibility and responsiveness. The iterative process must be based on participant experiences, balance fidelity with adaptation, and keep sustainability in mind if the goal is to ensure that interventions remain usable and meaningful. As with the design phase, identification of user needs, contextual constraints, and likely points of breakdown are essential to recognize quickly so that interventions are feasible in practice rather than retrofitted after problems emerge. Consequently, ongoing structures for communication and feedback support are critical for activities, such as shared problem-solving and responsive support in helping educators integrate new tools and approaches under variable conditions (Vanek & Harris, 2020; Bryk et al., 2015). Clear onboarding, accessible guidance, tailored technical assistance, and responsive support are particularly important during early use (Fixsen et al., 2005; Hill et al., 2023; Tondeur et al., 2016).

Monitoring how educators and learners interact with an intervention and making adjustments help ensure that implementation reflects participant needs rather than researcher assumptions. This attention is especially important because, as noted previously, there is so much variety in the adult education classroom. Learners have various levels of access to digital tools, and teachers play a variety of roles, have diverse prior experience with technology, and work anywhere from a few hours per week to full time (Nguyen & Cacicio, 2025). Studies of AFE

practice and professional learning document how these variations shape uptake, adaptation, and persistence, underscoring the need for implementation approaches that remain responsive over time (Belzer et al., 2022; Vanek & Harris, 2020).

Long-term viability depends on clarifying which aspects of an intervention are intended to endure: the pedagogical approaches, technological components, or implementation routines. When such decisions are paired with plans for maintenance, ownership, and ongoing professional learning, sustainability is more likely (Penuel et al., 2011; Penuel et al., 2015). In technology-mediated contexts, sustainability also depends on adaptability. Interventions reliant on rigid or proprietary tools without plans for updates or integration are especially vulnerable over time, whereas designing for flexibility—leveraging widely supported or open-access technologies—and building educator capacity can extend usefulness across changing instructional and institutional conditions (Dede et al., 2009; Wiley & Hilton III, 2018; Dede & Richards, 2020). Continued funding, institutional commitment, and professional visibility further support promising interventions beyond initial pilot or grant-funded phases (Coburn et al., 2012).

Considering the Context in Study Design, Methods, and Analyses

AFE contexts are complex, diverse, and fluid (Severson-Irby & Rolander, 2022; Reder, 2012). Attention to methodological fit, learner heterogeneity and mobility, and contextual factors—combined with the use of flexible design, analysis, and measurement strategies—can produce policy-relevant evidence under real-world conditions (Clark-Stallkamp & Lockee, 2024; Severson-Irby & Rolander, 2022; Rickles et al., 2018; Connolly et al., 2018). In AFE, causal intervention study designs, such as randomized controlled trials (RCTs), are not always practical due to difficulties implementing randomization, high attrition, and the complexity of interventions that must be adapted to heterogeneous learner needs—conditions that are especially pronounced among vulnerable learners (Odom, 2021). Given these constraints, researchers may consider alternative approaches—such as regression discontinuity, instrumental variables, matching, or comparative interrupted time series—that

can support credible causal inference when RCTs are infeasible (Steiner et al., 2017; Cook et al., 2008). However, their successful use depends on strong design assumptions (e.g., well-defined comparison groups and valid matching rules) that may be challenging to achieve in complex, fluid learning environments (Gopalan et al., 2020). For example, identifying a nonexperimental comparison group can be particularly difficult in the context of AFE given its widespread heterogeneity. While little guidance on the topic currently exists within the field, the topic has been addressed to some extent in adjacent fields such as career and technical education (e.g., Ross et al., 2021).

Variation is the norm in AFE, as programs serve learners with widely differing goals, life circumstances, and learning trajectories across diverse instructional settings (Severson-Irby & Rolander, 2022; Reder, 2012). To address this variation, some suggest that researchers should treat context and participant characteristics as integral components of interventions, explicitly theorizing and measuring variation rather than attempting to control it away (Conaway et al., 2024). Others emphasize the usefulness of intervention research that leverage specialized experimental designs that allow for more adaptation of the intervention (Hedges, 2017) or mixed methods designs aligned to specific populations and instructional environments, integrating qualitative evidence about local conditions with quantitative analyses to support interpretation and adaptation across diverse settings (Shannon-Baker, 2022; St. Clair, 2023). It is also beneficial to model heterogeneous effects directly—through interaction terms, subgroup analyses, and person-centered or longitudinal approaches—even when effects vary across learners and sites, because such analyses better inform differential impact and potential intervention scaling decisions (Schudde, 2018; Reder, 2012).

Learner mobility can affect every aspect of research—design, methods, and analysis—often leading to attrition. For the design, researchers must incorporate empirically derived attrition estimates into power calculations rather than using generic assumptions and oversampling high-mobility populations (Rickles et al., 2018; Henneberger et al., 2023; Kupzyk, 2011). Studies can also plan to accommodate high mobility by recruiting larger samples and building in assumptions around “connected episodes” of participation—allowing adults to “stop out” and re-enter programs (Clark-Stallkamp & Lockee, 2024; Comings

& Soricone, 2007). Methodologically, successful retention requires comprehensive contact information collection at baseline, implementation of tracking databases from study inception, use of multiple contact methods, and sustained community engagement (Ferris et al., 2021; Lynn, 2025; Condelli et al., 2010). Finally, for analyses, appropriate approaches include systematic attrition analyses to understand data missingness patterns, multiple imputation that accounts for data structure (e.g., multilevel, longitudinal), and validation of mobility estimates against external sources (Eisner et al., 2019; Grund, et al., 2018; Kristman et al., 2005).

Measuring outcomes in AFE requires balancing ambition with feasibility (Clark-Stallkamp & Locke, 2024). To test the real impacts of an intervention on improving learners' lives, studies will ideally measure outcomes beyond short-term test gains to include longer-term and life-wide impacts—for example, tracking whether programs lead to improved employment, earnings, or real-life literacy practices over time (Reder, 2020; Spurling et al., 2008). At the same time, practical constraints compel researchers to leverage existing administrative data to increase study feasibility and sample sizes that allow for the range of analyses described above. Administrative data also offers promise for long-term tracking but requires substantial partnership investment (Bigelow et al., 2021) and is often challenging to work with for research purposes (Yin et al., 2015). To be successful, researchers should establish administrative data partnerships during initial study design, plan for imperfect matches when mobile populations may have inconsistent identifying information, and have a plan for dealing with common administrative data challenges (Bigelow et al., 2021; Yin et al., 2015).

Another consideration in measuring adult learner outcomes is to attend to factors like learners' reading levels and English proficiency to ensure that measurement instruments are feasible and appropriate to administer. For example, standardized tests developed for K-12 or general populations often do not function as expected for adults with foundational skill needs, and studies may instead use simplified instruments, tests normed on similar populations, oral assessments, or native-language translations to ensure valid results (Talwar et al., 2021; Sabatini et al., 2011; Condelli et al., 2006, 2010; Hollenbeck, 2005). For the least literate adults, specialized tools using hands-on materials and oral administration demonstrate that meaningful assessment

is possible even when participants cannot read questions themselves (Kutner et al., 2007).

Communicating Effectively About Research Progress and Findings

Communicating about the research should begin during the development and implementation phase, not after the final report; such communication is strengthened through the strategic use of multiple channels and formats (Stein & Daniels, 2017). Practitioner briefs, webinars, blogs, toolkits, professional learning sessions, and open-access resources help reduce barriers to access, reinforce key messages over time, and support different forms of research use. Network-based communication activities, which leverage existing professional relationships, further support diffusion beyond traditional academic venues. In AFE, where professional learning often occurs informally and across distributed networks, using diverse channels extends the reach of research and supports field-building while aligning with guidance that emphasizes accessibility, relevance, and practical utility for end users.

Conclusion and Next Steps for the CREATE Adult Skills Network

The themes in this digest point to the importance of working closely with practitioners and other partners, designing AFE research that reflects real-world conditions, and paying careful attention to how interventions are implemented and sustained over time. This approach not only strengthens the quality of the evidence but also makes it more likely that findings will be used to improve teaching, guide policy decisions, and expand opportunities for adult learners. In addition, interventions are more likely to persist when considerations of infrastructure, ownership, and long-term support are addressed early and revisited over time, rather than treated as post hoc concerns (Coburn, 2003; Fixsen et al., 2005; Century & Cassata, 2016). The CREATE handbook will continue the work of expanding on these major themes and will provide examples of challenges and strategies from the network teams' real-world experiences in working with technology-enabled adult education instruction.

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