

Adaptation by Design: A Context-Sensitive, Dialogic Approach to Interventions

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### **Executive Summary**

Applied researchers, whether working with the framework of *design-based research* or *intervention science*, face a similar implementation challenge: they must step back as local actors interpret and enact new programs in varied, context-specific ways. Although this inevitable variability can be a problem for those who privilege fidelity and standardization, we argue for the advantages of researcher-practitioner collaborations that encourage local adaptation and ingenuity. We develop this argument for adaptive interventions by discussing two design-based research projects, Critical Civic Inquiry (CCI) and Science Literacy through Science Journalism (SciJourn), which create opportunities for youth to develop civics and science literacy respectively. CCI and SciJourn aim to build curricula that will travel to new schools and districts, but not through standardization. This is a delicate combination: the program must be flexible enough to enable productive adaptation, without being so protean that practitioners' implementations lack substantive commonalities. The two cases show how project leaders have sought to distinguish between invariant principles that define the intervention and heterogeneous practices that vary across sites. The cases also show how the model has improved when teachers can adapt it to their institutional context and when teachers and researchers establish social norms that encourage dialogic interactions.

### **Theoretical Resources**

Cultural historical psychologists have extended Vygotsky's notion of "tools" or "artifacts" by showing how tools carry cultural-historical information across generations and mediate human action. According to this view, tools vary in how flexibly they can be used, with some tools being more "univocal" and others more "dialogic." Univocal tool use is when one person (either physically present or not) imposes or dictates her viewpoint about how a tool should be

used; dialogic use is when tools are flexibly adapted in context to fulfill people's goals. We aim to make SciJourn and CCI dialogic.

In community-based research university researchers form partnerships with people outside of the academy in order to collectively advance local social change goals. It rests on the belief that people without academic credentials are capable of producing useful knowledge, that research should be driven by efforts to solve problems experienced by non-specialists, and that academics have an important role to play by leveraging their training about how to carry out high quality research.

### Case Studies

#### SciJourn

**Background.** The SciJourn project is based on the notion that practices of professional science journalists—such as making use of multiple, credible sources—relate to skills that scientifically literate adults could use fifteen years after they graduate from high school. SciJourn is a distributed activity system of school sites, an informal science institution, and a university, organized around the production of teen science news stories for a regional science print newspaper and online publication (SciJourner.org). Team members developed a set of science literacy standards and standards for article writing within the project.

**Example 1: From writing to reading and writing.** One of the notable ways that teachers in the process of implementation made the initiative their own was in stressing the *reading* of science news. The university team originally focused only on *writing* science news. In our first professional development workshop aimed at preparing teachers to facilitate their students' writing, our university team used a read-aloud/think-aloud (RATA) technique common in elementary reading instruction to highlight the critical elements of science news texts. We did

not initially advocate for use of RATAs in high school classrooms, but one teacher found them well-adapted to his time and curriculum constraints. In just a few minutes at the beginning or end of class, Mike used RATAs to model how he critically examines aspects of science news related to his curriculum, such as the credibility of sources, while assessing how important that news is to society. Mike shared how the RATAs helped him gain stronger rapport with students while fulfilling curriculum goals. More teachers utilized RATAs, and the university team has since encouraged forms of this activity as flexible means for teachers to model critical science literacy.

**Example 2: Sources of Information for Science News.** “Writing science news” has also been transformed through implementation. Students working on stories routinely search for multiple credible sources on the Internet in the manner that originators of the project envisioned, learning a great deal about how to critically consume science information on the web, and think about the kind of expertise different sources offer. But in part because the university-based researchers feared interviews were not well-adapted to the regimented time and relative isolation of schools, we did not initially push student interviews in that context. We have since learned that interviews are possible and worth encouraging in schools—school nurses, maintenance staff and local stakeholders often help teens make sense of the science and its importance. Interviewing is often a memorable and transformative experience for teens. In addition, although the project initially focused on teens using secondary science information, youth participants have included primary data from social media surveys and primary investigations from their own school in their stories.

**Summary.** SciJourn has been adapted in local contexts, enabled by norms for adaptation and dialogue within a distributed and diverse “ecosystem.” In contrast to highly scripted curricula, our standards are framed as principles that many different instructional actions could

fulfill. The professional development and research infrastructure facilitated and reinforced the positioning of university researchers and teachers as co-inquirers and co-developers of instruction. These factors enabled new patterns of activity to emerge and be taken up by others.

### **Critical Civic Inquiry**

**Background.** CCI develops partnerships with teachers in schools serving high percentages of students from historically marginalized groups. The designers formulated parameters for CCI projects that would provide consistency while also being flexible enough to accommodate local adaptation. In brief, CCI projects are supposed to focus on a problem experienced by students *at the school*, selected *by students*, and examined through the *lens of educational equity*. For this chapter we describe two projects that on first glance appeared to depart from CCI parameters. Each of these examples shows the value of CCI projects when they can be flexibly adapted to the local school context and lived experiences of youth.

**Example 1: School Spirit at Jane Addams High.** At Jane Addams students expressed great excitement about building stronger school spirit, through events such as the upcoming first inaugural prom, which they said they had persuaded the school leadership to support. Without an understanding of context, students' excitement about these emblems of school spirit, a ubiquitous feature of American high school life, might appear unrelated to CCI's civic empowerment goals. We discuss it here, however, because the meaning of the prom was quite different at JAH, a school for pregnant or parenting mothers. According to the teacher we worked with, Ms. M., most of her students had experienced failure in their prior school experiences, and were now at Jane Addams because of truancy, expulsion, or weak school performance at the comprehensive high schools they previously attended. Their effort to establish this normative rite of passage takes on new meaning in this context.

**Example 2: Educational Trajectories at Pathways Academy.** Pathways Academy was a “multiple pathways” school for students whose needs had not been met by comprehensive high schools. The school sought to build a relationally supportive environment where students felt cared for and known. When it came to selecting a problem at the school for their CCI project, the students and teacher had difficulty finding a topic that generated student enthusiasm. Ms. F. came to view CCI’s parameter that students focus on problems *at their school* as inappropriate for Pathways. She pointed out that most students at the school were grateful to have a second chance to be in school and they tended to speak with high regard for the sense of community at the school and the care showed by teachers. In this context, it did not make sense for the CCI project to force students to manufacture a problem at Pathways. Instead, a more meaningful iteration of the project was for students to study and take action about their experiences in the prior schools they had attended, which they did by writing letters to their former teachers and principals.

These two examples show how school contexts shape the meaning of student voice projects. What may be anodyne in one setting has a transformative potential in another. CCI action research projects need to have parameters that can be adapted by students and teachers to their local context.

### **Conclusion**

SciJourn and CCI aim to build flexibility and dialogism into their design. Consistent with the DBIR principles, we believe that worthwhile ideas are more likely to be sustained when the core intervention is flexible and responsive to varied contexts, local actors understand the relevant principles, and researcher-practitioner networks facilitate ingenuity, critical reflection,

and adaptation. Such interventions are marked by an ongoing commitment to iteration and dialogue rather than an initial trial period followed by standardization.