

Cocreating Culturally Responsive Resources With Communities Using Design-Based Implementation Research: The Challenges of Online Research

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Pub. Date: 2022

Product: SAGE Research Methods: Doing Research Online

Methods: Internet research, Design-based research, Implementation research

Disciplines: Education

Access Date: March 17, 2022

Academic Level: Postgraduate

Publishing Company: SAGE Publications, Ltd.

City: London

Online ISBN: 9781529600124

DOI: <https://dx.doi.org/10.4135/9781529600124>

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Abstract

This case study highlights the methodological and practical implications of modifying an investigation with community partners to fit an online format. Research interactions took place between November 2020 and June 2021, under the social distancing restrictions imposed by the COVID-19 pandemic. Twelve Latinx parents/caregivers participated in co-designing culturally relevant college and career readiness resources for Latinx families. A research partnership of two school faculty and a community partner collaborating with university faculty, staff, and students led the study using design-based implementation research (DBIR) as the primary methodological approach. The means of communication and resource sharing with parents were Zoom videoconferencing, WhatsApp text messaging, social media, and phone calls. Parents also received printed materials sent through students attending school under a hybrid modality (face-to-face and online classes). The use of online environments posed challenges in getting participants fully engaged in the co-design process. Some parents lacked technological skills or access to adequate technology, leading to communication barriers in some cases. The implementation phase, a significant component of DBIR, could not be achieved online. This case is about the strategies put forward by the research team to overcome the restrictive research conditions, the adaptations made throughout the process to facilitate community engagement, and lessons learned. It is an invitation to think about the implications of the decisions made by the research team and reflect on creative solutions to address the challenges faced.

Learning Outcomes

By the end of this case, students should be able to:

- Explain potential strengths and weaknesses of conducting community-engaged research in online environments
- Generate creative alternatives to address the absence of face-to-face interactions when engaging participants in the co-design process.
- Summarize best practices in conducting design-based implementation research online with community partners.

Project Overview and Context

Rationale

In 2020, a research team composed of two public school faculty and one community partner from a local Latinx organization collaborated with university researchers to develop culturally relevant college and career resources for Latinx families. The university team was composed of one university faculty (principal investigator), one staff member (experienced in providing college and career readiness orientation), and one graduate student. One of the public school faculty works as a family liaison, and both have experience

working with Latinx students and college and career orientation.

Latinx families, especially those who come for the first time to the United States, often lack access to informational resources to overcome barriers to successful postsecondary options (Garcia et al., 2020; Martinez-Wenzl, 2014). To address this situation with the end-users as co-designers, 12 Latinx parents whose children were studying in the Newcomer Program were invited to join the project. The Newcomer Program receives students who are new to the United States within the past year. Students stay in the program for one school year until they transfer to a conventional school. For 8 months—between November 2020 and June 2021, under COVID social distancing restrictions—parents participated in a series of online efforts to co-design informational resources and activities.

Methodological Approach

The study used design-based implementation research (DBIR) (Penuel et al., 2011) as the methodological framework. DBIR is implemented through the collaboration of practitioners and researchers to design, implement, and test sustainable educational innovations. This kind of research is driven by questions such as, “What works when, for whom, and under what conditions?” and “How can we make this innovation work under a wide range of conditions?” (Fishman et al., 2013, p. 143). DBIR work contributes to the development of theory and models at different scales and products that are, by design, more sustainable and scalable (Fishman, 2014). Implementation is a fundamental part of DBIR to inform the design and prove the educational innovation’s feasibility, coverage, and sustainability.

The research team considered the multiple advantages of using this methodological approach. DBIR is both process-oriented and product-oriented and allows researchers and practitioners to observe and analyze the iterative and changing elements at several points in time, foresee unintended consequences, and adapt as needed. Due to its roots in community-based participatory research (Wallerstein & Duran, 2010), design-based research (Cobb et al., 2003), implementation research (Peters et al., 2013), utilization-focused evaluation (Patton, 2003), and participatory evaluation (Cousins & Earl, 2004), DBIR provided a cohesive and comprehensive framework for conducting community-engaged research and generating actionable knowledge. DBIR would determine:

1. If it was possible to create relevant, easy-to-adopt innovative resources with the collaboration of academic researchers, practitioners, and end-users.
2. Whether the benefit of the designed resources could be extended to other Latinx families to support youth’s college and career goals.

Project Outcomes

The project produced tangible and intangible outcomes:

1. *Innovative resources*: The research produced a College and Career Readiness Guidebook for Parents and a Virtual Career Panel with Latinx professionals, both in Spanish. These resources

served to reinforce parents' already existing positive attitudes toward postsecondary studies and provided actionable information. The inclusion of the end-users in the co-design process increased acceptability and relevance. According to the evaluation made by parents, both resources were helpful, relevant, and of high quality. Parents mentioned their intention to use the guidebook to support Latinx youth transitioning to postsecondary opportunities and share the guidebook with other families in their community. In this sense, the evaluation evidenced the acceptability (satisfaction), relevance (usefulness), and intention to adopt the innovative resources (Peters et al., 2013). End-users and community partners' participation enhanced dissemination opportunities among Latinx communities and schools serving Latinx families.

2. *Actionable knowledge*: The study expanded the body of knowledge about Latinx newcomer parents' information gaps on college and career readiness and explored the causes and consequences of such disparities. This knowledge was used to inform the design of innovative resources.
3. *Capacity building*: The project increased participants' understanding of college and career preparation and their role in the process. Capacity building supported participant engagement in the co-design process. The more parents learned about college and career preparation, the more involved they were in discussions and co-designing. The study also closed gaps of perceptions between teachers, college students, higher education specialists, professionals, and families regarding the transition into college and career to create comprehensive resources that addressed the information needs of end-users.

Section Summary

- Design-based implementation research is a research approach that privileges researchers and practitioners working collaboratively to develop educational innovations. As such, DBIR was considered an appropriate framework to conduct research.
- The main expected outcomes of DBIR are new theories/models and scalable products. Co-design, implementation, and testing are essential components of this approach.
- The study included the end-users of the innovation in the co-designing process to increase the relevance and usability of the innovative resources.
- The project produced actionable knowledge, innovative resources, and built participants' capacities.

Study Procedures

The qualitative research was conducted in five stages that covered the three central moments of human-centered design: inspiration (knowing potential users), ideation (identify design opportunities), and implementation (IDEO.ORG, 2015). In each of these five stages, parents met once with the researchers to receive vital information and participate in conversations and activities that informed the design process. Zoom meetings with parents were set for 90-minutes from 6:00 p.m. to 7:30 p.m.

The research team met via Zoom every 2–3 weeks. The team kept regular communication via email to

discuss the theoretical underpinnings of research, assess progress, plan the meetings, summarize the results of previous meetings, and adjust the methodology when needed.

Stage 1: Focusing on the Problem (Inspiration)

The first meeting with participants uncovered some of the challenges that parents of newcomer Latinx students faced when supporting their children's dreams to pursue postsecondary options. During the session, participants shared their aspirations and expectations for their children, the steps taken to support these aspirations, and the resources or support they feel capable of providing and perceived as needed. Before the first meeting, researchers tried to address any issue participants could have when using Zoom, including:

- The family liaison at the Newcomer program ensured that all participants could use Zoom and checked what technology they were using (Chromebook or cell phone).
- A WhatsApp video chat group was created to communicate directly with parents. WhatsApp is a mobile application and is used by participants to connect with friends and family locally and internationally.
- A permanent Zoom link was established for all meetings. A shortened URL was created for the permanent Zoom link using Tinyurl.com.
- Two visual guides were shared with parents via WhatsApp with instructions to connect and use Zoom basic capabilities.
- During the first minutes of the meeting, members of the research team called or messaged participants via WhatsApp to help them connect to the videoconference.

Stage 2: Thinking of Workable Solutions (Ideation)

The second meeting would engage participants and researchers in brainstorming ideas about the best ways to share information more widely with the local Latinx community (ideation). The structure of the meeting was adjusted to explore participants' experiences further and provide critical information that would allow for richer interactions later in the process:

- A large segment of the session (70 minutes) addressed parents' most urgent information needs. The last 10 minutes were used to brainstorm ideas about the best resources or activities to disseminate information.
- Participants suggested five types of resources: (1) short, easy-to-digest videos that can be shared via WhatsApp or Facebook; (2) printed materials; (3) panels with professionals; (4) panels with students; and (5) one-on-one counseling to parents based on individual student interests.

Stage 3: Co-designing the Solution (Ideation)

The third meeting would involve small groups of participants in interactive conversations and participatory design activities. Participatory design (P.D.) involves nondesigners in co-design activities ([Sanders et al., 2010, November](#)). P.D. tools were adapted for online use:

- Inspired by co-design experiences with envisioning cards ([Friedman & Hendry, 2012, May](#)), the team invited participants before the meeting to create vision boards with their children to imagine their future in 5 and 10 years. They received printed instructions and a short video via WhatsApp. When ready, participants shared the pictures of their vision boards via WhatsApp. The envisioning activity helped parents and students align their postsecondary goals and values and engaged parents before the meeting.
- Before the meeting, participants were separated into three small groups who met on three different dates with members of the research team to participate in three ideation activities ([IDEO.ORG, 2015](#)) adapted for online use.
- The first activity was “Share Inspiring Stories,” which allowed parents to communicate the meanings and processes behind the creation of their vision boards.
- The second activity, “Top Five,” displayed a PowerPoint slide with mini cards showing 16 ideas to prepare students for college and careers. The facilitator asked participants why these ideas were valuable as she put them in “the virtual box of important ideas.” The exercise identified priorities and gaps in parents’ understanding of college preparation.
- The final exercise engaged parents in designing “storyboard dialogues” featuring participants conversing with other parents whose children were pursuing postsecondary studies.

With the information collected in the first three meetings, the research team started developing prototypes for a series of brochures addressing key college and career topics. The brochures were later integrated into one guidebook.

Stage 4: Implementing the Solution (Implementation)

In the fourth session, participants would use the prototype in a simulated training session with other Latinx parents to test if the guidebook could be easy to understand and could be used to communicate relevant information to other parents. Simulated training would allow testing while building participants’ capacity to take full advantage of the guidebook. However, implementation required face-to-face interactions cycles, and COVID restrictions were still in place. After consideration, the research team changed the course of the project and organized a virtual career panel with Latinx professionals. The panel aligned with one of the ideas proposed by parents during the second meeting.

- Parents contributed to the design of the panel by sending questions to the panelists beforehand. At the end of the session, participants reflected on their learning and completed a panel evaluation tool days after.
- Sections of the panel would appear in short videos to be shared with participants via WhatsApp.

Stage 5: Evaluating the Solution (Evaluation)

A few days before the final meeting, participants received the prototype of the guidebook and an evaluation tool to assess relevance, adequacy, and quality. Participants would evaluate the feasibility (suitability of

use), ease of use, and quality based on the implementation experience in the final meeting. Since in-person implementation was not possible, the session explored participants' reactions to the project activities and products through a reflective assessment exercise.

Based on the information collected through the evaluation tools and during the last two sessions, an updated guidebook version was printed for public use. Further interactions to implement and evaluate research products are needed to improve the design and test feasibility, coverage, and sustainability.

Section Summary

- The research design included five stages; in each stage, parents met once with the research team.
- The first two meetings (inspiration) focused on knowing more about the participants, their experiences, values, and information needs.
- The third meeting (ideation) consisted of interactive exercises and brought about clear ideas directly from end-users about contents for the guidebook.
- The fourth and fifth meetings were meant to be used for implementation, testing, and evaluation. Instead, a virtual career panel was organized using parent input.
- The prototype of the guidebook was evaluated for relevance, adequacy, and quality using an evaluation tool.
- Participants' learning was assessed with reflective assessment exercises.

Research Practicalities

Working in online environments brought about additional considerations and adaptations.

1. *Recruitment.* The family liaison recruited parents via phone. Students gave their parents a flyer, an information sheet about the study, a demographic data collection form, and a copy of the consent form. Parents were asked to contact either the family liaison or principal investigator via phone for more information. Verbal consent was obtained by the investigators and recorded during the first meeting.
2. *Data collection.* The study used qualitative data collection tools and techniques, including demographic forms, group discussions, Q&A sessions, vision boards, open-ended forms, ideation exercises, semi-structured evaluation tools, and reflective assessments. Additionally, the team took notes of sessions with parents and used research meeting notes, recordings, and emails to track the project results and inform the methodology.
3. *Data analysis.* Data analysis was an interactive and continuous task during the entire process. The research team met online to discuss preliminary findings and the contents of the prototype and decide on changes in the methodology. All data were analyzed using inductive applied thematic analysis (Guest et al., 2012). Research partners participated in generating the initial codes. Two team members put all codes together for a second round of discussions and search for themes. Themes were reviewed in the following team meetings. After arriving at a consensus, all final themes were

identified and named. Research partners collaborated in authoring the final research report.

4. *Co-designing approach.* The project tried to respond to the participatory and democratic principles supporting community-engaged research. Co-design engages participants in activities described as making tangible things (i.e., collages), telling or explaining stories (i.e., organize cards/ideas), and/or enacting (i.e., roleplay, envisioning tools) (Sanders et al., 2010, November). The research team made adaptations to involve participants in sharing what they envisioned at home (vision boards) and telling their stories (storyboard dialogues, categorizing ideas). Participants influenced the design through ideas, questions, comments, and conversations. Some of the vision boards and storyboard dialogues created with families were included in the guidebook to reflect their stories.
5. *Balance between co-design and capacity building.* The project's main goal was to produce culturally relevant college and career readiness resources; however, the need to build capacity gained relevance throughout the project to ensure equal participation in the co-design. It was important that all parents understood essential college and career concepts and felt that their main questions were answered. In this sense, both the process and products of co-design were used to build capacity and empower participants.
6. *Coordinating research collaborations.* Community-engaged research is time-consuming compared with conventional research. Participating in research tasks presents significant demands to community partners who already have regular responsibilities. Community partners had a significant role in bridging the university team with research participants and sharing their practical knowledge with the team and participants. They also dedicated time to analyzing considerable amounts of information, discussing literature to make informed decisions, finding relevant information online, building collaborations with other agencies, and discussing the development and refinement of the research products. Experience teaches that when research imposes unmanageable demands on community partners, it can harm the entire process. The principal investigator (PI) tried to reduce the burden on community partners by assuming some of the main research tasks, which led to conversations between the PI and the graduate student about distributed leadership in the partnership. Consequently, the PI developed a tool to discuss how partners perceived their participation in the research process. Results showed that on the scale of 1 (no participation) to 8 (total control), partners considered that their participation was around six in most research tasks (6 = acting together, you are part of deciding together what is best and feel like an active member of the team).

Section Summary

- The participatory and online aspects of research invited the team to reflect on several aspects of the process that can be of value for those conducting research with similar characteristics. Among the most important are:
 - The complexity of research collaborations.
 - Being attentive to the participatory nature that guided the research.
 - The importance of building capacities in the communities to improve their confidence and empower

them to achieve equal participation.

Challenges and Opportunities

The research faced practical challenges, most of which can be attributed to doing research virtually, but it also created opportunities for participation. Among the challenges were the following:

1. *Technology barriers.* During the first meetings, technology created barriers and frustration for those who did not have experience using Zoom. The tool posed challenges, especially for parents who were using their phones. In those cases, WhatsApp and phone calls were instrumental in guiding participants to connect. Connection via phone also challenged the effectiveness of participatory design activities, as some participants found it difficult to follow the exercises on their screens. The rhythm of the interactions was also affected. Researchers witnessed long pauses, changing levels of engagement, and interruptions (both environmental and from connectivity issues) that would not have occurred in face-to-face interactions.
2. *Length of the meetings.* Another challenge of using online interactions was planning sessions that kept participants interested in long online meetings. Contrary to our plans, the time slot set for the Zoom meetings (90 minutes) proved insufficient on several occasions. Sometimes, participants needed time to reflect, react, or read the information on their screens. Also, as parents felt more confident in their learning, they participated more and asked specific questions, which demanded more extended conversations.
3. *Length of the project.* DBIR projects tend to be lengthy and time-consuming. A critical limitation of this project is that participants would not be available the next school year because students in the Newcomer Program move to another school after one year. This restricted the length of the project to one school year if we wanted to work with the same participants.
4. *Timing.* In this project, meetings were scheduled to start in September and end in April, with the third meeting occurring the first week of December. Since funding and IRB approval took more time than expected, the meetings started mid-November and ended the final day of school. Starting the project in September would have added more flexibility to expand the time between meetings or add more meetings as needed. These limitations also challenged the interactive and flexible nature of the project toward the end since the number of interactions with participants to refine the prototypes was less than expected.
5. *Implementation.* In June 2020, when the proposal was written, it was not yet clear how long the social distancing measures would last. The project was planned to start online and switch to face-to-face early in 2021. As time passed, it became clear that the prototype would not be tested. While ideation and co-design were possible with the proper online adaptations, the conditions for implementation and testing were not adequate.

The project also created meaningful opportunities for participants and researchers:

1. While technology (or lack of) exacerbates inequalities, it can also be a great equalizer if capacities are built adequately during the process. The research team was sensitive to participants' technology limitations and addressed the problem early by creating conditions to accelerate learning and build confidence.
2. Technology also facilitated trust-building as parents became aware of what they were gaining through these interactions. Participants' progress was evident in the second meeting and especially observable during the virtual career panel session.
3. Technology added flexibility to meeting conditions allowing parents to attend the sessions from their homes, places of work, and even on their way home. This was an advantage since parents sometimes find problems in attending face-to-face meetings at the school for several reasons, including transportation and late working hours. Also, mobile applications allowed for interactions outside session times.
4. The diverse and interdisciplinary research team added cultural understanding to the analysis. The lead investigator is Latina and experienced life as a newcomer a few years ago. The family liaison shared a similar experience, coming to the United States from Latin America as an adult. Two members were born and raised in the United States. Two were of Latino origins but educated in the United States. The team was interdisciplinary, including professionals in education, social work, and public administration. This composition added different perspectives to interpreting the data from meetings with parents to inform the design.

Section Summary

- Timing, access to participants for a more extended period, and social distancing were three key issues that impeded implementation.
- Technology barriers affected participation, especially during the first meetings.
- Once all participants became proficient with the platforms, technology was a great facilitator in supporting the development of the knowledge infrastructure needed for effective participation.

Practical Lessons Learned

This case study focused on using a particular methodological framework and participatory techniques and tools adapted to the conditions of the project while keeping the fidelity of the intervention. Here, we provide practical ideas based on our experience in leading community-engaged research:

1. Community-engaged research invites the participation of partners and the community in shaping the research process. As principal investigator, I felt that the research was getting out of hand, and we would not achieve the desired outcomes. However, the research team was wise enough to lead the research toward the best possible outcomes. My advice is to be flexible, trust your partners, and respect their points of view. Take time to revisit previous steps to gain new insights and adjust the scope of work accordingly.

2. For those reasons, it is important to build diverse, interdisciplinary research teams that can look at research from different perspectives and epistemologies and keep you continually aware of the ethical principles that guide community-engaged research.
3. When deciding on significantly changing the course of the research, keep in mind the principles and goals that guide your research and get your team on the same page. This will help to reduce the sense of “messiness” that usually comes with lengthy and complex research projects.
4. Get to know your participants as much as possible. Collect data that provide context to their experiences and values; do not limit data collection solely to the problem under investigation. Contextual information is essential to interpret what participants share.
5. Do not focus your research only on producing scientific knowledge. Create tangible products or services that benefit participants. Build capacities for sustainability in the process.
6. Recognize the effort and time your participants and partners dedicate to your project. Always express gratitude for their participation, commitment, and support.

Section Summary

- When conducting community-engaged research, be flexible but keep in mind the principles and goals that support your research.
- Build interdisciplinary research teams.
- Create tangible products or services that participants can benefit from.

Conclusion

This research used participatory design activities to engage Latinx families and practitioners in developing and implementing culturally relevant resources. Using online tools posed procedural challenges that the researchers tried to address early in the process to ensure ethical, equal, and respectful interactions leading to outcomes that met the specific needs of the partnership. However, unforeseeable situations altered the fidelity of the procedures and expected research outcomes. Nevertheless, the experience opened opportunities to continue exploring how the products of research can be applied in other contexts.

We finish with three questions and our honest responses:

1. Was this study DBIR? The short answer is no. Although DBIR principles guided the initial stages of research, the methodology changed halfway through the process. DBIR focuses on how innovations are implemented and incorporated into educational systems. Because this study covered only the design part of the research and did not study the implementation results, the main DBIR question, “What works when, for whom, and under what conditions?” was not answered.
2. Was this research successful? Without a doubt. It was a success for participants (capacity building and access to innovative resources) and researchers (actionable knowledge and co-designed products). Further research is needed to study the applicability of resources in other contexts.
3. Will this research continue? There are plans to continue research with an upcoming cohort of parents

during the next school year. The investigation will focus on implementation and testing to provide answers related to fidelity (use as intended) and coverage (use in different settings).

Classroom Discussion Questions

1. What should the research team have done early in the process to address the issues of time mentioned in the case?
2. Name other strategies that the research team could have implemented to ensure participants' active collaboration in co-design?
3. Do you agree with the authors that this research was successful? Why or why not?
4. What are the advantages and disadvantages of continuing this research to address questions of fidelity and coverage?
5. Summarize three essential practices of conducting participatory research in virtual settings.

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