Conducting a Collaborative Curriculum Improvement Project

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This presentation will discuss a collaborative project to improve a curriculum about child traumatic stress by integrating new instructional design principles with problem-based learning. This will include a discussion of the design process, how needs and constraints were included in the analysis, solutions to identified improvement goals, and the process used to create new curriculum tools. The objective of this presentation is to share experiences with other instructional designers conducting similar projects.

The Core Curriculum on Childhood Trauma

The Core Curriculum on Childhood Trauma (Core Curriculum) is a tool being developed by the National Child Traumatic Stress Network to educate professionals who work in different academic- and field-based child-serving systems to improve the national overall quality of trauma-informed care for children and families. Settings in which the curriculum is being implemented include community-based mental health clinics, teaching hospitals, academic institutions, juvenile justice systems, and child protective services. Curriculum trainees include practicing mental health professionals, such as social workers, psychiatrists, psychologists, and mental health counselors; mental health graduate students, interns, and post-doctoral fellows; and professionals who provide other services to trauma-exposed youth and families, including child welfare and juvenile justice system workers. The Curriculum uses Problem-Based Learning (PBL), a collaborative learning practice in which groups of learners are presented with complex problems resembling those encountered by practicing professionals. These problems contain multiple decision-making points that require learners to repeatedly sort through, integrate, and develop solutions for problems (Barrows,1986). Our cases are segmented into pages focused on different aspects of a child's case. A facilitator supports the group as they collect and consolidate information; guiding them through the learning experience. In its basic form, the Core Curriculum guides learners through a four-step PBL process comprising (1) identifying important facts from the case description, (2) formulating hypotheses about the case, (3) determining important considerations and next steps to take, and (4) identifying learning issues that require further research.

The Core Curriculum instructional design team included a postdoctoral instructional designer, a clinical psychologist who serves as director of education in evidence-based practice at the Center, a child psychiatrist with expertise in childhood trauma and bereavement, a clinical care and implementation expert, and two social workers with expertise in childhood trauma and child service systems. The mental health professionals had all been working with the curriculum for a number of years, and were deeply invested in its success.

Design Process Overview

At the beginning of this project, the stakeholders did not have a clear idea of what the project might entail. They had a strong belief that instructional design principles would positively influence learning from the curriculum--so much so that they had worked with an instructional design consultant for several years until they finally obtained the resources needed to hire a full-time postdoctoral fellow to assist them in realizing their ambitions. However, they had only a vague awareness of the areas of the curriculum that needed improvement. To identify the improvements in the Core Curriculum that were most needed, and to develop a strategy to sequence and carry them out, we chose to conduct the project as a form of design-based research. This is an approach in which products are designed to solve a problem in a specific context through iterative improvement cycles. It frames solutions as goals constrained by the systems in which the problems are embedded (Sandoval, & Bell, 2004). This particular collaborative model used a critical analysis aspect in the design process. This allowed content knowledge to be guided by experts in trauma-informed care, while the improvement process itself was guided by an expert in instructional design.

The project began with an exploratory analysis of what should be included in the curriculum improvement plan. This was conducted as a critical needs and constraints assessment to determine what goals the current Core Curriculum was meeting and to identify the foundational aspects of the Core Curriculum that should be retained. After the assessment was concluded, its results were used to guide discussions of curriculum improvement goals. The primary aims identified were to support PBL facilitators, improve program implementation fidelity, create tools to improve critical reasoning and other learning objectives, and develop assessment materials for the curriculum. Many types of materials were needed to support these improvement goals. These included instructional guidance materials, case materials and resources, learning tools, and assessment tools. The existing curriculum materials were consolidated into these categories to determine which areas were well covered, as well as to identify gaps that still existed. Once we had identified a gap, we designed various tools and activities to address the learning needs. Once tools were created, they were distributed to our PBL facilitators for trial and feedback in an iterative process of refinement until the product was deemed adequate to fulfill the intended learning objectives. The design process we created to do this work is outlined in Table 1.

Table 1: Design Process Steps

1. Clarify the research question- What is the overall goal of the design project?
2. Perform a content needs and constraints analysis- What needs to be shared? What are the domains of information that need coverage?
3. Summarize the content analysis results to aid in group communication.
4. Collaboratively determine the smaller project goals and constraints that limit what can be done in the design process.
5. Create a draft of design. In areas with uncertainty, leave unmapped areas for collaborative decision-making.
6. Brainstorm possible design solutions to these areas, and use consensus decision-making to determine the courses of action.
7. Create a completed rough draft of the product.
8. Train collaborators and facilitators with the draft of the product, have them use it with learners.
9. Collect feedback about the draft.
10. Incorporate corrections and refinements derived from stakeholder feedback.
11. Iteratively continue cycles of refinement until an acceptable draft has been created and formalized.
12. Evaluate the final product's utility and applicability, and the fidelity with which it can be implemented.

Needs and Constraints Assessment

A conceptual content analysis was conducted on the Core Curriculum to identify the elements that made up the Core Curriculum, what stakeholders wished it to be, and what restrictions were necessary in the design process to retain foundational program features. Many materials were used in this needs and constraints assessment. The summary of these can be found in Table 2: Materials for Analysis.

Table 2: Materials Included in the Needs and Constraints Analysis.

1) The process conducted to determine what the Core Curriculum was:
   - read through the curriculum materials
   - read articles about child trauma
   - reviewed past evaluation reports on the Core Curriculum
   - interviewed internal team members about their conceptual frameworks
   - interviewed facilitators about their facilitation practices
   - surveyed facilitators about how they applied the curriculum in their work

2) The process used to determine what stakeholders wanted the Core Curriculum to be:
   - interviewed internal team members
   - surveyed facilitators regarding what they wanted the Core Curriculum to be
   - examined professional competencies about trauma-informed care
   - examined the contexts in which people wanted to use the Core Curriculum

3) The process conducted to determine the constraints of the project:
   - interviewed stakeholder about the learning goals of the Core Curriculum
   - read through facilitator guides
   - surveyed facilitators about their constraints in trainings
   - reviewed past evaluation reports on the Core Curriculum

Once this information was collected and consolidated, these areas of interest were used to construct rough models of each factor (what it was, what we wanted it to be, and systematic constraints) and to identify the primary components of each factor (e.g., clinicians had very little time for training, so trainings were constrained to being able to be conducted in a short time). This information was used to identify the improvement goals for the Core Curriculum. These improvement goals can be seen in Table 3

Table 3: Identified Curriculum Improvement Goals

1. Constraining all new additions to keep the rich, case-based approach of PBL. Everyone liked the existing cases. They wanted them retained, but with more materials to support their planning and use.
2. Create short cases to introduce the core concepts within a more limited time frame, when needed.
3. Create tools and systems to support PBL facilitation and fidelity of facilitation. Provide facilitators with guides for planning and instructing.
4. Create tools to support critical reasoning, case conceptualization, and some of the more challenging foundational knowledge. The tool creation should be constrained to PBL formats to be used with Core Curriculum cases.
5. Create ways to assess learning in the Core Curriculum, evaluate the Core Curriculum instruction, and improve program fidelity.
6. Determine acceptable formats for Core Curriculum training to meet the learning goals. Planning was difficult for facilitators, which constrained the use of the curriculum.

Building Towards the Identified Improvement Goals

After we determined our improvement goals, we continued our design-based research approach to develop the curriculum materials to reach these goals. We created planning, learning, and assessment tools to supplement the existing Core Curriculum cases. One important factor in the Core Curriculum development was building in sufficient flexibility and support so that facilitators could adapt the Curriculum to provide trauma-informed education for different audiences across a variety of learning settings. For this to happen, we needed to identify general learning objectives for the entire Core Curriculum regardless of such considerations as the case used, the specific learning audience, or the setting. The general learning objectives were thus separated from the case-specific learning objectives that the curriculum had focused on previously. Those case-specific learning objectives focused on specific insights and principles covered by the case material and on idiosyncratic details of the case itself that do not generalize well beyond that situation. We needed general learning objectives that could cover the scope of what

we wanted the curriculum to cover, regardless of which specific cases were selected or which particular instructional tools and activities were used.

The process of developing general learning objectives started as a content analysis similar to the needs assessment as previously described; competencies from different fields were coded and divided into categories. Key stakeholders, including the design team and Center leadership, were interviewed about the ideal content of general learning objectives and historical uses of the curriculum. This analysis was used to outline a prototype set of learning objectives. This prototype was then submitted to the senior management of the Center for review and approval. Management edited and re-wrote the learning objectives to frame the information in ways that they wanted. The design team then needed to convert the language of the general learning objectives to align with the intended curriculum assessment materials. The re-written learning objectives were iteratively cycled between the design team and senior management until a draft acceptable to both parties was produced. The final learning objectives can be found in Table 4.

Table 4: General Learning Objectives of the Core Curriculum

1. Apply the 12 Core Concepts as conceptual lenses to frame information and guide critical reasoning about a case study.
2. Identify ecological factors hypothesized to influence children's traumatic experiences and contribute to their post-traumatic adjustment.
3. Incorporate relevant ecological factors into a case conceptualization, and use that framework to evaluate the hypothesized contributions of different case factors and guide case-related reasoning.
4. Use critical reasoning to make judgments about the relative impact of various factors hypothesized to influence a child's traumatic experience and post-traumatic adjustment.
5. Clearly and accurately communicate appropriate trauma information to fellow professionals, clients, and family members within and across settings.
6. Apply a trauma-informed conceptual lens to real-world aspects of professional practice, including assessment, case management, and treatment planning.

Collaborative Instructional Design Process

The instructional design process used to create curriculum materials was very similar to the design process of the overall project. It was a form of design-based research in which products were designed to solve specific problems in the curriculum. This tool design process can be seen in Figure 1 below. The design team created four categories of materials: 1) Instructional Guidance Materials, 2) Case Materials and Resources, 3) Learning Tools, and 4) Assessment Tools. Table 5 describes each category of materials.
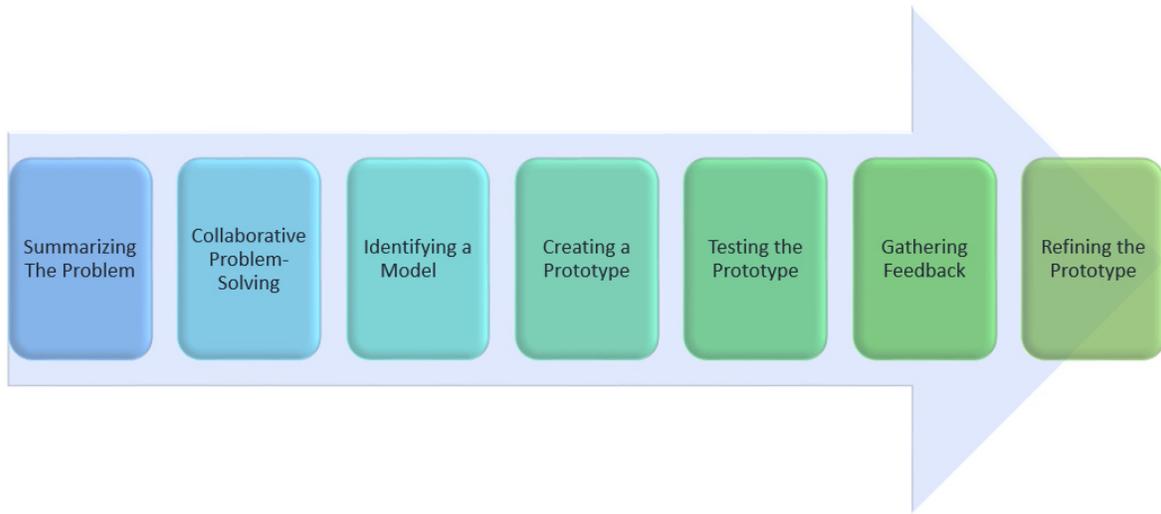
Collaborative Product Design Process

Figure 1. The collaborative product design process involved iterative cycles of prototype improvement.

Table 5 Categories of Materials Constructed for the Curriculum Improvement Project

Instructional Guidance	These materials guide facilitators in effectively using the Core Curriculum. This category includes materials to help learning facilitators plan their instruction, align their activities with their selected learning goals, incorporate appropriate materials that align with those objectives, and plan how to measure learning outcomes.
Case Materials and Resources	These case materials are used in the PBL process. They describe a child trauma case in sections so that group problem-solving can be conducted with the materials. Well-written case materials create rich, complex problem-based learning scenarios.
Learning Tools	Tools to support curriculum general learning objectives. They aid learners in communicating about the problem, consolidating information to create shared understandings. Also provide places to off-load information to simplify thinking about the problem-solving. Some learning tools also serve as assessment tools.
Assessment Tools	Tools to assess learning from trainings. There are both formative and summative assessment materials in multiple formats. Assessment methods are primarily performance assessment, to examine the complex thinking involved with case conceptualization and critical reasoning.

For instructional guidance materials, we developed structured planning guides, organizing templates, and worksheets that aligned with the PBL cases. The purposes of these materials were to improve facilitator support in planning and increase instructional fidelity to the curriculum. The learning tools we created were sets of heuristic graphic organizers to improve collaborative conversations and deepen thinking to support our general learning objectives. These tools were designed to reduce the work of consolidating information and simplify the creation of a shared understanding. They allowed for more complex interactions between factors and an enriched shared conceptualization.

The Instructional Approach

The instructional approach used in this collaboration was a model constructed specifically for this work. Embedded in cognitive science research, specifically related to cognitive load, the Cognitive Refraction Model guides the selection of tools and techniques to support a learning situation. Instructional design concepts of Problem-

Based Learning (Barrows, 1986) and Experiential Learning (Kolb, 2014) shape the facilitation of activities in this collaborative, learner-centered approach, while Backwards Lesson Design (Wiggins & McTighe, 1998) conceptually contributes a sequencing for the model's use. This cognitive load approach ensures that the materials created for instruction are scaffolded to the learners through facilitation techniques and instructional tools. The theoretical framework was constructed by reviewing and aligning applied cognitive load literature to derive a process-based categorization system organized by the work associated with the learning task. (Chandler & Sweller, 1991). This model is also being presented on at this conference (Grossman, 2018).

The Dissemination Process

The first round of tools was created and introduced at an advanced training of our existing facilitators. These stakeholders were knowledgeable about the curriculum and aware of the five rich PBL cases that had been a part of the curriculum for the previous five years. The new tools introduced at the college included two short cases, a packet of 6 learning tools and activities to support general learning objectives, an experimental extended case with a large suggested activity kit, and some rudimentary planning tools. In hindsight, we introduced too many new materials at this training, which proved to be detrimental in the short term to the adoption of the new materials.

After the initial training of the advanced facilitators, the project went into a lull. The majority of the design team attributed the lukewarm response to the materials to a deficit in the materials themselves. They deprioritized the project, and this led to bad communication and a slow feedback cycle. Furthermore, our initial collaborative approach had focused on development without an organized implementation plan. This lack of fore-thought developed into different understandings of the goals of the project and reduced the project's productivity.

Approximately a year into the project, this became a large enough issue that we took a step back and re-assessed the project and its forward progression. A report was created to summarize the work that had been done up until that point and to organize the project's future directions. This report was shared with the design team and other key stakeholders. The report being shared and discussed improved communication amongst the design team. It allowed for the creation of timelines and a strategic plan for future implementation. This included a larger discussion on material prioritization, an introduction of new pathways of information sharing within the team, and structured reporting formats. Materials needed for the new facilitators were prioritized before cycling back to the advanced facilitators. This report and the new approaches taken afterwards renewed the design team's dedication to the project.

Another factor that renewed interest in the project was that when our facilitators used the new tools, their learners liked them. The feedback was positive enough that the facilitators who did implement the new tools became the tools' champions. They used the tools, observed their role in their trainings, and came up with novel ways to implement them further. Since that time, many of these introduced tools have been refined based upon feedback from the advanced facilitators and redistributed in a more formal format.

The design team continued to create products to support the curriculum. As the project continues to progress, we are developing more assessment tools and cycling back to the advanced facilitator materials. These materials include planning tools for creating new case studies, an activity kit to explore more complex skills associated with the general learning objectives, and instructional guidance materials for tool use. This work continues to build on the identified action goals at the beginning of the project exploration.

To increase dissemination and usage of Core Curriculum material, we have formalized many of these products and posted them to a website accessible to our learning facilitators. Previously, facilitators had access to materials only at the training colleges or by requesting materials from the design team. By making the materials more accessible when our facilitators would like to use them, we hope that the materials will be used more, increasing program fidelity and learning. We have also been working to develop the public face of the curriculum through the National Center to increase awareness about the curriculum and further the dissemination of the work.

Evaluation Study

To better understand the learning associated with the instructional tools, we conducted an interview study about the tool use as observed by our advanced facilitators. These experts used the curriculum with the same cases both before and after the tools were introduced. We interviewed the facilitators about their tool use, the differences they observed in the curriculum's instruction, and the benefits and drawbacks of the tool inclusion. Overall, facilitators liked and valued the tools. They reported that the tools allowed for discussions that incorporated more factors together, better collaborative sharing, and a more holistic understanding of the situation. Furthermore, they

appreciated the greater flexibility the tools offered with training options and the increased ability to assess learners' current understanding. The tools increased engagement in the curriculum by breaking down the monotonous 4-step PBL cycle and allowed facilitators to tailor their lessons to achieve specific learning objectives, adjust to different audiences, or alter a training for the situation. The details of the study and the results of the interviews are being shared in another session in the conference, Heuristics to Improve Learning/Reasoning Skills (Grossman & Layne, 2018)

Collaborator's Perspective

This presentation about a collaborative process is being summarized and presented upon by an individual mind. This is theoretically misaligned with the collaborative approach. In order to buffer this limitation, this section includes the perspectives of the psychologist who served as the project's primary investigator and the director of education in evidence-based practice at the Center.

To date, the Core Curriculum has enjoyed good support across the Network. During past grant cycles, we focused largely on training new cohorts of PBL facilitators to assist in disseminating and implementing the Curriculum across the Network's many sites, while conducting two relatively modest evaluation studies. Always in the background, however, have been larger questions about how the Curriculum fits in with and helps to address calls for competency-oriented education and training in core professional competencies, including traumatic stress. Our decision to hire a full-time post-doctoral fellow in instructional design represented a significant commitment on the part of the UCLA National Center and the Network to apply (and in some aspects, create and innovate) instructional design principles to a curriculum that is already enjoying broad dissemination—in perhaps as many as 100 sites across the US thus far.

We believe that the curriculum carries the potential of much more widespread dissemination and impact. This includes both "upstream" impacts, by changing how the next generation of mental health professionals is trained in foundational trauma-related knowledge, skills, and values; as well as "downstream" impacts, by developing effective, efficient, and engaging ways to "retrofit" the existing professional mental health workforce by furnishing them with in-service training in foundational (and advanced, as appropriate) competencies. The large scale of this endeavor (the Network now consists of 100 actively funded sites, with many more affiliate sites), its social importance (receiving strong bipartisan support in Congress), and the aim and structure of the Network have created a very unusual instructional design laboratory where products can be quickly developed, field tested, refined, and then broadly disseminated. Notwithstanding the setbacks described herein, the rapidity with which these steps have been taken reveals a much more rapid evolution in the development and dissemination of the Core Curriculum relative to past grant cycles. The creation of general learning objectives, case-specific learning objectives, and an assessment toolkit will position us to undertake a more rigorous evaluation of the Curriculum than has been heretofore been done.

Discussion

The purpose of sharing so much of our process from our curriculum improvement project is to share perspectives and experiences with other instructional designers working on similar projects. To support this work, we offer some of what we saw as the strengths of our process, the challenges we had to overcome, and the big ideas we feel might be valuable for other practitioners who are seeking to apply instructional design principles to other professional settings.

Strengths of the Process.   The biggest strength of the process was that our curriculum felt more complete and clearer as we made the improvements identified from our needs and constraints assessment. Our stakeholders said that they wanted specific changes to make the curriculum more powerful and more useable. The tools and materials that we created in our collaborative design process serve their intended purposes. Feedback from facilitators evidences the roles the materials are playing and the ways in which they are supporting learning. In this manner, we feel our collaborative design practice improved our accuracy in assessing the learning materials necessary and in designing the tools as well.

Another focal strength of the collaborative design process is that it allowed us to leverage the expertise of a number of professional contributors. Our design team consisted primarily of experts in different fields of mental health, and our facilitator collaborators were also experts in different fields of mental health. This made their feedback on content knowledge particularly impactful and relevant to the instructional design. The primary responsibility of the instructional designer was to weave this information together in ways that were accessible to the learners.

Difficulties with the Process. The first difficulty associated with this collaborative design project was that members of the design team had multiple demands on their time and were not equally invested. Feedback on prototypes was postponed as other projects were prioritized. Additionally, the process needed to work with people with very different schedules. We found that having set check-in topics and spots allowed people to re-align back to what we were working on, but that those also seemed to make the process take much longer. In this manner we would re-analyze and re-make the same decision multiple times. We never found a more successful way around this challenge, and it continued to be a bottle-neck in the collaborative process.

One of the strangest aspects of the Core Curriculum Improvement project was the translation across disciplines. The instructional design expert approached the curriculum design from a cognitive load perspective, focusing on improving collaborative load and scaffolding from facilitators to make learning materials more accessible to the audience. Materials were constructed with specific learning objectives in mind, and they influenced the end format of those materials. Evidence-based research was the foundation of the instructional approach, and each tool had a theoretical foundation for its construction. This intentionality proved difficult to communicate to the design team overall.

While the tools functioned as intended, many members of the design team were slow to adopt new aspects of the curriculum. They had not used the new materials with learners, so they only started to understand the tools' importance when their facilitator collaborators provided positive feedback. These collaborators became early adopters and championed the tool use integration. This created a cascading effect that slowly won over the more hesitant members of the design team. Nonetheless, the process of translating the cognitive science implications into easily accessible information for the design team was not as successful as it could have been, and that impacted the curriculum's dissemination efficiency.

Big Ideas

Even given the difficulties with the collaborative process, key stakeholders felt that this work was very successful and are invested in future collaboration. Overall, we would recommend this process to another group as a powerful approach to collaborative decision-making and project design/implementation. In recommending a similar process, we would also like to provide some guiding suggestions derived from our experiences.

1. Figure out your design and implementation process early on**.** When being invited to work on an interdisciplinary collaborative process, identify whether the people organizing the project have determined the methods they would like to implement to reach the project goals. If they do not have a process identified, as an instructional designer, you can improve your project by offering possible processes that might be reasonable. It is much easier to select from a few choices than to construct a process from an abstract theoretical framework. The model we created for this purpose was based in anthropology, ethnography, and qualitative research for problem exploration and iterative collaborative problem-solving for design purposes.
2. One of the most important aspects in our collaborative process was the work of summarizing collected information so that the design team could make meaningful decisions about the material. This information should be in a written format so that team members can analyze multiple aspects of the project as they align with each other. Having the information written allows the team member to refresh their problem representation in the moment of decision making. Ideally, this summary should be broken down into segments of identified decision-making points. To get consensus between group members can be difficult, especially when interactions are often asynchronous and across a distance. Separating and demarking different choices to be made makes it is easier for team members to orient together for problem-solving.
3. The instructional designer should identify ways of supporting team members in making valuable contributions. As the instructional designer, examine the processes your counterparts work well with and try to adapt your collaborative process to play on the strengths of your collaborators. For example, if a collaborator is much better at reviewing collected information than collecting the information, organize your collaborative process to have them incorporate their perspective later in the process. This allows people to contribute in ways that work for them and builds buy-in into the process.
4. Iterative processes are good for collaborative endeavors because they allow for continual product refinement and they allow for team members to flexibly contribute when they have the time.
5. In the creation of action goals, think of systematic constraints as well as the needs of a system. This makes it easier to prioritize what changes will give you the largest impacts for your time and effort.

6. Early adopters of tools and materials can field test and improve the curriculum. Moreover, their motivation can support generate interest and enthusiasm in program improvements. Identifying and supporting these individuals supports the project overall.
7. As you progress on your project, remember to monitor your progress and re-assess whether you are still in-line with your original goals. Look at the products you are making and see where your goals need support.

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