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Building Adaptive Expertise and Practice-Based Evidence: Applying the Implementation Stages Framework to Special Education Teacher Preparation

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Field experiences, especially student teaching, may provide such opportunities. For portfolio process. Rather than focusing on a single instance, common experiences in teaching service SETs in a graduate-level special education preparation program to design a student or an Individualized Education Program (IEP). These authentic experiences provide a chance for pre-service SETs to demonstrate routine or social need. The CIP provides a dynamic, expertise. As they respond to challenges in the classroom, pre-service SETs begin developing skills necessary to a SET, including (a) identifying adaptive expertise, adapting information learned through coursework and readings through a variety of informal assessments; (b) the structure of the classroom. The mentor selecting appropriate, research-based interventions; (c) collecting and analyzing data; and (d) determining the effectiveness of an intervention to the emotions, practices, and critical thinking required of a special educator (Roberts, Benedict, & Thomas, 2014).

Concurrently, there is a growing understanding that special educators must be more than consumers of research—they must also be contributors and work in partnership with researchers to inform the wider research community (Kratochwill et al., 2012). Within classrooms, pre-service and in-service SETs have a unique vantage point of the implications and outcomes of interventions applied in real classroom settings. Referred to as practice-based evidence (PBE), findings generated by classroom teachers can provide opportunities for researchers to assess the efficacy of an intervention in a variety of settings, the supports needed for implementation, and the difficulties teachers may face (Kratochwill et al., 2012; Smith, Schmidt, Edelen-Smith, & Cook, 2013). To prepare SETs to participate in this process, preparation programs, especially at the graduate level, must include assignments and training that allow pre-service SETs to learn how to locate research- and evidence-based practices, to design interventions and implement them within a classroom, and to understand the importance of fidelity to treatment.

Final, cumulative projects in SET preparation programs may provide opportunities for pre-service SETs to demonstrate both their routine and adaptive expertise and to participate in the development of PBE. Similar in many ways to a master's thesis or action research project, we developed the Capstone

The purpose of this article is to describe the CIP and how it meets these aims, CIP and how it provides an opportunity for the we used the Intervention Stages framework, pre-service SETs to demonstrate their routine one of the Active Implementation (AI) framework expertise in a classroom situation, while also works developed by implementation science building adaptive expertise. Moreover, the tists. In special education, researchers at the CIP can prepare pre-service SETs for their Scaling Up of Evidence-based Practices role in the development of PBE, a goal aligned Center (SISEP Center; <http://sisep.fpg.unc.edu>) with the CEC Professional Standards. Toedu) adopted the AI frameworks to guide

system-level change when working with state system. This includes collecting assessment departments of education (for a complete information, identifying strengths, and determining description, see Fixsen, Blase, Metz, & Vanmining needs (A.I. Hub, n.d.; Fixsen et al., Dyke, 2013). Although the scope and 2013). Stakeholders identify the appropriate resources available within a teacher preparation research- and evidence-based interventions tion program differs substantially from the that might be appropriate and investigate the resources available to the SISEP Center, the types of resources and people needed to suc- AI frameworks provide useful tools for assist- cessfully implement the essential components ing pre-service SETs to complete the CIP or of the intervention. Essential to this stage, all similar projects. Using the Implementation members of the intervention team must buy-in Stages Framework, we describe the process of the intervention selected and support the completing the CIP and how it (a) provides an necessary changes (Fixsen et al., 2013). opportunity to evaluate the routine expertise For students completing the CIP, the of our students while also building their adap- Exploration Stage occurs in the first few tive expertise, (b) promotes the research skills weeks of student teaching. Prior to the semes- necessary to contribute PBE, and (c) aligns ter, the pre-service SETs attend orientation with CEC's Initial and Advanced Professional meetings to review the CIP expectations, dis- Standards for SETs. We conclude by discuss- euss the meaning of research- and evidence- ing the implications of including similar proj- based practices, and learn about the Human ects in special education preparation programs Subjects Review process (see the appendix

Implementation Stages and the CIP

The Implementation Stages framework guides the activities pre-service SETs undertake to complete the CIP, as they move from learning about the variety of research- and evidence-based interventions (Exploration) to implementation and reflection (Full Implementation). The framework consists of four phases to organize the activities necessary to successfully implement new programs (Exploration, Installation, Initial Implementation, and Full Implementation; <http://implementation.fpg.unc.edu/module-4>). As the students move through the stages, they must demonstrate their adaptive expertise and engage in a process that may lead to contributing PBE. Table 2 provides a general timeline for the CIP process, along with a description of the activities completed during each phase and the CEC standards addressed.

Stage 1, Exploration: Identifying Challenges and Seeking Solutions

During this first stage, stakeholders communicate the strengths and needs of the currenting standards for research- and evidence-based

Table 2. The CIP Activities, Implementation Stages, and the CEC Standards.

Implementation Stages Framework	Exploration	Installation	Initial Implementation	Full Implementation
Timeline CIP activities	Orientation to Week 3	Weeks 4-6	Weeks 7-11	Weeks 12-15 and beyond
	Review CIP expectations	Meet with seminar leader to discuss IRB proposal	Gain IRB approval, parent/guardian consent, and student assent (if appropriate)	Reflect on findings of CIP
	Discuss evidence-based and research-based practices, human subjects review process	Submit protocol to university IRB	Begin intervention	Create research poster
	Become acquainted with student teaching setting, personnel, and students	Training on intervention implementation for self and others involved (including identified student or class, cooperating teacher, paraprofessionals)	Make adjustments to intervention based on initial implementation, data analysis, reflection on instructional practice, and feedback from others	Write research paper

practices, as well as how to use resources such

must determine how to balance treatment integrity with the contextual realities of the classroom and their role as a SET, all skills essential to developing adaptive expertise. Achieving this balance, or at least attempting to, may also help build PBE as the pre-service SETs must reflect on whether the modifica-

aide may be available to provide feedback. Installation to Initial Implementation. As they This provides an additional way to collaborate begin implementation, the intervention plans with others (Standard 7 from the Initial and often need to be adjusted based on analysis of Advanced CEC Standards) and adds to the initial student data and feedback from coop-rigor of their interventions (Advanced Level, erating teachers and other colleagues and Standard 4). stakeholders. Adjusting instruction based on

The introduction to single-case research reflection of teaching practice is a key com-design helps the pre-service SETs better ponent in developing adaptive expertise understand some of the research studies (Bransford et al., 2005; De Arment et al., included in their literature review. This pro- 2013). The relative ability of the pre-service vides many of them ideas for strengthening SETs to do this becomes apparent at this their intervention if given more time. In their point, as some can make adjustments to their final paper, the pre-service SETs are often plans more readily than others. This is not able to identify correctly design limitations in unlike the "growing pains" large systems the studies they reviewed. Moreover, many encounter when implementing significant identify their research design as a limitation of changes to policies and practices. As Fixsen their intervention (most conduct an A-B and colleagues (2013) note, there is an "awk-design), suggesting stronger designs for future wardness associated with trying new things research. The pre-service SETs' ability to and the difficulties associated with changing identify and speak of researcher control and old ways of work are strong motivations for the functional relationship between the inter giving up and going back to education as vention and the behavior not only aligns well usual" (p. 223). During seminar, the pre-service with Standard 4 of the Advanced Level CEC SETs convey this sentiment. For instance, the Standards, it provides an opportunity for them students often feel confident in their ability , thda colle to demonstrate adaptive expertise as they, conhlatees tAlthough fiey -anctedn offer suggestions for adjusting and strength- ening their interventions.

Stage 3, Initial Implementation: Piloting the Practice

During the third stage, actual implementation of the intervention occurs. Now, "staff are attempting to use newly learned skills in the context of an organization that is just learning how to change to accommodate and support the ways of work" (Fixsen et al., 2013, p. 223). Although fidelity to treatment should remain a priority, professional judgment, and practical knowledge should not be ignored when implementing research-based practices (Cook & Cook, 2011; Cook, Tankersley, & Landrum, 2009). Data collected through the process should be used to drive changes to the intervention and help with problem solving (AI Hub, n.d.).

After gaining IRB approval, consent from parents/guardians, and assent from identified students, the pre-service SETs move from

Stage 4, Full

Additional Considerations and Implications

Pre-service SETs in our program have completed the CIP for approximately four semesters. Each semester, the projects increase in rigor and sophistication. This may be due to some of the changes faculty members have made to their courses in light of the CIP. For instance, faculty members now include research papers or annotated bibliographies in their courses. This has helped strengthen the students' abilities to locate peer-reviewed, relevant research. Also, the faculty members who teach courses in assessment and positive behavior interventions convey the relevance of their material to the CIP process.

A number of challenges make it difficult to support all of the pre-service SETs as they complete the CIP. For instance, as each student chooses an intervention to implement based on the needs of their placement, the faculty seminar leader must be prepared to provide guidance on a wide range of research-based practices. Although faculty discussed the possibility of requiring a single type of intervention (such as strategy instruction) to be used by all pre-service SETs, the wide range of placements, student needs, and resources available made this option unsuitable. Moreover, the variety of placement options (including implementing resource rooms, self-contained classrooms and co-teaching arrangements) poses significant challenges, and there is no way to forecast the interventions the pre-service SETs will need to be prepared to implement.

At the same time, the wide range of placements and intervention choices may not align with the research agendas of faculty at a university. For instance, each semester, at least one pre-service SET designs a CIP focused on social narratives for students with autism. Although these projects could add to the PBE, no faculty in our program currently focuses on this line of research. Without a faculty mentor to guide the process, there is reluctance on the part of pre-service SETs to disseminate information beyond hallway conversations while also demonstrating the CEC Standards and professional development opportunities

in their school. Opportunities for the pre-service SETs to find researchers from other institutions, whether through online collaborative websites or by making connections at local and national conventions, may need to be designed and promoted as a way to effectively build PBE. Otherwise, valuable lessons learned and data collected may be lost.

To understand the influence of the CIP on outcomes, additional research must be conducted. Currently, pre-service SETs complete a narrative evaluation of their experience at the end of the semester. This information, along with journals maintained throughout the semester and interviews conducted with the pre-service SETs and their cooperating teachers, could provide evidence of the usefulness of the Implementation Stages framework and whether the CIP supports their development of adaptive expertise. In addition, now that the CIP has been in place for multiple semesters, the now in-service SETs could help understand whether it made them more likely to use research- and evidence-based interventions, how it affected their development of adaptive expertise, and whether they now participate in the research process.

Armed with necessary research skills and adaptive expertise, SETs can be an invaluable source of PBE, providing information to researchers about the fit and feasibility of research- and evidence-based practices. Although interventions conducted by SETs may not meet researcher standards for treatment integrity, harnessing PBE about the implementation of a strategy or intervention under "normal circumstances"—that is,

without the researcher present, can enhance the implementation and dissemination of research- and evidence-based practices (Krauschwill et al., 2012; Smith et al., 2013). This requires SETs to possess both routine and adaptive expertise, as they determine where they must maintain fidelity to treatment and where they can make adjustments to meet the needs of their students and the setting. The CIP and projects similar to it provide opportunities for pre-service SETs to meet these aims, while also demonstrating the CEC Standards for Professional Special Educators.

Appendix

Example Seminar Schedule

Week	Topic/activity	Tasks
Prior to semester	Orientation: Overview of student teaching and standards for teachers (New York State & CEC)	IRB/human subjects training certificate (online module)
Prior to semester	Orientation: Overview of the CIP, the IRB process, and the role of research in classroom teaching	
Student teaching begins		
1	Preparing for instruction and data collection: How special educators use data to inform IEPs, FBA/BIPs, and how these could relate to the CIP	
2	Focus on the CIP and IRB: Finding appropriate interventions and preparing a literature review	Intervention summary and literature review worksheets
3	Collecting data to evaluate student performance; Peer-editing and sharing: CIP plan and IRB forms	IRB draft due prior to class meeting; Students bring hard copy of IRB draft to share with peers
4	Submitting to the IRB	Students submit IRB through online portal during seminar
5	Fidelity to treatment and research designs	
6	Meetings with supervisors about student teaching placements	
7	Intervention and literature review sharing	Overview/summary of your CIP intervention and supporting research in 6 PowerPoint slides
8	Video night	10-min video clip of teaching
9	Presenting data and sharing results; review of APA format and directions for the CIP poster	Bring 3 PowerPoint slides that summarize data collection methods and any collected CIP data and graphs
10	Pulling it all together: The CIP article and more information about APA	
11	No class meeting	Individual meetings with seminar leader about CIP
Student teaching ends		
12	Are we ready?	Submit drafts of research paper and poster for feedback and review by seminar leader
13	Special Education Program Research Forum	Research paper and poster due!
14	Career night: Administrator panel presentation and mock interview night	

Note. CEC = Council for Exceptional Children; IRB = institutional review board; IEP = Individualized Education Program; CIP = Capstone Intervention Project; APA = American Psychological Association.

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