

CIDDL Research and Practice Brief 7: Supporting Teachers and Their Students through Content Acquisition Podcasts



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PUBLISHED

October 5, 2021



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Suggested Citation:

Hoekstra, N. J., & The CIDDL Team. (2021). Supporting teachers and their students through Content Acquisition Podcasts. The Center for Innovation, Design, and Digital Learning. <https://ciddl.org/research-and-practice-brief-7-supporting-teachers-and-students-through-content-acquisition-podcasts/>

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Dear stakeholder,

Thank you for engaging with the Center for Innovation, Design, and Digital Learning ([CIDDL](#)). The work that you are about to access is supported with funding from the Office of Special Education Programs at the U.S. Department of Education.

The CIDDL Center is striving to impact the use of educational technologies into preparation programs, including special education, early intervention, and related services personnel preparation and leadership personnel preparation programs that prepare professionals serving students with disabilities.

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Guest Expert: Dr. Michael Kennedy

[Dr. Michael Kennedy](#) is an associate professor in the [Department of Education and Human Sciences](#) at the [University of Virginia](#) and head of the [Supporting Teachers through Coaching, Observations and Multimedia to Educate Students with Disabilities \(STORMED\) lab](#). His work focuses on the use of multimedia instruction, especially through the use of Content Acquisition Podcasts (CAPs), to enhance learning. Dr. Kennedy has done extensive research into how CAPs can be implemented to support preservice teacher education and professional development to support teacher uptake of evidenced-based practices. In addition, Dr. Kennedy has investigated the use of student versions of CAPs to support vocabulary learning for students in STEM classrooms.

Topic: Supporting Teachers and Their Students through Content Acquisition Podcasts

What will you learn from this Brief?

In this brief, Dr. Michael Kennedy discusses the potential of multimedia instruction for mixing visual and auditory inputs to improve learning. The Content Acquisition Podcasts (CAPs) do just that: they take well-known, evidenced-based practices and describe them through a podcast and video modeling with the aim of supporting preservice educators. Dr. Kennedy goes on to describe how CAPs can be combined with data-driven feedback

to promote ongoing professional development. Finally, Dr. Kennedy explains how CAPs can serve to support students in STEM classrooms.

Context

According to Kennedy et al. (2015), podcasts offer the possibility to create instructional materials that are both easy to use and grounded in validated instructional design principles. An example of this work can be found in CAPs. As short, multimedia vignettes, CAPs consist of clear images, limited vocabulary, and concise narration (Kennedy et al., 2018). Shorter CAPs average between 6 to 9 minutes and use on-screen text strategically to reinforce essential terms or concepts (Kennedy et al., 2015). Some longer CAPs may range from 10 to 15 minutes and include video modeling of a practice (Kennedy et al., 2018). CAPs have been designed to provide teachers with direct instruction on an instructional practice (CAP-T), model implementation with a video (CAP-TV), or provide instructional slides that teachers can adapt for their own use (CAP-TS; Kennedy et al., 2018).

The ability of a teacher to teach core content requires not only understanding the content itself, but making it comprehensible to a diverse classroom of learners (Ball & Forzani, 2009). This requires that preservice teachers both learn the evidence-based practices that can support student academic needs as well as receive repeated opportunities to practice teaching (Green et al., 2020).

In this brief, Dr. Kennedy describes how CAPs can be used to support preservice teachers to learn evidenced-based practices, for ongoing teacher professional development, or as a learning resource for students with disabilities. CAPs use vivid images, clear narration, and limited on-screen text to provide learners with the information they need to spur active learning while not overwhelming their limited cognitive resources (VanUitert et al., 2020). This blends nicely with the [Universal Design for](#)

[Learning \(UDL\) framework](#), which similarly recognizes the fact that all learners differ in working memory capacity and background knowledge (Meyer et al., 2014).

Key Insights

Preservice teachers need three types of knowledge about instructional practices to be successful in the classroom. These types of knowledge include declarative (i.e., factual information about what a practice is), procedural (i.e., the steps to implement a practice), and conditional (i.e., when and how a practice is best implemented; Peeples et al., 2019). According to Peeples et al. (2019), however, many teacher education programs lack opportunities for preservice educators to build their procedural and conditional knowledge until late in their program. This is where CAPs can provide support within preservice teacher education or ongoing teacher professional development.

Dr. Kennedy: “We do a lot of talking in teacher education... We tell the candidates ‘here’s what you need to know, here’s what you need to do.’ We need chances for teachers to engage in use of specific practices and have an opportunity to receive feedback.”

Kennedy has developed his CAPs in accordance with Richard Mayer’s cognitive theory of multimedia learning (CTML). The CTML is based upon three assumptions about how the mind works: people have two separate channels for processing audio/verbal input and visual/pictorial input; each of these channels has limited processing capacity at any one time; and meaningful learning requires paying attention to the presented material, mentally organizing this material into a coherent structure, and integrating the material with existing knowledge, which all requires substantial cognitive processing (Mayer & Moreno, 2003). A major challenge for teachers during instructional design is discovering the balance between

guiding a learner's cognitive processing without overloading their working memory capacity (Mayer, 2009).

Dr. Kennedy: "We have these ways that we input information both using our visual and auditory inputs, but we can only handle so much information at any given time. That's just how the human brain works. If we design multimedia with that in mind, and keep things simple but also robust, we can positively impact learning."

In a series of studies, Kennedy and colleagues (2018) demonstrated that teachers who learned evidenced-based practices through CAPs implemented more elements of the practices with fidelity than did teachers who learned via traditional lectures and readings. Another important strategy for supporting teachers' continued development is the ability to look at performance over time (Peeples et al., 2019). Unfortunately, many teachers do not receive the quality and in-depth feedback nor ongoing support they need to make improvements that would impact performance and behavior of students with disabilities (Kunemund et al., 2021). To address this, Kennedy and his colleagues developed the Classroom Teaching (CT) scan: a low-inference observation instrument that records frequency, duration, and a measure of implementation fidelity of the practices that teachers use (Peeples et al., 2019).

Dr. Kennedy: "The CT scan is the classroom teaching scan... It gives a timeline of the entire lesson - or whatever section you wanted to watch - and a non-judgmental, data driven record of what transpired. And then, out of that, the coach and the candidate, or the teacher, can have a conversation."

In a further investigation, Peeples et al. (2019) were also able to demonstrate that preservice teachers who used CAPs and received

feedback via the CT Scan spent more time implementing evidenced-based practices than did comparison groups.

Dr. Kennedy: “It sort of answers one of these questions that our field has: well, we’re all doing things like this, but do we have enough empirical evidence to know that it’s actually working? So, this is how we’re answering that question: We think so.”

While CAPs have been shown to be a powerful tool for supporting pre-service and in-service teachers in the use of evidenced-based practices, there is also potential for their use with students with disabilities.

Dr. Kennedy: “A big issue for students with disabilities, English learners, those at risk, but for all students, especially as we get into middle and high school, is the volume of what they need to learn... And this information sort of snowballs, and it creates for students a barrier to their entry into STEM kinds of fields and careers...”

An example of the type of information that can create a barrier for students to access the curriculum is content-specific vocabulary. Many content area instructors do not feel prepared to effectively teach vocabulary (VanUitert et al., 2020). Kennedy and his colleagues have designed CAPs intended for students: The CAP-S. The CAP-S contains a prescribed instructional sequence of select elements. The sequence includes: the introduction and rationale for the video, naming the vocabulary term, a review of critical background knowledge, a student-friendly definition, an example, a non-example (if applicable), a highlight of the morphological features of the word (if applicable), and ending by repeating the definition (VanUitert et al., 2020). Evidence from VanUitert et al. (2020) has shown that CAP-S can support students in their science vocabulary growth.

Resources

In his interview, Dr. Kennedy highlights a couple of resources that may be of interest:

- [A Sample CAP-TV](#)

Declarative instruction begins around the 1:54 mark, procedural instruction begins at 2:28, and conditional instruction is found at 5:10 (Peeples et al., 2019).

- [COACHED](#)

This is a coaching and classroom observation tool for professional development. This web application is designed for teachers, coaches or principals, or for university-based or alternative teacher education programs, to document and evaluate teacher performance without bias. Data gathered by COACHED can be used to help inform professional development.

Link to Video

This Research and Practice Brief can be viewed on video online at <https://tinyurl.com/99yyfd6d>

Suggested Readings

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Transcription of Interview

Transcription of the interview can be found at <https://ciddl.org/brief7-interview-transcript/>

For More Information

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