Innovative Poster

The CoRe of the Problem: How to Help Preservice Teachers Break Down Content

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Introduction/Need for Innovation

An important facet of teacher education is the preparation of preservice teachers to plan effective lessons. However, preservice teachers often fail to grasp the intricacy of lesson planning or connect planning to their teaching practice (Hammerness et al., 2005). An important aspect of planning is pedagogical content knowledge (PCK), the intersection of what teachers know about the content and how they break down the content when teaching (Gess-Newsome, 2015; Shulman, 1986). PCK has been a focus in agricultural education literature with studies centered on preservice teachers, highlighting the influence of personal beliefs, knowledge of content, and context (Rice & Kitchel, 2015; Stewart, Lambert, & Claflin, 2018). As teacher educators, we recognize the inconsistencies in preservice teachers' understanding of lesson planning and their development of PCK. As a way to strengthen the planning process and further develop PCK, we incorporated the Content Representation (CoRe) template into the teacher preparation curriculum.

How it Works

The CoRe template was created to illuminate science teachers' thinking about content (Cooper, Loughran, & Berry, 2015). Originally used as a data collection tool, the CoRe template has also been utilized in professional development and as a tool for curriculum and lesson planning. The CoRe template (Figure 1) includes three main columns which focus on three important concepts for the lesson, or key ideas. The first column in the table lists the prompts to be answered addressing each important concept, for example, "what do you intend students to learn about this idea?" and "why is it important to know this?"

	Important Concept 1	Important Concept 2	Important Concept 3
What do you intend the students to learn about this idea?			
Why is it important for students to know this?			
What else do you know about this idea (that you do not intend the students to know yet)?			
Difficulties or limitations connected with teaching this idea.			
Knowledge about students' thinking which influenced your teaching of this idea.			
Other factors that influence your teaching of this idea.			
Teaching procedures (and particular reasons for using these to engage with this idea.			
Specific ways of ascertaining students' understanding or confusion around this idea.			

Figure 1. Content representation template. Reprinted from *Science teachers' PCK: Understanding sophisticated practice* by R. Cooper, J. J. Loughran, & A. K. Berry, 2015, *Re-examining pedagogical content knowledge in science education*, 60–74.

The CoRe template was employed twice during 2018-2019 in our program to assist a cohort of preservice teachers in planning lessons and think about the practice of teaching. Preservice teachers were first introduced to the CoRe template during the fall term as they prepared for a microteaching experience.

The second experience was during a student teacher seminar workshop on breaking down content for the agriculture classroom. Preservice teachers were given a scenario around an introductory agricultural education topic, parts of the cell, as a basis for class discussion and topic to complete the CoRe template. The session began with a discussion about the topic and brainstorming ideas as a group, which led to a reintroduction of the CoRe template and its purpose. They worked together to identify important concepts and focus on the prompts for the first important concept before breaking into small groups to complete the template. After the students completed the template, they were asked to discuss how they would transfer the information from the template to a lesson plan.

Results to Date/Implications

Overall, the introduction of the CoRe template has been positive to our teacher education program at Oregon State University from both the perspectives of teacher educators and preservice teachers. Teacher educators noted the benefits of using the CoRe template as a tool to discuss the practice of teaching and gain insight into the thought processes of the preservice teachers. Two instances of using the CoRe template was not sufficient for all the preservice teachers to fully understand or adopt when planning their lessons. The anecdotal findings align with research that states PCK is elusive and challenging to measure (Cooper, Loughran & Berry, 2015).

Feedback from the preservice teachers was wide-ranging. A few individuals remembered reviewing the CoRe template, but found it difficult to implement, “We went through it really quickly so it didn’t stick with me super well.” Others noted “…it took some guidance to really get started” and they weren’t a fan of the small boxes, but liked the prompts. For another group, the CoRe template became a tool they used when planning lessons during student teaching, helping them focus on what they wanted their students to know. This occurred especially with seeing the bigger picture of the course and with scaffolding information for students. One preservice teacher said, “I started using it in the last 4 weeks of student teaching and I really wish I used it the entire time.”

Future Plans/Advice to Others

We plan to continue to incorporate the CoRe template into the teacher preparation curriculum. Based on anecdotal evidence, prior research, and feedback, reviewing the CoRe template once or twice is not enough to truly make an impact. In the upcoming year, we plan to utilize the Core template in the curriculum design course and ensure we are providing content and guidance as preservice teachers work through how to break down content as they learn to teach. We encourage other teacher education programs to utilize the CoRe template with their student teachers, being sure to provide the why behind the use of the tool, modeling how it is used, and providing several opportunities for practice and application.

Costs/Resources Needed

There is no cost to implement the CoRe template in teacher preparation coursework, beyond course time. The template can be shared electronically or printed depending on need.

References

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