

**Professional Development to Deepen Teacher Content Knowledge:
Lessons from the NSF Math and Science Partnerships**

Facets of Teacher Content Knowledge

<p>I. Disciplinary content knowledge (DCK)</p>	<p>A. Knowledge of content at the level the students are expected to know it B. Knowledge of content beyond what the students are expected to know</p> <ul style="list-style-type: none"> ○ More advanced concepts ○ Deeper understandings of concepts and connections among them
<p>II. Pedagogical content knowledge (PCK)</p>	<p>A. Knowledge of how students think <i>about particular content ideas</i></p> <ul style="list-style-type: none"> ○ Initial conceptions ○ Learning difficulties ○ Learning progressions/trajectories <p>B. Knowledge of instructional strategies <i>for teaching particular content ideas</i></p> <ul style="list-style-type: none"> ○ Eliciting ideas ○ Challenging student thinking ○ Scaffolding learning while maintaining cognitive demand ○ Assessing student thinking/understanding ○ Advancing student thinking/understanding <p>C. Knowledge of curriculum regarding <i>particular content ideas</i></p> <ul style="list-style-type: none"> ○ How the instructional materials develop particular content ideas ○ K-12 articulation of particular content ideas
<p>III. Ways of knowing content (WOK)</p>	<p>A. How ideas/problems are investigated</p> <ul style="list-style-type: none"> ○ Hypothesizing, conjecturing ○ Designing/conducting inquiry, problem solving ○ Productive habits of mind <p>B. Ways of establishing knowledge in the discipline</p> <ul style="list-style-type: none"> ○ What counts as evidence ○ The nature of explanation, justification in the discipline ○ The nature of working in the intellectual community of the discipline