

### Survey Question

6. This teacher is knowledgeable about the topics in this subject

Australian  
Professional  
Standard

Professional Knowledge Domain

Standard 2: Know the content and how to teach it

Focus areas:

- 2.1 Content and teaching strategies of the content area
- 2.2 Content selection and organisation
- 3.3 Use teaching strategies

What does this sound like in the classroom?

"This teacher is like a walking, talking Wikipedia. They are so passionate about teaching [this subject] and they know **so** many interesting things about each topic."

Why is this important?

Being 'knowledgeable' about a subject is an essential component in a teacher's armoury. It is this deep understanding allied with knowledge of pedagogy and the curriculum that allows teachers to fully facilitate learning. The importance of pedagogical content knowledge has been debated and assigned varying degrees of importance over the years. Shulman (1986) argued that developing general pedagogical skills was insufficient for preparing content teachers, as was education that stressed only content knowledge. In his view, the key to distinguishing the knowledge base of teaching rested 'at the intersection of content and pedagogy'.

*'To teach all students according to today's standards, teachers need to understand subject matter deeply and flexibly so they can help students create useful cognitive maps, relate one idea to another, and address misconceptions. Teachers need to see how ideas connect across fields and to everyday life. This kind of understanding provides a foundation for pedagogical content knowledge that enables teachers to make ideas accessible to others.'*

Shulman's defined pedagogical content knowledge as teachers' interpretations and transformations of subject-matter knowledge in the context of facilitating student learning. The key elements include:

1. Knowledge of representations of subject matter (content knowledge)
2. Understanding of students' conceptions of the subject and the learning and teaching implications that is associated with the specific subject matter

3. General pedagogical knowledge (teaching strategies).  
(Solis, 2009)

To complete what he called the 'knowledge base for teaching', Shulman included other elements: curriculum knowledge; knowledge of educational contexts; and knowledge of the purposes of education (Shulman, 1987).

Pedagogical content knowledge theory questions the value of knowing 'everything' about a subject. One must understand how students learn (Standard 1) and demonstrate high-quality teaching strategies to deliver high-quality subject knowledge. For beginning teachers, learning 'on both fronts' can be a particularly taxing aspiration, but "if beginning teachers are to be successful, they must wrestle simultaneously with issues of pedagogical content (or knowledge) as well as general pedagogy (or generic teaching principles)" (Grossman, as cited in Ornstein, Thomas, & Lasley, 2000, p. 508).

ACER (2015) surmises that the reason for high rates of out-of-field teaching has to do with the size of schools in Australia, of which about 35% enrol fewer than 400 students. Schools are required to teach a diverse curriculum, regardless of size or location, therefore in many cases teachers have to 'pick up' a subject where they are not a content expert.

What strategies  
have been  
shown to work  
in the  
classroom?

Shulman (1986, 1987, 1992) created a **Model of Pedagogical Reasoning**, which comprises a cycle of several activities that a teacher should complete for good teaching: comprehension, transformation, instruction, evaluation, reflection, and new comprehension.

1. Comprehension: Teachers need to first understand what they are going to teach, and where possible, understand it in several different ways. It is also necessary for a teacher to understand the **purpose** of the lesson at hand.
2. Transformation: How can the teacher transform content knowledge into forms that are pedagogically powerful and yet adaptive to the variety of student abilities and backgrounds? This involves preparation, selection of appropriate teaching strategies, and tailoring the content and adaptation to the variety of different students in the class.
3. Instruction: This includes many of the most crucial aspects of pedagogy: management, presentations, interactions, group work, discipline, humour, questioning, and discovery and inquiry instruction.
4. Evaluation: The evaluation process includes checking for understanding and misunderstanding during interactive teaching as well as testing students' understanding at the end of lessons or units
5. Reflection: Reviewing one's performance as a teacher, analysing and adjusting practice for the future. Has the desired learning outcome occurred?
6. New comprehension: The teacher develops new understanding of the subject and pedagogy involved.

**What three things can I try in my classroom tomorrow?**

1. Enrol in a short course, a MOOC or watch a webinar about some aspect of the content you are currently teaching and take some new information to share with your students.
2. Learn with your students. Not quite sure about something? When we stop learning, we stop teaching. Model that learning about a subject never stops.
3. Check your knowledge. If you're game, give the students carte blanche with questioning you about a particular topic and see if there are gaps in your knowledge. Seek out the answer either with the students or post-lesson.

**What opportunities are there for collaboration with my colleagues?**

Work with your colleagues to provide access to an expert subject leader or the resources to nurture one for each subject. Can subject leaders take more responsibility for training other staff? Create networks with neighbouring schools to share good practice and capitalise on local expertise. Tap into the wonderful subject teaching associations that exist in each state (and nationally) to remain at the forefront of best practice.

**Where can I find out more?**

Referenced articles, books and other great reads:

- Shulman, L. (1987) Teacher's In-Depth Content Knowledge. *Intime: Integration new technologies into the methods of education*. Accessed 15 March 2015.
- Cochran, K. (1997) Pedagogical Content Knowledge: Teachers' Integration of Subject Matter, Pedagogy, Students, and Learning Environments. In: *Research Matters: to the Science Teacher*. No.9702, Jan 14 1997. Accessed 20 May 2015.
- Hobbs, L. (2015) Too many teachers teaching outside their area of expertise. *The Conversation*, 13 April 2015. Accessed 14 April 2015.
- Weldon, P. (2015). The Teacher workforce in Australia: Supply, demand and data issues. *Policy Insights*, Issue 2. Melbourne: ACER. Accessed 14 June 2015. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.493.2271&rep=rep1&type=pdf>