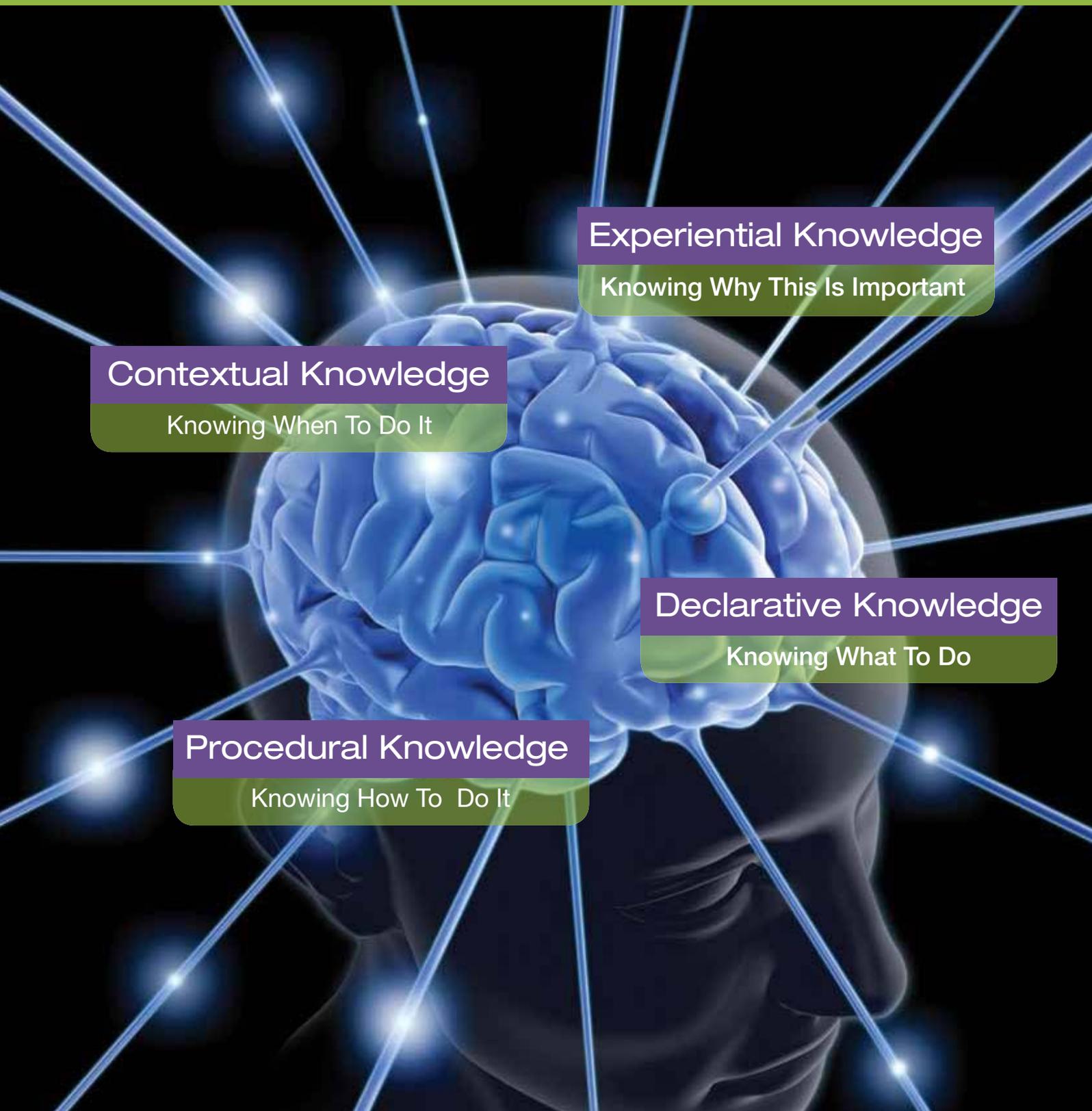


By Elizabeth Ross Hubbell

Using McREL's Knowledge Taxonomy for Ed



Experiential Knowledge

Knowing Why This Is Important

Contextual Knowledge

Knowing When To Do It

Declarative Knowledge

Knowing What To Do

Procedural Knowledge

Knowing How To Do It

Tech Professional Development

I love those a-ha moments that happen in an educational technology workshop when participants begin to envision their teaching in entirely different ways. I remember such moments, and the awesome, expansive—albeit intimidating—realization of what it means to completely integrate technology into instruction.

Throughout the years, I have learned some key ideas that help teachers embrace, apply, and feel comfortable with technology in their pedagogy. My colleagues and I at Mid-continent Research for Education and Learning (McREL) have facilitated hundreds of workshops in the United States to help teachers integrate 21st-century tools with research-based instructional strategies. Teachers tell us that they leave renewed and excited about getting back into classrooms to try new ideas. Even more electrifying are the comments we have received from workshop participants. Here is what one had to say:

I am a [digital] immigrant with both feet stuck firmly in the old world. I feel so extremely accomplished now that I can create a blog, a wiki, make templates online, and speak the language so much better. My students are going to think I am the bomb!

McREL's Knowledge Taxonomy is a useful guide for any educational technology professional development plan. This taxonomy is based on the assertion that teachers need to know not only *what* to do to improve student achievement, but *why*, *how*, and *when*. Addressing each of these areas of knowledge is fundamental to the success of any professional development initiative.

Experiential Knowledge

Experiential knowledge addresses the question of why professional development is important. One of the biggest struggles in an ed tech workshop occurs when teachers do not understand the urgent need to transform our classrooms into learning environments that engage today's students and prepare them for higher education and their future careers.

I often begin a professional development session by addressing the question "Why technology?" I find that reading a stimulating article or watching a presentation, such as Karl Fisch's Shift Happens (<http://www.youtube.com/watch?v=pMcfrLYDm2U>), is a good springboard for lively and thought-provoking conversations. Fisch, the director of technology at Arapahoe High School in Colorado, has included questions to help facilitate such discussions at <http://shift.happens.wikispaces.com>.

At other times, participants may read or jigsaw an article to help them begin thinking about the dichotomous worlds their students encounter inside and outside of their classrooms. Good resources for such articles include *L&L*, *Edutopia*, and blogs such as Will Richardson's Weblogg-ed, Ian McCoog's The Anxious Educator, Steve Dembo's Teach42, and Vicki Davis' Cool Cat Teacher Blog. This is a small sampling of the great bloggers out there. I encourage novice blog readers to start by subscribing to a few blogs using a resource such as Google Reader. Your personal learning network will help you grow your reader subscriptions.

Educators can also think about the question "Why technology?" from a business standpoint. In this case, I talk

about how the world might look in the near future. Or I might use a logic model to help teachers think about their clients, identify their needs, and determine the best resources to meet those needs. These exercises help teachers realize that educational technology doesn't just mean wires, plugs, and boxes. Instead, it's about how education must evolve to best prepare our students for their future. For more "why technology" resources, see www.diigo.com/user/ehubbell/WhyTech.

Contextual Knowledge

Contextual knowledge refers to understanding when to use the knowledge or skill. Using research-based instructional strategies as a framework for integrating technology helps teachers address the level of understanding for which they are aiming rather than the content area they are "covering." For example, a teacher may find a virtual frog dissection site and think that it would be a great resource to use when the class studies amphibians. It is a much stronger use of technology, however, when the teacher is able to think, "This would be a great resource when we are studying amphibians. It will also provide nonlinguistic representation and an opportunity for my students to generate and test hypotheses about amphibians versus mammals."

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Regional Educational Laboratories



The Regional Educational Laboratory (REL) Program consists of a network of 10 regional laboratories.

The Regional Educational Laboratory (REL) Program provides access to education research through applied research and development projects, studies, and other related technical assistance activities. Each REL serves its region by bringing the latest research and proven practices into school improvement efforts.

McREL administers the Central Region Educational Laboratory (REL Central), which serves the needs of Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota, and Wyoming.

Since the U.S. government first authorized the REL program in 1965, the objectives set for the program have changed from the broad goal of

general educational improvement to the establishment of priority areas to enhance the impact of laboratories in each region.

The current priority is to provide policy makers and practitioners with expert advice, training, and technical assistance for interpreting the latest findings from research pertaining to the requirements of No Child Left Behind. In instances where scientific evidence is not available and schools need appraisal and analysis of alternative strategies to improve learning, the labs fill the void with applied research and development projects.

For more information, visit <http://ies.ed.gov/ncee.edlabs>.

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In this way, novice tech users begin to think about using technology as a vehicle to facilitate student understanding rather than an embellishment within a specific content area. The latter often results in technology acting as a frill, or extra, after the “real” learning has taken place. The former tends to lead to more thoughtful and integrated use of available tools. For this reason, during a workshop, I often introduce various tools and websites in conjunction with a specific instructional strategy, such as summarizing or note taking.

Declarative Knowledge

Declarative knowledge addresses what teachers need to know. One of the most important objectives in an ed tech workshop is helping teachers see the difference that the tools make in student learning. Throughout a workshop, I provide multiple examples of student work that show how teachers can use these tools in dynamic learning experiences. Equally important is easy access to these tools, both during and after the workshop. By uploading links to resources and examples on a wiki or directing participants to a social bookmarking account, I facilitate access while modeling approaches that teachers can try on their own.

Procedural Knowledge

Procedural knowledge addresses how to use the knowledge or perform a skill. It is crucial that teachers have time to play with the tools I introduce during the session. The more comfortable they are with them, the quicker they will successfully integrate the tools into their instruction. I often provide information through a brief lecture, allow for questions and discussion, and follow with plenty of application and exploration time. The conversations that teachers have during these trial-and-error periods often lead to the deepest learning experiences in the workshop. It is during this time that they begin to process what they have heard or seen and begin assimilating it into their own pedagogy.

For some time, it has been common practice to encourage teachers to leave professional development sessions with a final lesson or unit plan in place. In my experience, teachers do not need to walk away from the workshop with a polished finished product, but they do need a tool that they can immediately access and use the next day in their classrooms. During this

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phase of the workshop, when the focus is on procedural knowledge, I give teachers opportunities to create their own social bookmarking accounts and save a few new websites or to create a collaborative wiki to organize resources for an upcoming unit.

Building a PLN

Before leaving for the day, I try to give participants tools so that their learning can continue beyond the time

we've spent together. During this final session, teachers learn how Web 2.0 resources (such as Twitter), Ning sites (such as Classroom 2.0), and Google Reader can help them create their own learning networks. Educators across the world connect many times a day with resources such as these.

Information changes so quickly that it would be irresponsible for educators to wait until the next university class, conference, or workshop to extend their learning. The tools I've mentioned provide a rich and dynamic learning playground for teachers to connect and communicate with other teachers, principals, staff developers, and district leaders. In this way, we are modeling the very essence of what we want our students to do: reach far beyond their immediate environment to become lifelong learners and teachers in a global society.

Resources

- Classroom 2.0: www.classroom20.com
- Cool Cat Teacher Blog: <http://coolcatteacher.blogspot.com>
- Delicious: www.delicious.com
- Elizabeth Hubbell's Delicious account: www.delicious.com/ehubbell
- Google Reader: <http://reader.google.com>
- Ning: www.ning.com
- Shift Happens Wiki: <http://shiftohappens.wikispaces.com>
- Teach42: <http://www.teach42.com>
- The Anxious Educator: <http://theanxiouseducator.blogspot.com>
- Twitter: www.twitter.com
- Weblogg-ed: <http://weblogg-ed.com>



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