

Technology Is Not the Panacea Many Think It Is: The Importance of Teaching and of Supporting Teachers

Jill Rosenblum, Walch Education Vice President
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We hear a lot about the use of technology in classrooms and technology investments—everything from iPads to “one laptop per child” initiatives get a lot of press. What we tend to overlook, however, is the teacher’s central role in student learning and achievement.

New, rigorous standards and sophisticated 21st-century learning goals represent a significant challenge to teachers, and the expectation that every student must achieve these standards increases that challenge. “Technology” in and of itself is not an adequate response to the growing challenge. Although technology offers effective instructional tools, and perhaps a more cost-effective means of distribution, skilled teachers are more important than ever. Technology can supplement and support quality instruction, but cannot supplant it.

To be effective, teachers not only need to “know their stuff” (the content, concepts, and procedures of their subject matter) and how to deliver it (instructional models, pedagogical approaches), they must facilitate a dynamic interaction among and between the content, the lesson or activity, and their students. It is along this interface, where students’ prior knowledge and thinking interact with new information and ideas in the context of instruction, that teachers help learning happen. A teacher’s ability to respond to evidence of student reasoning and ideas, drawing them out and making important connections to concepts and skills, is fundamental to the process of learning. Interactive discourse, reacting to students in real time—eliciting their thinking, gauging their understanding and/or misunderstanding, and directing or re-directing their connections and concept development—forms the heart of effective teaching.

For decades, researchers have been identifying effective teaching practices and documenting the value-added contributions of successful teachers. Providing all teachers with sufficient professional development to ensure consistently effective instruction in every classroom is a daunting undertaking, especially as budgets and schedules tighten.

Consider the selection and implementation of instructional materials that support good teaching. This support, a path to effective teaching, cannot come in the form of materials that remove the teacher from the teaching and learning equation. Neither technology alone nor the best-designed curriculum materials can replace the teacher. Learning depends on their roles as connectors, orchestrators, responders, redirectors, clarifiers, and relators. Instructional materials can encourage good teaching by scaffolding instruction and enabling all teachers to be more effective.

Supportive instructional materials actively engage students, allowing their teachers to play a dynamic, interactive role, guiding, responding, and facilitating as appropriate. Learning any discipline requires active student involvement, including authentic, hands-on experiences. For example, genuine scientific inquiry allows students to construct conceptual understanding, and its authenticity depends on its

unscripted structure. Virtual labs with pre-ordained outcomes do not provide students the opportunities that they need to discover and comprehend the nature of science. Further, they don't provide teachers the opportunities that they need to help students respond to real results. Instructional activities generate new experiences for students. It takes an adept teacher to help students connect the new observations to their prior knowledge and to the formal concepts of new knowledge. Thus, knowledge and understanding are constructed.

Technology-based instruction is not "the answer." Instructional materials, infused with teacher support that allows them to play their essential role effectively, are a big part of the answer. High quality materials for teaching and learning provide teachers with:

- background information on the targeted concepts and procedures and their place within the discipline (links, passages, visual representations)
- research into common student misunderstanding and errors and strategies for addressing them
- models of dynamic interaction and effective discourse (sample dialogue, prompts, and questions with a range of student responses and teacher responses, in turn)

We must equip teachers with a range of tools and approaches, technology one among them, so that they can perform their indispensable role.