VisionQuest®: 
Teacher Development Model for Scaffolding Technology Integration

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Abstract: The professional development model proposed here builds on and extends the use of VisionQuest®, a CD-ROM teacher development tool designed to help teachers envision and achieve technology integration. The VisionQuest® model is based on the assumption that teachers are more likely to embrace pedagogical and classroom change if these changes address real issues they face in practice. Teachers are challenged to reflect on their current knowledge and classroom practices, relative to technology integration, and then, after observing exemplary models included on VisionQuest®, develop and pilot their own solutions to relevant classroom issues. By engaging teachers in reflective activities that nurture and sustain their professional development, VisionQuest® facilitates the growth of teachers' visions for teaching and learning with technology.

Introduction

Despite the fact that technologies have achieved substantial presence in schools (Education Development Center, EDC, 1996), teachers all over the country continue to grapple with both practical and philosophical problems posed by the integration process (Hadley & Sheingold, 1993). Currently, K-12 teachers are experiencing mounting pressures, both from within and outside the educational system, to demonstrate that the huge investments being made in technology are not being wasted. Yet, according to the National Center for Education Statistics (NCES, 1997), "relatively few teachers (20%) report feeling well prepared to integrate educational technology into classroom instruction" (p. 8). Although most teachers report that professional development activities are available to them and that they frequently participate in them (NCES, 2000), teachers continue to face significant barriers as they begin integrating technology within their classrooms.

Traditionally, technology courses for in-service teachers have focused on increasing teachers' technical skills and competencies for using specific software applications. Yet clearly, an increase in teachers' technical skills is insufficient to guarantee the effective use of technology in the classroom.
Through previous research efforts (Ertmer, 1999; Ertmer, Addison, Lane, Ross, & Woods, 1999; Ertmer & Hruskocy, 1999; Hruskocy, Cennamo, Ertmer, & Johnson, 2000) we have identified a number of challenges that teachers face as they begin to integrate technology within their curricula. Besides a host of technical and logistical questions (e.g., How does this software package work? Where and when should we use computers?), more subtle issues, related to teachers’ pedagogical visions and beliefs, as well as their perceived confidence for using technology, are also known to impede meaningful classroom use.

The VisionQuest© professional development model emphasizes building on teachers’ current beliefs and practices. By starting with teachers’ prevailing classroom needs, and acknowledging their current levels of self-efficacy, VisionQuest scaffolds teachers’ development by meeting teachers where they are. In addition, this model emphasizes the role that teachers’ beliefs play in the adoption and change process and specifically outlines how those beliefs might be addressed through teacher development efforts. While traditional staff development models have been aimed at eliminating first-order barriers (barriers that are external to teachers and include skills training and equipment needs), the VisionQuest© model focuses primarily on challenges presented by second-order barriers (barriers that are intrinsic to teachers and that challenge fundamental beliefs about current practice).

Teacher Beliefs

In summarizing research on teachers’ beliefs, Pajares (1992) noted that “there is a strong relationship between teachers’ educational beliefs and their planning, instructional decisions, and classroom practices” (p. 326). In particular, teachers’ beliefs about their ability to use computers in instruction may be key, given the role self-efficacy is proposed to play in determining behavior. In a recent study by McKinney, Sexton, and Meyerson (1999), participants with lower efficacy beliefs expressed concerns typical of those in an early stage of change (self-concerns) while those with higher self-efficacy had concerns that were more characteristic of later stages of change (impact-concerns).

Self-efficacy refers to personal beliefs about one’s capability to learn or perform actions at designated levels (Bandura, 1997). According to Bandura, self-efficacy is based, not solely on the level of skill possessed by an individual, but on judgments about what can be done with current skills. As such, self-efficacy is thought to mediate the relationship between skill and action. Simply put, without skill, performance isn’t possible; yet without self-efficacy, performance may not be attempted. According to Bandura, “beliefs of personal efficacy constitute the key factor of human agency” (p. 3). Thus, teachers who have high levels of efficacy for teaching with technology are more likely to participate more eagerly, expend more effort, and persist longer on technology-related tasks than teachers who have low levels of efficacy.

So what does this mean to designers and others who are responsible for teacher development? How can we design professional development experiences that address teachers’ second-order barriers, or more specifically, that build teachers’ efficacy for using computers in instruction?

Given the long-term nature of the integration/adopter process, we recommend that staff developers/instructional designers meet implementation needs in a responsive fashion—that is, through “iterative interventions” (Frame, 1991) that meet and challenge individual teachers at their current levels of use. As teachers face changing needs, the strategies designed to meet them must also change. In addition, training strategies should be varied to meet the needs of teachers at different levels of technology use. Different strategies are likely to be more or less effective for teachers with different levels of confidence and skill (Snoeyink, 2000). For example, it is important not to discourage those who have low levels of confidence by surrounding them with others who are much more experienced and confident. By designing staff development programs that start with the real concerns that teachers have, and helping them experience success in solving their own problems, we have a better chance of making headway in the technology integration process.

The VisionQuest© Professional Development Model
VisionQuest© is designed to address teachers' second-order barriers, specifically their visions for, beliefs about, and confidence for teaching and learning with technology. This model (adapted from NCREL, 1997) builds on, and extends, the use of the VisionQuest© CD-ROM teacher development tool, designed to help teachers envision and achieve technology integration.

VisionQuest© features the classroom practices and technology integration visions of six teachers and is designed to support users' reflections on both the underlying beliefs and classroom strategies that enable exemplary technology use in ordinary settings. Teachers, featured on the CD-ROM, share their ideas for classroom technology use and demonstrate how technology supports their fundamental beliefs about teaching and learning.

The VisionQuest© professional development model, which serves as the underlying framework for the CD-ROM, facilitates the growth of teachers' visions for teaching and learning with technology by engaging them in reflective and collaborative activities that nurture and sustain their professional development. The six-step model (Fig.1) facilitates reflection on, and the transformation of, classroom practice. Teachers are challenged to reflect on their current knowledge and classroom practices, relative to technology integration, and then, after observing exemplary models included on VisionQuest©, develop and pilot personal solutions to relevant classroom issues. Through a collaborative and reflective process, teachers gradually develop their own understandings about how to integrate technology in ways that address relevant curricular and pedagogical issues within their classrooms. Each step in the model is described below.

**VisionQuest© Teacher Development Model**

- Reflect on Current Knowledge
- Modify and Extend Understanding
- Observe Models and Cases
- Growing Visions: Transforming Practice
- Reflect on Changes
- Reflect on Practice
- Initial Changes

**VisionQuest© Professional Development: Scaffolding Technology Integration**

**Reflect on Current Knowledge**

In the first step of the model, teachers are encouraged to reveal the goals they want to accomplish in their classrooms, the barriers that hinder their work, and the instructional and/or administrative concerns they have, related to specific aspects of classroom practice (e.g., classroom organization, assessment practices). Teachers also are asked to reveal their beliefs about teaching as well as the incentives that motivate them to teach. At these early stages of technology adoption and use, the focus is not on specific technology skills or needs. Teachers are encouraged to consider their needs as both teachers and learners prior to considering their needs as technology users. Teachers and trainers work collaboratively to develop an individual teacher profile, followed by the development of an individual teaching/technology plan (ITP) in the next step. Thus, an individual teacher profile might include information about teachers’ 1) classroom practices, 2) classroom context, 3) perceived issues and barriers, 4) beliefs about teaching, 5) motivation for teaching, as well as 6) preferred ways of learning and teaching. By beginning with teachers' perceived
needs, we remove the focus from the innovation and place it instead on teaching practices and the important issues teachers face.

Observe Models and Cases

One of the most effective ways to help teachers move forward on their technology integration journeys is through the use of peer and exemplary models (Gilmore, 1995; Pintrich & Schunk, 1996) which are believed to lead to increased confidence and competence. During this step, pre- and in-service teachers observe teachers who use technology in their teaching. Web sites, videos, text materials, and the VisionQuest© CD-ROM are used to examine both the pedagogical beliefs and classroom practices of exemplary technology-using teachers. The CD-ROM is organized around the metaphor of a journey and is divided into three sections: Roadmap, Path, and Destination. Within these three sections key themes are addressed: Guiding Vision, Getting Started, Incentives and Barriers, Teacher and Student Roles, Classroom Organization, Curricular Emphases, Assessment Checkpoints, and Sample Student Products and Assessment Tools.

Reflect on Practice

During this step, teachers and staff developers co-develop an individual teaching/technology plan by considering various means for meeting specific needs identified in the teacher profile. That is, after reviewing the issues teachers face, staff developers help translate these important questions into technology-based learning opportunities. For example, if a teacher indicates that she would like to revise her assessment practices, staff developers might help her consider any of the following technology solutions: creating a grade book, determining weighted scores using a spreadsheet, or developing a rubric based on Internet samples. Depending on the type of support teachers request or require, different types of support should be offered (one-on-one consulting, just-in-time training, formal classroom training, peer collaboration and observation, etc.). Some strategies will work more readily and be more appealing than others, depending, at least to some extent, on the barriers teachers describe. Different barriers (e.g., lack of confidence vs. lack of support) typically suggest the use of different strategies. For example, if teachers mention not yet feeling comfortable with technology, they probably are not ready to begin using technology in the classroom. Instead, they need to increase their personal comfort through increased individual and personal use. By acknowledging and helping teachers work through specific first- and second-order barriers, we help them identify strategies that work for them and simultaneously build confidence in their ability to address future barriers.

Initiate Changes

As teachers test their ideas in their classrooms, they experience first-hand what works and what doesn’t. As Maddin (1997) emphasized, ”the real learning begins back in the classroom” (p. 56). Information obtained through direct experience is one of the most powerful means to shape future practice. Because teacher self-efficacy is a fluid construct, it changes with new experiences. While early success can raise efficacy, early failures may lower it. For this reason, it is probably important that reluctant teachers experience as much success as possible during their first attempts to use technology within the classroom. Additionally, teachers should set realistic goals for themselves since they will measure their success by how closely they meet the goals they have set (Pintrich & Schunk, 1996). It is not critical that reluctant teachers implement a highly sophisticated lesson with lots of bells and whistles. What’s most important is that they are successful. Risk and surprise need to be eliminated, or at least greatly controlled.

Reflect on Changes
Kagan (1992) explained that changes in teachers’ beliefs are rarely the result of reading and applying research findings. Teachers base most of their ideas on their own and others’ experiences. In order to promote professional growth, Kagan recommended that teachers’ awareness of their own beliefs be raised, followed by experiences that challenge those beliefs and promote integration of new ideas into current belief systems. Such reflection initiates the revision process. After implementing new ideas or tools in the classroom, the teacher takes time, with or without others, to reflect on the teaching/learning processes and outcomes achieved. Teachers consider how the teaching and learning that occurred compared to what was expected. As teachers realize that their “ability to successfully utilize technology has increased, they are motivated to attempt to learn more about technology, its uses, and benefits” (George & Camarata, 1996, p. 51). However, as with most teaching experiences, there are usually many opportunities for improvement. Teachers should be encouraged to focus their reflections primarily on what the students did or did not do in response to the lesson. Based on this information, teachers can consider what changes need to be made to facilitate the types of student performances or levels of thinking desired.

**Modify and Extend Understanding**

In this final step, teachers are encouraged to discuss their instructional changes with others and consider the overall usefulness and effectiveness of the changes they have initiated. Based on conversations with others, teachers are encouraged to outline their next steps for development. This may include implementing a revised version of the lesson, adding one more idea to the lesson, or reading relevant literature to examine what others have done. Revisions made after each iteration are not likely to be substantial; however, continual refinements, over time, can add up to noticeable differences. As teachers continue to converse with others about how they addressed a relevant issue in their classrooms, as well as the results they obtained, they initiate, in effect, new cycles of development.

**Educational Implications**

According to Fisher, Dwyer, and Yocam (1996), "The major challenge to supporting school learning with technology lies not with technology but with the professional development of educators" (p. 7). The success of our technology integration efforts will depend, ultimately, on the focus and effectiveness of our staff development efforts.

Traditional approaches to teacher development have typically employed a one-size-fits-all mentality. *Responsive professional development*, as represented by the VisionQuest© model, meets teachers where they are, yet moves them continually forward by engaging them in activities that explicate both their own and their students’ evolving understandings. Recognizing that even “expert” teachers continue to evolve (and that expertise is emulated in a variety of ways), early professional development activities impel teachers to reveal, test, and refine current beliefs about classroom practice. As teachers engage in iterative classroom tryouts and collaboratively reflect on changes in students’ thinking, they become more sophisticated at recognizing and assessing their own understandings and abilities. Through this ongoing examination of practice, teachers begin to construct deep understandings of how to translate reform-based pedagogy into practice. As initial questions (e.g., What makes a "good" activity?) lead to additional questions (e.g., How can technology support this activity? How do I assess students’ work?), the VisionQuest© model has the potential to engender simultaneous changes in instruction, assessment, and teacher and program development.

**References**


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**Acknowledgments**

Portions of this work were supported by the Multimedia Instructional Development Center at Purdue University and the Herrick Foundation of Michigan. The authors wish to thank the participating teachers and their school principals for their hospitality and efforts during this project. In addition, we thankfully acknowledge the assistance of the Educational Technology development team during the creation of the VisionQuest® CD-ROM.