

# K-A-RPE Model

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## INTRODUCTION

The phenomenon of distance-based learning has dramatically changed the direction and delivery of education in the past decade. Course Web sites, whether used as supplemental resources for face-to-face courses or as essential materials in an online course, have exploded since the mid-1990s. By the end of the millennium, higher education institutions world-wide were racing to establish dominance on the distance education bandwagon.

Pastore (2001) estimated that 1,500 colleges and universities were offering Web courses by 1999, and this was expected to double to 3,300 by 2004. The U. S. Department of Education found some 26,000 online courses with an estimated 100 new college courses going online every month (James & Voigt, 2001).

Technology has become an integral part of the educational process, particularly as it has broadened the realm of distance learning. According to the National Education Association (NEA), currently one in 10 higher education members teaches a distance learning course. Furthermore, 90% of its members who teach traditional courses indicated that distance learning courses are already offered or are being considered for immediate implementation at their respective institutions (NEA, 2000).

## TEACHERS AS LEARNERS, EXPERTS, AND SCHOLARS

The International Society for Technology in Education (ISTE) recognizes three distinct levels of professional technology development. At the outset, *technology foundations* are suitable for all teachers-as-learners as they prepare to assume the instructional duties of the classroom teacher. At mid-level, *skilled educator competencies* address the teacher-as-expert; specifically, those who serve as computer teachers and building/campus-level technology facilitators. At the third level is *IT professional leadership* with advanced

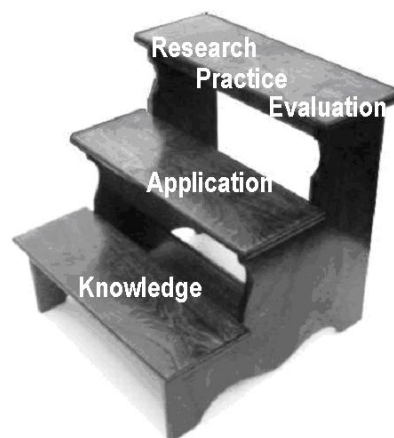
programs for preparing the teacher-as-scholar and those who serve as technology directors, coordinators, and IT specialists.

To meet the increasing demands for technology at all three levels, dedicated technology-based programs have been implemented for pre-service (undergraduate), in-service (classroom teachers and graduate students), and post-graduate (i.e., doctoral candidates) learners. Technology courses inherent at all three levels often beg questions in the minds of teachers and technologists as they move through their formal education agendas. What will I learn differently about technology as a freshman than I will as a graduate student or even a doctoral candidate? What is different at each of these levels? If I take undergraduate technology courses as a teacher-as-learner, am I sufficiently prepared to use technology throughout my career?

## THE K-A-RPE MODEL

Since 1996, the K-A-RPE Model has served to differentiate teaching and learning of technology. It is offered here as an archetype for other institutions seeking to develop their own comprehensive technology program.

*Figure 1. The K-A-RPE model*



Knowledge, application, and research, practice and evaluation (K-A-RPE) offer the necessary dichotomy among instructional technology programs for undergraduates, graduates, and doctoral candidates. Similar to other more well-known taxonomies, the K-A-RPE model is progressive and assumes mastery and competency at previous levels.

At the *knowledge* level of the model, candidates are introduced to technologies as personal learning tools. For example, in an undergraduate technology course, participants are encouraged to “create a 10 cell x 10 cell worksheet to capture semester quiz grades and correctly compute an average (mean) score given only a lecture/demonstration on the basic features of electronic spreadsheets.” At the knowledge level, the teacher-as-learner acquires the technology skills that will serve to enhance their own learning needs beginning with a formal pre-service education and lasting throughout a lifelong career as an educator.

Graduate candidates, on the other hand, seek to master technology to advance the learning process as instructional technology is infused into the classroom curriculum. At the *application* level, candidates master technology-based skills for immediate inclusion into everyday instruction. For example, “using principles of instructional system design, teachers will develop and implement an eight-page, text-based, student workbook containing all the essential elements appropriate for a selected classroom lesson.” At the application level, the teacher-as-expert acquires technology skills that benefit their students. Success is measured as an observable increase in student achievement and classroom learning outcomes.

At the highest level of the K-A-RPE model lie research, practice and evaluation. Doctoral candidates, too, must learn new technologies. They must also be able to apply technology in a very practical sense. But they do so with a rich knowledge base (research) and a comprehensive review of the literature to support their implementations of technology as teaching and learning tools. The teacher-as-scholar is charged with changing the way technology is experienced (practiced) in the classroom and they do so with an ever-watchful eye on verifiable learner achievement (evaluation).

With a focus on *research*, the doctoral candidate investigates the number of computers located in a particular school and how the technology impacts student achievement scores as evidenced in standardized tests. For example, by “using Internet-based data, candidates

correlate student achievement scores and the ratio of students-to-computers.” Instructional technology improves the *practice* of teaching and learning when “candidates develop a visual presentation suitable for school directors and technology coordinators that provides an overview of instructional technology and its potential impact on district decision-making to include: administration (planning and budgets); faculty (professional development, curriculum, and teaching load); and staffing.” Finally, *evaluation* implies assessment of student achievement and how technology succeeds (or fails) as a tool for learning. In every respect, it presupposes a firm grasp of the pillars of instructional technology education and merits co-equal status in the K-A-RPE model. “Candidates assess at educational software packages in the core academic areas of mathematics, social studies, language arts, and science and appraise content coverage, effective use of technology, and impact on student learning outcomes.”

The K-A-RPE model distinguishes among instructional technology programs throughout higher education and seeks to answer the questions posed earlier.

What will I learn differently about technology as a freshman than I will as a graduate student or even a doctoral candidate? Simply put, a well-designed formal education program in technology considers all three roles of the educator over the course of their career. Technology demands for the teacher-as-learner focus on technical knowledge and the skills needed to effectively use technology for your own learning. The teacher-as-expert, comparatively, exhibits the broader range of technical competencies necessary to effectively apply technology as an alternative teaching strategy in the classroom. Ultimately, educators are expected to give back to the discipline the qualities of best practice accumulated throughout a lifetime of personal achievement; for the teacher-as-scholar, technology takes on the role of research, practice, and evaluation.

What is different at each of these levels? Here are some excellent examples of how technology skills and competencies differ at each level of the model.

## UNDERGRADUATE PROGRAMS

At the bachelor’s level, knowledge plays the most pronounced role. Examples of typical knowledge outcomes at this level include:

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