

# Teacher as Filmmaker: iVideos, Technology Education, and Professional Development

David Wong, Punya Mishra, and Matthew  
Koehler

*Michigan State University, East Lansing, Michigan*

Sharman Siebenthal Adams

*University of Michigan, Flint, Flint, Michigan*

*In our Masters program in Educational Technology at Michigan State University, K-12 teachers create “iVideos” – short, two-minute, digital videos designed to evoke powerful experiences about educative ideas. For example, an iVideo might enable viewers to experience the vastness of space, the interconnection between people and their environment, the timeless themes in great literature, and other compelling subject-matter ideas. How might these teacher-made iVideos serve as catalysts for teacher technology education and professional development? We describe the conceptual foundation of iVideos by building on the metaphor of teacher as filmmaker - an idea that highlights how teachers and filmmakers both strive to create powerful experiences for their audiences. In doing so, we argue that teachers are enabled to transform ideas and practice by immersing themselves in deep pedagogical consideration of subject-matter, significance, audience, learning, epistemology, and aesthetics. We also discuss how this approach develops teachers’ competency and efficacy with technology.*

**I**n our Masters program in Educational Technology at Michigan State University, K-12 teachers create “iVideos” – short, two-minute, digital videos designed to evoke powerful experiences about educative ideas. For example, an iVideo might enable viewers to experience the vastness of space, the interconnection between people and

their environment, the timeless themes in great literature, and other compelling subject-matter ideas. In a way, an iVideo is like a television commercial that promotes an important idea. Such well-crafted “advertisements” can advert (not avert) our attention and inspire us to see the world with new eyes. They are made compelling by their creative use of images, words, and music. Engagement with the subject-matter ideas is evoked by artfully stirring emotions and imagination. In viewing an iVideo, students fully experience the idea and its capacity to change how they see and understand the world.

Although iVideo is digital video, it is also more than that. In our work, iVideo is also a larger perspective on learning, teaching, and professional development. For the past two years, a group of faculty and graduate students have been exploring the potential of teacher-made digital videos as an approach to teacher technology education and professional development. Understanding the benefits of our approach requires an understanding of the possible roles of technology as a transforming agent in education, and the set of conditions and qualities that lead to fruitful, educative transformations of practice and ideas. We describe the conceptual foundation of iVideos by building on the metaphor of teacher as filmmaker - an idea that highlights how teachers and filmmakers both strive to create powerful experiences for their audiences. In doing so, we argue that teachers are enabled to transform ideas and practice by immersing themselves in deep pedagogical consideration of subject-matter, significance, audience, learning, epistemology, and aesthetics. We also discuss how this approach develops teachers’ competency and efficacy with technology.

“Communicate” opens with a dark screen and the faint sounds of a computer program booting up. We then see a close-up shot of hands at a keyboard and hear the sound of keys softly clicking. Then, the scene shifts to another set of hands at a different keyboard. These hands pause, then begin to type. Then, it’s back to the first set of hands. We are taken back and forth between the two scenes – all the time seeing only hands and hearing only the keys. We soon realize a man and woman are sending messages to each other. Through the phrasing and rhythm of the typing, and the wonderfully expressive movement of the hands, we are pulled into the dramatic rise and fall of their interaction. Communicate is a simple, quietly moving piece about the power of the on-line experience.

## Technology and Professional Development: New Ideas, New Practices

How does creating iVideos facilitate professional development? One can rightfully wonder whether teachers learn anything more than just how to use a video camcorder and editing software when making iVideos. Doesn’t prudent professional development require that teachers first consider new theories of pedagogy before trying new technologies? At the very least, shouldn’t teachers be dissatisfied with their current practice and, thus, be looking to technology as a tool to help them achieve their pre-existing educational goals?

The question of whether technology serves or drives educational practice has been a popular topic of discussion among scholars in education. One position argues that technology is a means to an end, subservient to larger educational goals. According to this perspective, the goals of education are clearly laid out and the function of technology is to help us in the efficient achievement of these goals. A contrary position argues that technology is an end in itself and comes with its own imperatives that force and constrain the world of learning. According to this perspective, the use of technologies in education often lack a firm grounding in core educational psychology principles and values. Technology becomes the driving force, irrespective of whether its use is educationally valuable or not.

Salomon and Almog (1998) stake out a third position by asserting that it may be more fruitful to see the relationship between educational psychology and technology as reciprocal in nature. “Technology serves education and at the same time opens up novel opportunities” (p. 222). Technologies in education have served to facilitate current theories of learning and pedagogy. At the same time, technologies imported into education have also challenged existing conceptions of learning, requiring novel psychological explanations and pedagogical justifications.

## The Proper Relation Between Practice and Ideas in Professional Development

The different perspectives in Table 1 raise a fundamental question: in the professional development of educators, what is the proper relation between ideas and practice? From an examination of Table 1, an important point can be discerned - practice is always transformed. That is, regardless of what motivated the inclusion of technology, class-

room practice will be different; i.e. the class can now go to computer class once a week, students can now use the Internet and library resources on their project reports, teachers can now use PowerPoint slides and overhead transparencies. From many professional development standpoints, change in practice is the ultimate goal.

Of course, the transformation of practice is no assurance of

Table 1. Three Possible Relations Between Technology, Ideas, and Practice

<i>Possible relations</i>	<i>Description</i>
Technology is a means to an end	Technology is used as a tool to accomplish educational goals. Ideas about how and what to teach are unchanged, but the ways in which they are taught are changed by the addition of new technology and tools. <i>That is, Ideas guide the use of technology and the use of technology changes practice.</i>
Technology is an end in itself	New technology is created outside the realm of education and because they are so compelling and pervasive outside the classroom, they make their way into the classroom "as is." Accordingly, classroom instruction has to accommodate these changes. <i>That is, the use of new technology changes practice.</i>
Technology is a means to an end, but also transforms the ends of education	Technology is a means to accomplish existing educational goals and functions within the teacher's pre-existing pedagogical framework. In addition, in using the technology, the ideas that justified its original use come to be reconsidered and modified. Technologies bring new ideas, and challenge previously held assumptions. <i>That is, Ideas guide the use of technology and the use of technology changes the practice and transforms ideas.</i>

progress or positive development. We are familiar with how district or state technology standards have often prompted compliance in only the most superficial sense. Furthermore, we are well aware that principals, real estate agents, and legislators are eager to point to a school's technology resources as a proxy for educational progressiveness and effectiveness.

There is also a tendency to err in the other direction. For example, a common inclination in schools of education is to denigrate practitioners who cannot articulate an explicit rationale for their teaching practices, regardless of whether their practices are effective or not. We are quick to label the un-reflective practitioner as unprofessional; we dismiss the idea of "natural" teachers who cannot fully explain how and why their students are so moved. These schools of education argue that good teaching is a rational endeavor where awareness and intent are paramount virtues. In the extreme, but not uncommon case, the ability to articulate a sound rationale for teaching often "counts" more than the ability to have a positive impact on students. Intent matters as much, if not more, than action.

These examples illustrate that we value a concurrent and connected transformation of ideas and practice in professional development. Change in practice is not sufficient; change in ideas and intent is similarly unsatisfying. Furthermore, when one views technology as a tool, there is little assurance that one's view of teaching or learning has evolved at all, despite the change of practice. Similarly, when one views technology as a self-justifying end in itself, there is little assurance that new practices are connected in any way to a vision of what it means to educate.

Thus, we direct our full attention to the third option - that technology affects both ideas and practice of education. From a professional development standpoint, we assert the ONLY proper relation between technology, ideas, and practice is that ideas and practice are both transformed through the use of new technology. Dewey and Vygotsky have emphasized, perhaps more strongly and clearly than any other educational theorists, the necessary bi-directional relationship between people and their environment as mediated by technology. In this transactional view, tool-use involves more than Man altering Nature; in changing Nature new possibilities emerge which, in turn, inspire and support new ideas and behaviors in Man. The general idea that entities in relationship are mutually transformative finds wide expression: Darwin's ani-

mal-in-environment, Bandura's reciprocal determinism in social learning, Marx's material dialecticism between material conditions and consciousness.

We point to this litany of diverse and well-known scholarship to emphasize that mutual transformation of ideas and practice is an inherent condition of educative human interaction. In the broad range of possible experience, mutual transformation occurs as a matter of degree, rather than completely or not at all. In some cases, technology can inspire great advances in teachers' educational vision and practice. In other cases, there is minimal change, or change in idea or practice only. The challenge and art of professional development is to create conditions that advance teachers' ideas and practice as much as possible. We believe creating iVideos represents one such possibility.

### iVideos as Opportunities to Think About Teaching and Learning

"Kids with Guns." We see two boys walking around the cafeteria as their classmates huddle under the tables. The footage from Columbine High School's security video is grainy and unclear, but this only heightens our imagination. Interspersed with the security footage are scenes from a local summer military festival. We see slow motion scenes of young kids playing with various kinds of toy and display guns. They peer down the barrel, point straight at the camera, and pull the trigger. They smile, but the meaning of their smiles is ambiguous. There are other scenes from first-person shooter video games and from kids' school drawings of gunfights and war. The sound track is at first a puzzle as it is neither music nor ambient sound. Soon, we come to a horrifying realization: it is the taped conversations between the Columbine police dispatcher and desperate parents wondering about their children. Kids with guns - there is probably not a single sane person in the world that wouldn't agree that kids shouldn't kill other kids. However, to agree with a nod of the head is one thing. To feel a new sense of repulsion deep in one's heart when seeing children playing with guns is quite another thing. This iVideo has the capacity to move us beyond mere agreement.

### The Activities of iVideo: Studio and Seminar

Students were asked to make two iVideos (idea-based videos) to communicate an idea of educational importance to a wider audience. The videos also had to inspire others with passion for the idea. In devel-

oping the film's big idea and constructing the actual iVideo, students worked in small groups. The first video had to complete the sentence: "Teaching is \_\_\_\_\_." The second video was up to each of the student groups (with the approval of the instructors). Topics included, the role of technology in the library sciences, communicating online, appropriate uses of technology, and content areas such as literacy, science, and mathematics.

*iVideo Studio.* Students were provided with digital cameras, tapes, tripods, software, and computers. They also received demonstrations on how to use a camera, capture video, edit it, and produce a digital movie. Most of their time was spent in groups discussing/debating their idea, storyboarding, filming, digitizing, editing, revising, and soliciting feedback. The instructors scheduled regular times for students to preview their works in progress to the whole class (although many objected to showing their uncompleted work) so that feedback was a consistent part of the iVideo process. In the iVideo Studio, instructors spent most of their time circulating among the students acting as a coach and mentor. Occasionally some advanced technical assistance was given by the instructor, but for the most part the students learned "how to learn" by engaging in the task at hand. Versions of the movie were posted to a website so that feedback from other masters' level students and course instructors could also serve as an impetus to change and re-design the digital videos. Once the movies were complete, they were shown to an audience of approximately 80 people (all of whom were involved in the summer session) and were posted to the website so that others could also see the final products.

*iVideo Seminar.* One of the important features of our Educational Technology master's program is our insistence that technology use be informed by a deep understanding of learning. As a result, our students spend considerable time becoming familiar with various perspectives, constructs, and issues in educational psychology. Thus, in addition to creating videos and learning the relevant DV technologies in the iVideo Studio, we devoted an equal amount of time in what might be called our iVideo Seminar. Central to the overarching metaphor of teacher as filmmaker is the idea that powerful learning is an aesthetic experience that involves the heart and the mind, an intuitive sensing and rational construction of meaning, and emotions and thoughts. In this view, to teach is to artistically render an idea into a compelling, moving experience. During the iVideo portion of our program, the seminar be-

comes a study of aesthetic philosophy (Dewey, 1934; Jackson, 1994, 1998, 2001; Eisner, 1985, 1990), the creative work of artists (musicians such as Copland, 1972), writers such as Dillard (1990), film editors such as Oldman (1995), and psychological theories of learning (Norman, 1988, 2002; Perkins, 1986; Bruner, 1979, 1985).

Finally, an important activity in the iVideo project was writing and presentation of a "Director's Commentary." In art, just as in teaching, much of the work that goes into creating the product is not obvious to the audience. The Director's Commentary is an opportunity for our teachers to discuss the complex process of integrating subject ideas, aesthetic considerations, and technology into a coherent artful experience.

### iVideos, Learning New Technology, and Transforming Practice and Ideas

"Solitude." The image that lingers with the viewer after seeing "Solitude" is of a person sitting alone in a computer lab. The idea is obvious – working at a computer is often a solitary, lonely activity. However, Solitude has such an artful, delicate touch that the experience never feels trite or heavy-handed. There is never a statement asserting, "Working at a computer can be lonely." The images are metaphorical rather than literal, and the whole piece works to evoke rather than denote the sense of despairing loneliness. The wire-reinforced window on the door to the computer lab becomes more of a barrier than an opening. The rows of flickering screens in the computer lab create an eerily uncomfortable aura around the lone individual. Because we never see his face, only his back – and only through the door window at that – he never becomes anything more than a generic computer user. "Solitude" is a quiet counter-argument to the widespread belief that technology brings people closer together.

As mentioned earlier, Vygotsky and Dewey emphasize the role of dialogue or interplay in learning - as the individual acts on the environment, the environment also acts upon the individual. We believe that design activities are particular adept at fostering this interplay and building on it to develop teachers' proficiency with technology and affect positive changes in their educational ideas and practices. At its core, the iVideo project is about communicating ideas and transforming oneself and the world through the process of working with those ideas. This

process of "acting on" an idea happens in two ways: intellectually and physically. Intellectually, teachers engage with the ideas and concepts and attempts to learn more about them—with the goal of communicating them in a powerful and engaging manner. Physically, teachers work with the evolving movie, modifying, and manipulating it to fit the desired ends. This is the "dialogue" between ideas and world, between theory and its application, a concept and its realization, tools and goals. We see this dialogue as being at the heart of true inquiry involving the construction of meaning and the evolution of understanding through a dialogic, transactional process.

### iVideos and Learning New Technology

Students learned a wide variety of technology skills in the iVideo project including digital video filming and editing, audio recording and editing, FTP file transfer, large file backup and storage, CD burning, web design, and HTML. More notably, they learned these skills as particular tasks and challenges emerged in their work. They had reason and incentive to learn technology. The exigencies of making a powerful, high quality iVideo compelled students to learn more about how to use the technology. From our observations over two years, there is no doubt that teachers are highly motivated to create a high quality product. We observed students assuming responsibility for their own learning by playing with the software and hardware, seeking out on-line resources and tutorials, and sharing their knowledge with students. Instructors were available to provide assistance, but students began to rely more and more on their fellow students. Furthermore, they come to see that their iVideos, as well as their own teaching, are more than just assignments. iVideos were intensely personal expressions of who they are as individuals. The strength of the iVideo approach is that these various technologies are learned in an integrated authentic context that is not divorced from issues of content or pedagogy (Koehler, Mishra, Hershey, & Peruski, 2004; Mishra & Koehler, 2003).

Making iVideos is difficult from both a technical and artistic standpoint. Adobe Premiere is a complex program, far more difficult than PowerPoint, HyperStudio, and other multi-media packages. However, in a very short period (less than a week in our summer program), most teachers developed an adequate facility with Premiere. (We made the difficult decision to use Premiere rather than iMovie because most of our teachers worked on PC machines.) Not only was the learning curve

steep, but the experience was filled with technology problems such as camera-computer compatibility, moving large files from computer to backup drives, networking issues, and so on. Although teachers did become frustrated in the face of these challenges, it is most important to note that they eagerly persisted in their learning. This sense of efficacy is an important outcome of this learning experience – an outcome, perhaps, more important than what teachers learned about the particular technology. It is our hope and belief that their experiences with the high level of technological challenge in the iVideo project helped these teachers develop confidence and knowledge to continue to learn technology skills beyond this course.

### iVideos and Transforming Ideas and Practice

It is often the case that educational technology courses end up as “how to” workshops with little or no serious consideration of educational ideas or practices. While there is a place for this kind of training, it should not be the primary focus of a master’s program in Educational Technology. Therefore, even though the iVideo project was undoubtedly a technology-intensive activity, we intended for teachers to engage with educational issues with equal intensity. One might wonder, how much time should be spent on technology and how much on ideas and practice? Would a 50/50 split be appropriate? Our response is, perhaps, a bit unconventional. Because we have proposed that learning new technology is a powerful means for opening up and illuminating important pedagogical issues, we suggest that it is near impossible, or at least not very useful, to learn new technology independent from the consideration of issues in education. Therefore, our enlightened calculus leads us to propose that 100% of the time should be spent considering new technologies and 100% of the time should be spent reflecting on pedagogical ideas and practices.

Therefore, as teachers developed their technology skills in their iVideo projects, we encouraged them to also consider and transform their practice and ideas about education. In their roles as filmmakers, teachers immersed themselves in deep consideration of the following pedagogical questions: what is the central idea, what is the significance of the idea, what is the experience intended for your audience, what are your assumptions about learning and epistemology, and how does your work create a powerful aesthetic?

*What is the central idea?* Good art is often a matter of extreme

selection. The job of the artist is to see beyond the surface details and draw our attention to the essence of an idea. There may be a tendency to forget that good teaching requires the same skills as school days are long, school years span nine months, and the curriculum is packed to overflowing with content. The two-minute limit on the iVideos and the requirement that they be about a powerful idea prompted teachers to serious discussions about the “big” idea to be expressed in their work.

*What is the significance of the idea?* All artists are concerned with matters of significance otherwise, why should their work be worth the time and effort of their audience? Time and energy are precious resources and, again, the daily exigencies of school often obscure this basic truth. Our teachers read Annie Dillard’s “The Writing Life” who recommends, in her typically incisive manner, that writers should assume they are writing “...for an audience consisting solely of terminal patients...What could you say to a dying person that would not enrage by its triviality?” (p. 68). Our teachers responded to the call for significance by redoubling their efforts to make their iVideos rise above the ordinary into the realm of the extraordinary. Similarly, they were awakened to the need to make the experiences in their classrooms to break from the routine and to be reanimated with significance.

*What is the experience intended for your experience?* Throughout the creation of their iVideos, teachers were asked to consider the nature of their audience and the intended effect of their iVideo on this audience. In particular, they considered both the efferent and aesthetic intentions of their work (Rosenblatt, 1978). The efferent concerns “products” that can be carried away from the experience such as new conceptions or perspectives. The aesthetic concerns the experience itself as created in the transaction between the audience and the iVideo. In other words, what do teachers hope their audience will feel, sense, and think when experiencing their iVideo?

*What are your assumptions about learning and epistemology?* Because our master’s program in Educational Technology has its home in the larger Educational Psychology program, there is a strong emphasis on issues of learning. In addition to the issues mentioned already, creating iVideos provides rich opportunities to consider how powerful learning might occur. Initially, many teachers think that experiences are made powerful by being clear, repetitive, and forceful. It is assumed that a point is well made by hammering upon it repeatedly, or at least repeated hammering from different angles. This view of learning is not

surprising as teacher education is rife with recommendations to be explicit or that a good lesson must introduce, elaborate, and summarize its main points. However, in their role as filmmakers, teachers began to realize how the powerful and the artful are related. Over time, they began to question whether their iVideos should be obvious and explicit or subtle and implicit. They learn the difference between showing and telling, the tension between ambiguity and clarity, and the power of symbolism.

*How does your work create a powerful aesthetic experience?*

One of the greatest advantages of working within the metaphor of teacher as filmmaker is that it creates opportunities to consider the aesthetic qualities of teaching and learning. Within the cognitive tradition that dominates most teacher education programs, the domain of aesthetics is often overshadowed in the bright light of more “scientific” considerations. However, Dewey (1934), Jackson (1994, 1998, 2001), Eisner (1990), and others, remind us that powerful experiences are inherently aesthetic in nature. Aesthetic qualities such as timing, rhythm, and the integration of sight and sound have everything to do with the power AND meaning of an experience. Good filmmakers and good teachers both appreciate that the emotions, moods, and sense evoked by their work are primary considerations.

## Beyond iVideo: Extraordinary Transformation with Ordinary Technology

In the field of educational scholarship, exemplary educational technology tends to be of the highly specialized variety. Fine examples such as Jasper, CSILE, WISE, and SimCalc come to mind. A close look at these technologies, though, reveals something interesting. To begin, one cannot help but be impressed by their highly specialized design. These are not “off the shelf” technologies intended for general consumption. Instead, they are often created with specific subject-matter goals in mind. One also is struck by how these technologies are designed with particular learning, pedagogical, and epistemological principles in mind. To even begin to use these technologies, educators must change not only their teaching activities, but also their fundamental epistemological views of learning and teaching.

These technologies often require specialized training that educates the user about not only the mechanics of the technology, but also its overarching principles of teaching and learning. In light of this model of

technology use, one can legitimately wonder whether the technology (per se) transforms teaching. It seems more accurate to claim that in these cases teaching must be transformed in order to effectively use these technologies. (One is reminded of the right-hand-only spoon used in the past to discourage left-handedness.)

The impact of these highly specialized educational technologies might be characterized as extraordinary transformation of ideas and practice with extraordinary technology. In our work, we strive for something different: extraordinary transformation with ordinary technology. We feel this is a productive approach for several reasons. To begin, it is obvious that ordinary technology is more readily available to teachers thereby increasing the opportunity for improvement to happen. Less obvious, by emphasizing ordinary technology, we shift the focus from the technology to the educational experiences that they create. In a parallel fashion, Dewey (1938) warned against evaluating instructional practices on the basis of whether they were student-centered or teacher-centered curriculum. He urged that we should attend instead to qualities of the educational experience, regardless of whether they were teacher or student-centered. In a similar way, we believe that the value of an educational technology is best understood by examining not only the nature of the technology, but also by understanding the qualities of the experiences created when users interact with it.

Finally, in building upon the metaphor of teacher as filmmaker, we create opportunities for teachers to not only learn new technologies, but also to consider important issues in teaching and learning. Upon returning to their classrooms, some of our teachers created iVideos for their students or had students create their own iVideos. Many teachers, however, did not yet have sufficient DV resources at their schools. What, then, was the value of iVideos? For one, these teachers will be on the cutting edge and will have a vision of what can be done once DV inevitably becomes more commonplace. And, even if iVideos were not likely to be made by either teacher or the student, larger lessons have been learned. In their brief and intense time as filmmakers, these teachers developed a greater appreciation for what it takes to create powerful, significant experiences for others. These lessons inspired by the iVideo experience could be carried back to any classroom, with or without the particular technology.



## References

- Bruner, J.S. (1979). *On Knowing: Essays for the Left Hand*. Cambridge, MA: Harvard University Press.
- Bruner, J. (1985). Narrative and paradigmatic modes of thought. In E. Eisner (Ed.), *Learning and Teaching the Ways of Knowing*. (Eighty-fourth yearbook of the National Society for the Study of Education – Part II), pp. 97-115. Chicago, IL: University of Chicago Press.
- Copland, A. (1972). *Music and Imagination*. Cambridge, MA: Harvard University Press.
- Dewey, J. (1934). *Art as Experience*. New York, NY: Perigree.
- Dewey, J. (1938). *Experience and Education*. New York: Collier.
- Dillard, A. (1990). *The Writing Life*. Harper. St. Helens, OR: Perennial Press.
- Eisner, E. (1985). Aesthetic modes of knowing. In E. Eisner (Ed.), *Learning and Teaching the Ways of Knowing*. (Chapter 2, pp. 23-36). Chicago, IL: University of Chicago Press.
- Eisner, E.W. (1990). *The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practices*. Upper Saddle River, NJ: Prentice Hall.
- Jackson, P.W. (1994). Thinking about the arts in education: A reformed perspective. *Teachers College Record*, 95(4), 542-554.
- Jackson, P.W. (1998). *John Dewey and the Lessons of Art*. New Haven, CT: Yale University.
- Jackson, P.W. (2001). John Dewey's definition of art. *Teachers College Record*. ID Number: 10735.
- Koehler, M. J., Mishra, P., Hershey, K., & Peruski, L. (2004). With a little help from your students: A new model for faculty development and online course design. *Journal of Technology and Teacher Education*, 12(1), 25-55.
- Mishra, P., & Koehler, M. J. (2003). Not "what" but "how": Becoming design-wise about educational technology. In Y. Zhao. (Ed.). *What Should Teachers Know about Technology?: Perspectives and Practices*. (pp. 99 – 121). Greenwich, CT: Information Age Publishing.
- Norman, D.A. (1988). *The Psychology of Everyday Things*. New York, NY: Basic Books.
- Norman, D.A. (2002). *The Design of Everyday Things*. New York, NY: Basic Books.
- Oldman, G. (1995). *First Cut: Conversations with Film Editors*. Berkeley, CA: University of California Press.
- Perkins, D.N. (1986). *Knowledge as Design*. Hillsdale, NJ: Erlbaum.
- Rosenblatt, L. (1978). *The Reader, the Text, the Poem: The Transactional Theory of the Literary Work*. Carbondale, IL: Southern Illinois University Press.

Salomon, G., & Almog, T. (1998). Educational psychology and technology: A matter of reciprocal relations. *Teachers College Record*, 100(2), 222-241.

---

**David Wong, Punya Mishra, and Mathew Koehler** are associate professors in the Learning, Technology, and Culture Program in the College of Education at Michigan State University. **Sharman Siebenthal Adams** is an assistant professor in the Department of Education at the University of Michigan, Flint. Correspondence should be directed to David Wong, [dwong@msu.edu](mailto:d Wong@msu.edu).



---

# Technology in the College Classroom Education

---

Mark Girod & J. P. Steed  
Editors

2007

===== [K]