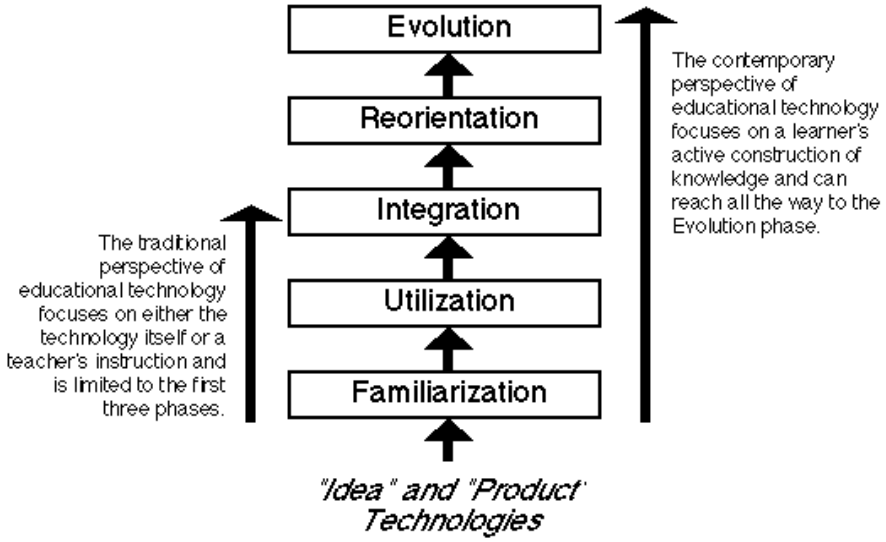
## Digital Development

Hooper, S., & Rieber, L. P. (1995). Teaching with technology.
In A. C. Ornstein (Ed.), Teaching: Theory into practice, (pp. 154-170). Needham Heights, MA: Allyn and Bacon




**Familiarization**

The Familiarization phase is concerned with one's initial exposure to and experience with a technology. A typical example of familiarization is a teacher participating in an in-service workshop covering the "how to's" of a technology, such as word processing, spreadsheets, assertive discipline, cooperative learning, motivational strategies, etc. In this phase, the teacher simply becomes acquainted with a technology. Once the workshop ends, so too does the teacher's experience and growth with the technology. All that remains is a memory of the experience. The teacher may discuss the experience and the ideas represented in the experience, even with some degree of authority, but no further action takes place. A great deal of instructional innovation begins and ends with this phase.

**Utilization**

The Utilization phase, in contrast, occurs when the teacher tries out the technology or innovation in the classroom. An example is a social studies teacher who uses role-playing simulations learned in a workshop or graduate course. Obviously, teachers who reach this phase have progressed further than Familiarization, but there is the inherent danger that a teacher will become prematurely satisfied with their limited use of the technology. The attitude of "At least I gave it a try" will likely interfere with any enduring and long-term adoption of the technology. Teachers who progress only to this phase will probably discard the technology at the first sign of trouble because they have made no commitment to it. This is probably the highest phase of adoption reached by most teachers who use contemporary educational media, including the computer. If the technology were taken away on Monday, hardly anyone would notice on Tuesday.

**Integration**

Integration represents the "break through" phase. This occurs when a teacher consciously decides to designate certain tasks and responsibilities to the technology, so, if the technology is suddenly removed or is unavailable, the teacher cannot proceed with the instruction as planned. The most obvious technology that has reached this phase of adoption in education is the book and its derivatives, such as worksheets and other handouts. Most teachers could not function without the support of such print- based technologies. Another example, though perhaps amusing to some, is the chalkboard. Most teachers would find it extremely difficult to teach without it. Hence, the "expendability" of the technology is the most critical attribute or characteristic of this phase (Marcinkiewicz, in press, 1991). Although Integration is the end of the adoption model for many, it really only represents the beginning of understanding educational technology. For some teachers, the Integration phase marks the beginning of a professional "metamorphosis," but only if they progress even further in their adoption pattern.

**Reorientation**

The Reorientation phase requires that educators reconsider and reconceptualize the purpose and function of the classroom. It is marked by many characteristics, probably the most important of which is that the focus of the classroom is now centered on a student's learning, as opposed to the teacher's instruction. A teacher who has reached the Reorientation phase does not view good teaching as the delivery of content (i.e. the teaching "acts" of explaining, managing, or motivating). Instead, the teacher's role is to establish a learning environment that supports and facilitates students as they construct and shape their own knowledge. In this phase, the learner becomes the subject rather than the object of education.

Teachers in the Reorientation phase are open to technologies that enable this knowledge construction process and are not threatened by being "replaced" by technology. In fact, these teachers will probably include technology in their classrooms without necessarily feeling the need to be an "expert" themselves. Their interest is on how technology allows their students to engage the subject matter. It would not be unusual for the students to be more competent than their teachers with the technology. For example, consider a history teacher who discovers that students prefer to create HyperCard stacks that replace a traditional term paper assignment (Hoffmeister, 1990). If the teacher has a reoriented view of education that is student-centered, the teacher will focus on how intensely the student has engaged the content, not on how well the stack is "programmed." The teacher will emphasize (and evaluate) how well the student has become both a researcher and explorer due to the availability of the computing tool. Whether the teacher possesses more or less technical skill with HyperCard than the student is inconsequential. In addition, the teacher learns about history and HyperCard along with the student. Of course, the teacher's greater experience is an indispensable resource and guide to the student. Rather than view a technology as something that must be mastered beforehand and presented to students in a controlled and systematic way, a teacher at the Reorientation phase would encourage and expect students to appropriate the technology in ways that could not be anticipated.

**Evolution**

The final phase, Evolution, serves as a reminder that the educational system must continue to evolve and adapt to remain effective. There will never be a final solution or conclusion and to be searching for one means that one is missing the point. The classroom learning environment should constantly change to meet the challenge and potential provided by new understandings of how people learn. As previously discussed, this appropriate application of basic knowledge for some useful purpose is what defines educational technology and living up to this definition is the hallmark of the Evolution phase.