

Stages of Technology Integration

Novice (Entry)	Teachers generally try to establish order in a radically transformed physical environment. They deal with reorganizing furniture, unpacking boxes, running extension cords, untangling cables, and setting up computers. At this stage, they will develop basic computer skills including navigation around the desktop. They learn to get comfortable with the basic operations of equipment. Moving to the next level means there is a willingness to use the equipment with students, or sometimes only a willingness to have students use equipment, i.e., without teacher support.
Apprentice	Teachers' concerns begin to tilt toward using computers rather than connecting them. They view computer instruction for students as a new curricular topic or personal reward of free time. Teachers at this stage learn core technology skills to enhance personal productivity. They use their new technology skills to communicate with parents, students and colleagues. Presentation tools are used to disseminate information to the whole class. Word-processed documents are developed to individualize instruction. As teachers progress through this stage, they begin to build links between technology and instruction. They incorporate computer-based activities aimed primarily at teaching children how to use technology, e.g., keyboarding instruction and word processing. Technology supports instruction through drill-and practice and tutorial applications. They ask for software in particular subject areas. They want sample lessons and time to review software they can adapt to their established curricular and pedagogical preferences. They need to learn strategies for using one computer in the classroom. They also need support with planning and leading instruction in the computer lab.
Instructor (Adaptation)	The new technology has become thoroughly integrated into traditional classroom practice. Lecture, recitation, and seat work remain the dominant form of student tasks; but students use word processors, databases, some graphic programs, and many computer-assisted instructional packages for approximately 30-40% of the school day. As teachers progress through this stage, they learn to individualize curriculum and instruction to meet a wider range of learning styles and abilities. They share and delegate teaching duties to the computer; however, the absence of the computer would not prevent the implementation of instruction. To move beyond this stage, teachers need to see models of how to plan a cross-curricular, learner-centered project.
Coach	At this stage, teachers rethink how they teach. Their role shifts from direct instructor to facilitator. They understand learners construct their own understanding based on their prior experience. They recognized the importance of building on the conceptual and cultural knowledge students bring to the classroom. Students collaborate on learning tasks. Technology is seamlessly integrated into the learning environment. It is a tool used to accomplish instructional goals, and it enables students to do things that were not possible without it. The absence of computers would prevent the implementation of instruction. To move beyond this stage, teachers increase their own mastery by mentoring colleagues through peer teaching and by leading staff development. They use technology to participate in new kinds of professional development such as collaborative workgroups and on-line study groups. NCREL's Indicators of Engaged Learning define the dimensions of teacher's instructional practice at this stage.
Expert (Transformation)	The classroom is expanded to include anywhere learning takes place. The teacher models life long learning and has become skilled at involving students in developing authentic learning activities. Many classroom learning activities are extended to the family environment. Students are self-directed and spend more time learning from each other and experts in the community. They work in collaboration with people in different locations all over the world. Some are involved in apprenticeship programs. The technologies are transparent. Teachers at this stage begin to have a tremendous impact on the school and community. They are catalysts that cause significant change. They cannot get to this stage without a clear vision, leadership and administrative support, community support, access to current technologies including the Internet, time for planning and learning, etc.