

Technology Integration

Literature Review

Dreamweaver for Teachers

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Literature Review

The review of the literature shows technology integration requires that teachers must first become comfortable with their own computer use and their access to and use of computer technology must be supported by school administration. There can be many advantages to improving student literacy by better supporting teachers in their computer-using needs. Teachers' and their students' access to well-equipped computer and supported labs as part of a school-wide computer literacy curriculum prove to be a greater benefit than a traditional classroom. Computer and technology literacy is the "ability to use, manage, understand and assess that technology (Emeagwali, 2004, p.16)."

As technology becomes ever-present in the classroom, teachers are finding, with regards to using that technology, the "need for professional development should be recognized and ongoing (Sharp, 2002)." While computer use by students at home is increasing, students often "lack the understanding of Internet structure and databases, what a computer can do, as well as the skills and knowledge to understand and use information technology (Sharp, 2002)." Technology must be integrated into the classroom in a manner that encourages teachers to "venture beyond familiarization and utilization and into the integration, reorientation, and evolution phases of technology use. (Hooper & Reiber, 1995)."

The role of the computer in the computer lab or classroom focuses on the desired outcome, which is solving an intellectual problem using the best tool at hand, in this case, a computer. To better understand how teachers use computers, it is important to concentrate on several factors that identify the exemplary computer-using teacher. These focal points with regard to computer usage are: the teacher's goals, frequency of the student's computer use, experience level of student computer users, the relevancy of this computer use compared to the desired outcome of the learning activity and finally the general functions of the computer in the class or lab setting (Becker, 2000). Teachers considered by their peers to be exemplary computer users themselves encourage their students to exploit these computers as intellectual tools for writing, analyzing data, and solving problems (Becker).

Exemplary computer-using teachers worked in a teaching environment that was favorable to encouraging and rewarding computer literacy on the part of teachers. Most importantly, schools where there was found to be a high-level of exemplary computer-using teachers were characterized by several factors including: a social-network of like-minded computer-using teachers, sustained use of computers for activities not directly related to basic computer skills and organized support for these teachers in the form of on-site staff (Becker, 2000).

In addition to on-site staff and a supportive social network, funding plays a clear role in supporting high-level and effective computer usage as a tool for increasing students computer literacy and acceptance. Well-funded computer labs equipped with up-to-date computer hardware and software as well as staff support were key factors in

the adoption rate of teachers of computer technology as part of their everyday classroom activities. In addition, teachers found that teacher training in technology must be directly related to their needs. Appropriate and contextually relevant training in computer technology and available on-site support of that technology is required for effective use of this technology in subject teaching (Hulme and Hulme, 2000). Not only do effective computer-using teachers need up-to-date computer hardware and software and relevant training, but they also require time for experimentation and hands-on training with their computer equipment (Anderson and Becker, 2001).

On the student-side of the technology literacy equation, access and the role of the computer in student assignments appear to be an important factor. Steven Hackbarth reported in a study of changes in primary students' computer literacy that "students in the class requiring completion of projects using computers outscored all others" in an assessment of computer-related vocabulary (2001, p.19). Students who utilize computers as a tool to complete assigned projects score higher on the Computer Literacy Assessment Tool (CLAT) than their peers who accessed computers for "free-time" use only (Hackbarth, 2001). Another assessment of computer literacy employed by Hackbarth was a timed test that required students to write down as many computer related terms within three minutes. Free-time access to computers did not appear to have a significant impact on performance on the timed test (Hackbarth). The conclusion of Hackbarth's study with regard to computer use in the classroom illustrated that "gains in student's time production of words 'having to do with' computer appeared again to be most clearly related to amount of class time spent using computers for assigned projects (Hackbarth)."

Project-based learning activities can increase student computer literacy when the activity requires that the student: engage in sustained reasoning, manage complexity, test a solution, manage problems, organize and navigate information, collaborate and communicate to other audiences (McGrath, 2004). To succeed in future educational goals and the workplace, students need to “become more deeply involved with technology to enhance their understandings of what they are learning as well as to open doors (McGrath, p29).” Especially for girls, project-based learning using computers will help them “understand how things connect and why they work (McGrath, p30).” Project-based learning is new dimension to traditional teaching, adding a computers to project-based learning takes instruction one step further and asks that “teachers re-write old scripts...they are inventing new versions” of instruction (FNO.org, 1995, p. 11).

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