
COMPUTER LABS

VERSUS

CLASSROOM INTEGRATION OF COMPUTERS

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Summary

As schools obtain more technology, the question about how to use computers effectively rarely precedes the question of where to locate them: in the classroom or in the computer lab. The two questions are essential to each other. For schools who wish to use drill and practice software, who intend to teach mostly computer-based skills, and for those without knowledgeable teachers to use them, the lab may be the best situation. For teachers who want to take advantage of "the teachable moment," for those who want to emphasize group work and project-based learning, for those who want a change to fully integrate technology into their teaching in the most powerful way possible, then the five computers in the classroom arrangement is best.

Should School Computer Labs Be Phased Out?

"Computers belong in all classrooms, not held captive in the computer lab and taught as a specialized subject area at a scheduled time."

Barbara Barr, K-1 teacher at Brookside Elementary School,
Nicholasville, KY

All staff and students need to learn how to effectively use this instrument. This can most realistically happen when computers are conveniently accessible in a classroom.

Computer labs have a number of drawbacks. In a lab setting, the computer is learned apart from other subjects and activities. It is much more difficult to integrate technology into other areas of the curriculum within the lab setting. The computer becomes a separate course or activity, rather than a tool used to enhance learning in other areas.

Time limits are another disadvantage to computer labs. Most educators have an assigned time to use the lab. This restricted access limits activities a teacher can conduct with students.

The time limits affect students, too. Scheduled time to conduct research in a lab a few times a week doesn't allow ample time to work on projects.

Even the physical location of computer labs causes problems in many schools. It is just too inconvenient to have educators take away from their classroom time to shuttle students down the hall or to another part of the school.

Teachers must become comfortable with computers in order to use them effectively. This will happen when computers are available in the classroom on a consistent daily basis.

"I call this the right shoe vs. left shoe debate. You need both kinds of shoes to get anywhere. In an ideal world, computers belong on every student's lap. But rather than focusing on where we put them, we need to focus on how the computers will be used. Once we know that, we can make better decisions about how they'll be deployed"

Ferdi Serim, former computer lab teacher at Witherspoon Middle School in Princeton, New Jersey

According to Serim, he has seen labs used well, and seen them used in ways that made him cringe. There is indeed a push by some to get rid of labs. He feels that computer labs should not be phased out. Rather, they should be used in ways that make educational sense.

While he feels that computer labs are effective places to give all students adequate access to technology to perform meaningful work, he goes on to say that simply having a computer lab within a school is not enough. The specter of the empty, locked lab is responsible for much of the impulse to do away with labs and put the machines back into the classroom.

The lab must be viewed as a shared resource for both the classroom teacher and the computer lab teacher. Computer labs will only work when there are people who know how to use them and who are empowered to make them serve educators' needs.

Barr, Barbara; Serim, Ferdi. "Should School Computer Labs Be Phased Out?" NEA Today, September 1999.

Computer Pod in the Classroom, Library, or Hallway

"The lab versus classroom debate is about classroom management, not about technology."

What is a computer pod?

- A cluster of 3-5 computers
- In a location such as a classroom, library/media center or hallway
- Can be permanent or "mobile", e.g. portable hubs, C.O.W.s

What issues are related to the use of computer pods?

- The lab vs. classroom debate is about classroom management, not about technology.
- Group work vs. whole class instruction
- Computer access as a reward for completing your work

Why should group process be used?

Students... will appreciate the value of teamwork and make a positive contribution when working with others to solve problems and complete tasks. (Senior High Science Program Vision Statement, Alberta Education, 1994)

Students learn research skills more readily when skills are shared through cooperative learning. (Focus on Research, 1990)

Students enhance their ability to manage ideas and information in collaboration with others. (English Language Arts, 1998)

"There are many positive results that can be derived from cooperation in learning at the computer. Group work allows students to observe, imitate, and learn from each other. Students keep each other on task and share a sense of accomplishment. The encouragement, support, and approval of peers builds motivation and makes learning an enjoyable experience." (Rysavy & Sales)

"Cooperative grouping actually improves computer-based learning." (Bruder)

"Technology can have a beneficial effect on classroom interaction patterns&emdash;toward greater interaction among class members and toward more collaborative learning experiences. The research indicates, however, that teacher attitudes and the amount and arrangement of computer hardware are important factors in determining how teachers and students interact." (Sivin-Kachala & Bialo)

"Providing a computer for each child may, in fact, hold back that child's performance, because they then lose the benefits of working in a small group. What research has found is that the greatest benefit in cooperative learning comes to those who give help to others. Individual computer workstations do not afford students this opportunity to help others." (Bruder)

"Computer Pods in the Classroom, Library, or Hallway." August 24, 1998. Edmonton Regional PD Consortium, Edmonton, Alberta, Canada (<http://www.epsb.edmonton.ab.ca/pd/microcentre/Program3/comPods.htm>)

Effects of Computer Location on First Grader's Usage and Enjoyment of Computers

The purpose of this study was to examine the effects of computer location of first grade students' enjoyment and usage of computers. A large difference was found concerning time spent on computers between in-class and computer lab settings. In-class computer students spent three times as long on computers as computer lab students during the three-week recording period. All students were surveyed on computer enjoyment. Survey results indicated that computer lab students wanted greater access to computers, while more in-class computer students believed their class used the computer every day. In addition, in-class students believed more strongly in the role that computers played in helping them learn.

Computer Skills for Information Problem-Solving: Learning and Teaching Technology in Context

There are some encouraging signs concerning computers and technology in education. For example, it is becoming increasingly popular for educational technologists to advocate integrating computers in the content areas. Teachers and administrators are recognizing that computer skills should not be taught in isolation, and that separate "computer classes" do not really help students learn to apply computer skills in meaningful ways. This is an important shift in approach and emphasis. And it's a shift with which library media specialists have a great deal of familiarity.

Library media specialists know the moving from isolated skills instruction to an integrated approach is an important step that takes a great deal of planning and effort. Over the past 20 years, library media professionals have worked hard to move from teaching isolated "library skills" to teaching integrated information skills. Effective integration of information skills has two requirements: (1) the skills must directly relate to the content area curriculum and to classroom assignments, and (2) the skills themselves need to be tied together in a logical and systematic information process model.

Eisenberg, Michael B.; Johnson, Doug. "Computer Skills for Information Problem-Solving: Learning and Teaching Technology in Context." ERIC Digest.

West Virginia Story: Achievement Gains from a Statewide Comprehensive Instructional Technology Program

- The West Virginia Basic Skills/Computer Education Program has documented student achievement outcomes for eight years.
- Program has three basic components:
 1. software that focuses on West Virginia's basic skills goals in reading, language arts and mathematics;
 2. enough computers in the schools so that all students will be able to have easy and regular access to the basic skills software; and
 3. professional development for teachers in the use of the software and the use of computers in general.

Schools chose how to distribute the computers — in labs, classrooms or a combination of labs and classrooms. "Students who had access to Basic Skills/Computer Education computers in the classroom did significantly better than students who were taught with BS/CE equipment in lab settings." Students had higher gains in math and overall scores.

Teachers with computers in their classrooms used the computers more while delivering instruction, planning lessons than those teachers who took students to the lab. "Sixty‐one percent of the

teachers with access to computers in their own classrooms said they were confident in using computers in their teaching compared to only 43 percent of the teachers who took their children to a lab for instruction in, about or with computers."

Results indicated that students performed better and that teachers performed better and were more confident when they used the classroom deployment model rather than the lab model. Since teachers were able to choose the model of deployment, it may have been the teachers who were more skilled already with technology chose the classroom model as opposed to the lab model. There is nothing in the study that explains WHY they did better in the classrooms with computers. It may have been increased access, it may have been teacher attitude, or it may have been that teachers who made this particular choice were already better teachers. In other words, the distribution pattern of the computers was a correlate of how well the students and teachers did, but this has not been proven to be a causative factor.

Mann, Dale. West Virginia Story: Achievement Gains from a Statewide Comprehensive Instructional Technology Program.

Subject Cultures and the Introduction of Classroom Computers

The insertion of computers into such an environment has the potential to either exacerbate or relieve problems of control. Independent in-class computer use was viewed by (an) art teacher as one way of keeping students 'very busy, very happy, very absorbed in something productive....' ".

"Subject Cultures and the Introduction of Classroom Computers." Research Journal, December 1995.

Assessing the Impact of Computer Integration on Students

"It was very difficult to introduce a program/lesson or show how to use a new piece of equipment while in the computer lab. As I spoke, the students could not resist using the computers."

From a student survey reported in this article:

- 53 % of the students said computers made their school work easy,
- 25% of the students said computers helped increase their grades
- 28% of the students said computers helped them be more creative
- 27% of the students said computers increased their interest in academic subjects
- One student said, "I don't think computers will make a huge difference in schools to kids who, who don't try, or don't want to learn. But they will, evidently, help encourage kids to learn."

This article also stated that professional support for teachers attempting computer integration and using action-research mode to identify and solve problems is as important as hardware and software

"Assessing the Impact of Computer Integration on Students", Journal of Research on Computing in Education, Winter 98.

***Put Computers into Elementary Classrooms
&endash; Not Labs***

This article is not research-based but opinion.

"Install the computers in classrooms, rather than computer laboratories. Scheduling lab time can be such a hassle that many teachers give up; then your expensive equipment sits idle. Having the computers right in the classroom also makes it easier for teachers to individualize instruction in a variety of subjects."

"Put Computers into Elementary Classrooms &endash; Not Labs!" Education Digest, December 94.

***Barrier to Computer Integration:
Microinteraction among Computer Coordinators
and Classroom Teachers in Elementary Schools***

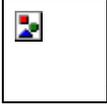
Computer coordinators said..."they often performed tasks with minimal teacher consultation and that integration of lab activities with classroom work was minimal."

- Teachers in this study avoided the labs &endash; never entered even when bringing their students
- Computer activities in lab were unrelated or very loosely tied to classroom curriculum
- Researcher suggests that "it may be more appropriate and more fruitful to employ coordinators as resources facilitators, utilizing their expertise to identify and access technical resources and coordinate strategies of computer integration with classroom teachers rather than for them."

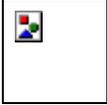
Evans-Andris, Melissa. "Barrier to Computer Integration: Microinteraction among Computer Coordinators and Classroom Teachers in Elementary Schools," Journal of Research on Computing in Education, Fall 1995.

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