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Project CHILD: A Proven Model For the Integration of Computer and Curriculum in the Elementary Classroom

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Abstract

Project CHILD constitutes a unique three-dimensional instructional system that has been subjected to substantial evaluation and revision over the course of fifteen years and which has a proven track record of academic success for children in grades K-5. Project CHILD has continued to evolve and slowly expand across the United States. In the 2003-2004 school year there were over 14,000 students and more than 500 teachers involved.

The system is based on an alternative, "retro-techno" theory of the proper role of computers in elementary education. The curriculum focus is on reading, writing, and mathematics, while the methodological focus is on team teaching, multiple instructional modes, and a three-year, continuous progress learning cycle. Effective school transformation is obstructed by three major barriers: school organizational structure, fear of losing control, and inappropriate training and staff development. Project CHILD has developed practical and effective ways to surmount these barriers.

The Problem

Computers and classrooms thus far have been like oil and water. They may touch one another, but they don't mix. Why in the dawn of the 21st century, do American classrooms still resemble snapshots from the past? Why has technology had so little impact on teaching and learning in our public schools (Cuban, 2001)? Why is it that in so many cases "computers and curriculum are still not fully connected" (Shields, 2003)?

Development of Project CHILD

For the past 15 years, I have been working with a select group of elementary schools to change this picture. Together we have been developing a unique teaching and learning system called Project CHILD (Changing How Instruction for Learning is Delivered). Numerous scientifically-based evaluations across diverse sites using randomized comparison studies have validated CHILD as an effective program that increases achievement in reading, writing, and mathematics in grades K-5 (Butzin, 1997;

Butzin, 2001; Herndon, 2003; King & Butzin, 1992; Kromhout & Butzin, 1993; Orr, 1991).

Technology is a key component of Project CHILD. Computers are powerful tools for providing quality independent practice and for increasing time-on-task when students are away from the teacher. Project CHILD embraces technology and provides teachers with systematic methods to integrate effective instructional software into standards-based lessons.

The original acronym for CHILD was Computers Helping Instruction and Learning Development. But over the years, CHILD was mistaken as a "computer program." Thus we changed the acronym to Changing How Instruction for Learning is Delivered, as a more suitable description. More information is available at www.ifsi.org.

The CHILD Model

The CHILD model has a three-dimensional form. It differs fundamentally from the single-dimensional traditional grade school model—one teacher teaching every subject to one grade level for one school year. The key three-dimensional elements of CHILD include:

- Three-teacher teams
- Three subject areas (reading, writing, mathematics)
- Three learning modes (computers, hands-on, paper/pencil)
- Three years of continuous progress.

In Project CHILD, three subject-focused expert teachers form cross-grade clusters (K-2 or 3-5) to facilitate standards-based skill articulation and in-depth diversified learning. The teachers and students stay together for three years to enhance continuity and commitment.

There are three classrooms in a cluster – one for reading, one for writing, and one for mathematics. One of the classrooms serves as the student's home base – usually grade specific, but some CHILD schools use a multi-age approach. Each of the three classrooms has at least six learning stations to facilitate diversified learning in three modes—technology, hands-on, and paper/pencil. Each CHILD classroom is set up with these six learning stations:

- a Computer Station for learning with instructional software
- a Teacher Station for small group tutoring
- a Textbook Station for written work
- a Challenge Station for learning in a game-like format
- an Exploration Station for hands-on activities and projects, and
- a Construction Station for creative expression.

Students rotate through the three cluster classrooms for instruction in each basic subject. Students spend 60-90 minutes in each of the cluster classrooms, returning to the classroom that serves as their home base for instruction in science and social studies. After a brief whole-group teacher-directed lesson, students work at the stations to practice and apply the lesson content using a variety of learning modes. The teacher assigns students to their beginning stations, but students move independently as they finish the first assigned task. They set goals and keep track of their station work using a logbook called a Passport.

CHILD provides challenging station tasks for all students. The model has been used for gifted students, as well as an inclusion model for students with special needs.

Students with limited English and students with disabilities also thrive in CHILD classrooms.

Emphasis on Teaching-Learning Processes

Teaching and learning are at the heart and soul of Project CHILD. Project CHILD classrooms provide multidimensional learning opportunities, where the focus is on student engagement. And when students are busy and engaged, the teacher is freed to interact more meaningfully with individuals and small groups. The development of the CHILD model grew out of my experiences as an elementary teacher, as well as my doctoral research when I spent a semester as a participant observer in a first grade classroom, studying engaged time-on-task from a child's point of view (Butzin, 1984). Like many pioneers in the early days of computing, I could see its potential to engage children in meaningful learning experiences. But the realities of classroom life created huge barriers.

Role of Computers

In the early days, there was great hope that computers would transform teaching and learning, just as they had transformed business practices. There were two major theories that guided this optimism. One theory envisioned technology transforming the teacher's role into that of a facilitator of learning. Computers would usher in a new era of constructivist learning, where students would be empowered to create their own meaning. The teacher' role would change from "the sage on the stage," to the "guide on the side" (Mernit, 1990).

The second theory envisioned technology as a productivity tool, offering a cost-effective way to replace teachers (Cetron, 1985; Yoder, 2003). Computers with well-designed instructional software would become the perfect teaching machines, able to provide individualized instruction. Classrooms could thus become "teacher-proof" as the machines took over the teacher's role of delivering instruction. The teacher's role would change to become a manager of instruction, reviewing computer-generated reports and assigning remediation where needed. Very dynamic (and expensive) integrated learning systems (ILS) were created and marketed successfully to the schools by companies such as the Computer Curriculum Corporation and Jostens Learning Company.

Both theories proved to be naïve. The constructivist theory came up against the barrier of established classroom practices and standardized testing. Building the basic skills of reading, writing, and mathematics, and covering the core curriculum requires a more skill-based, direct approach to teaching. And with increasing pressure to score high on skill-based high-stakes tests, it is understandable that constructivist learning, which requires ample time for exploration and individual discovery, has not taken hold in America's schools.

It was also naïve to think that computers could replace teachers. The ILSs did not improve test scores as promised, and have since fallen out of favor. Good teaching, it seems, remains at the core of successful learning. School is still a social enterprise, and of central importance are teachers and their interactions with students and the classroom environments in which they work (Cohen & Ball, 2000). The interaction between teachers and students within the context of their unique "ecosystem" is the most critical factor in school change. "Innovations fail … because they have not satisfactorily considered the central issues of teaching and learning … programs have tried to change what teachers do and say without consideration of interactions of environments." (p.1).

An alternative theory

Perhaps we have overlooked another theory—one that neither transforms nor transplants the teacher. This theory suggests that information technology creates opportunities for teachers to continue doing what they do best—a "retro-techno" theory if you will. This theory keeps the teacher's role as central to learning, along with the student's role to be highly engaged. This retro-techno theory is built upon the time-on-task literature, which points to the positive correlation between student engaged time-on-task and learning (Berliner, 1980; Butzin, 1984; Caldwell, Huitt & Graeber, 1982; Fredrick & Walberg, 1980; Graden, 1982; Stallings, 1980).

The retro-techno theory proposes that computers enhance learning by increasing time-on-task, not by changing teachers into facilitators, or replacing them altogether. This theory guides the building of systems that use technology to enhance time-on-task when students are working independently away from the teacher, thus giving teachers more quality time to teach small groups. In effect computers are tools for de-facto class size reduction.

Our focus, then, should be on helping teachers to change their classrooms, not to change the teachers themselves. We must help teachers transform their classrooms into what Tomlinson calls "invitational classrooms," that is, "where environment and instruction work in tandem to invite, inspire, and sustain student learning" (2002). And computers are vital tools for creating invitational classrooms for 21st century children.

Three Barriers

This transformation into computer-friendly invitational classrooms cannot take place until three major barriers are removed. And this is what Project CHILD has successfully done. By removing these barriers, we enable Project CHILD teachers to create truly invitational classrooms, where students feel empowered and challenged. We give teachers time to teach, and to reach students on a more intimate level. And we create a vital role for technology as a valuable resource integrated into daily instruction.

What are the three barriers to successful computer integration in the elementary school? The first major barrier is the structure of the school itself. Not the physical structure, but the organizational structure. The traditional elementary school is still structured for the most part as the grammar school of the 19th century. There is one teacher for each grade (first grade, second grade, etc.) There is little articulation and coordination across grade levels. Teachers begin each school year with brand new students, and use weeks of precious time to get to know the children and diagnose their needs. Each teacher has one year (or actually 180 days) to teach the grade's entire curriculum – reading, writing, mathematics, science, and social studies. The added pressure to meet higher standards and score high on standardized tests creates a daunting challenge for any teacher. Given the vast scope of material to be covered, along with keeping 25-30 young children busy all day, the textbook and chalkboard reign supreme. Teachers feel they have more control and can cover more when they are standing in front of the class with everyone doing the same thing at the same time. Add to this the additional planning time required to identify and select appropriate software to match lesson objectives across multiple subjects, it is understandable that few teachers are prepared to take on the computer integration challenge.

Fear of losing control is the second major barrier that keeps teachers from fully embracing technology in their classrooms. Computers in a traditional classroom create a

huge classroom management dilemma. With two or three computers in the back of the room, the sheer act of deciding who can have a turn creates a problem, since students will fight and squabble over getting their fair share of precious computer time. Teachers are also unwilling to pull students away from whole-class lesson time. Thus the computer is seen as a competitor, rather than a helper. It's far easier to use computers as a reward when "work" is completed, or to keep them turned off altogether.

The third barrier to computer integration has been inappropriate training and staff development. The bulk of teacher training has focused on learning to use the computer itself. Somehow people believed that teachers would figure out how to change their classrooms by osmosis. Computer pioneers overlooked the importance of developing supporting curricular and classroom management materials, along with the ongoing training and coaching necessary to help teachers transform their classrooms.

Surmounting the Barriers

The CHILD system directly overcomes these three major barriers. CHILD attacks the structural barrier by changing the traditional grade school design. CHILD teachers can focus on one core subject area, and have three years to focus on their students. Gone is the pressure to cover everything quickly in a one-dimensional fashion.

The fear-of-losing-control barrier is solved by the CHILD learning station format, along with a well-defined classroom management system. Project CHILD is defined by 20 essential components that give teachers a step-by-step system to implement. CHILD teachers begin to discover the wonderful paradox that the more control they give to the students, the more the classroom stays under control. And when children are busy and engaged in the station tasks, and able to move at their own pace, discipline problems all but disappear.

Finally, Project CHILD overcomes the change-by-osmosis barrier by providing extensive training, on-site coaching, and ongoing support for teachers. CHILD teachers become part of a community of innovators through an annual conference, newsletters, and Internet chats. The CHILD system also includes well-developed lesson-planning guides, along with supplemental station activities to facilitate the transition to the learning station format. The CHILD materials also include extensive software correlations to facilitate easy identification of appropriate software to supplement the teacher's lesson.

The integration of computer and curriculum will only happen when 1) the traditional elementary school structure is changed to provide more continuity across grade levels with subject-focused teachers; 2) when classrooms become transformed to accommodate multi-dimensional learning activities; and 3) when teachers get appropriate training along with well-developed curriculum planning guides and classroom management materials. Increased learning will only happen when time to teach and engaged time to learn are expanded --both of which computers can wonderfully accommodate. Project CHILD is a proven system to bring computers into classrooms to enhance teaching and learning.

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