

From Old Tools to New Tools with S.A.F.E.T.Y.

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PHASE ONE: 1990 *Technology Awareness*



The first three months as technology director for Manor ISD were spent assessing and evaluating the district's level of technology integration. For a small district (1600) Manor I.S.D. had made a sizable investment in technology; however, there were several factors that had negatively effected the successful integration and implementation of technology in the district:

1. Decisions had been made for campuses without administrative or teacher input.
2. The district had been told what they needed by the vendors rather than the district assessing what they needed and then selecting appropriate technology.
3. No one person with a strong technology orientation had been given the time to take ownership of technology integration district-wide.
4. Technology training had not been a major component in the overall implementation process.
5. Technology was thought of in only one dimension -- computers.
6. A "drop it in and someone will eventually use it" approach had not proven successful.

A seminar was developed for the school board members, district administrators, and campus administrators in December 1990. During this four hour session the participants were shown demonstrations and had an opportunity to have hands-on experience using stand-alone computers, networked computers, interactive laser videodisc (LVD) players, graphing calculators, and other "new tools". This seminar has proven to be one of the most valuable activities during my four years as technology director. The new level of technology awareness that was gained in four hours provided a foundation from which to build.

PHASE TWO: SPRING 1991 *Creation of the Computer-Media- Classroom System*

In the spring of 1991, faced with the perplexing problem of getting all the "new technology tools" into the hands of the classroom teacher effectively, I began creating a system of tools to enhance and enrich instruction. To be effective the system had to meet specific criteria that addressed "S.A.F.E.T.Y."

To begin with the system had to be **S**imple. Teachers do not have the time nor the expertise to assemble and cable equipment as needed. The equipment had to be easy to manipulate -- a keystroke or push of a button.

Accessibility to the tools from early morning to late afternoon for instruction, as well as student and teacher productivity, was fundamental. All teachers have their own method of instruction and need to have the **F**lexibility to move the tools within the educational environment.

The need for the system to be **E**xpandable from a basic system was a requirement. Once the teachers begin to see the benefits of having “new tools”, getting more is always the next step. **T**raining on the system had to be accomplished with ease and a minimum amount of time.

Lastly, teachers had to take ownership (**Y**ours) based on their needs and the needs of their students. The system of tools a kindergarten teacher requires are different from the high school social studies teacher. The software, laser videodiscs, and CD-ROMs chosen must correlate and enhance the specified curriculum.

Each basic *Computer-Media-Classroom* (CMC) system consists of a MS-DOS computer and display interfacing with a 27” large screen monitor, printer, mouse, and audio device. The basic system can be expanded with the addition of a laser videodisc player, a video cassette recorder (VCR), CD-ROM drive, and modem selected according to grade level and content area. The computer is linked to the large screen monitor by a 50 foot S-Video cable which allows the projection of instructional software and CD-ROMs with flexibility for classroom arrangement. The total cost per classroom averages just under \$5,000 which includes the hardware, software, training and supplies. (See list on following page.)

COMPUTER MEDIA CLASSROOM**Spring 1994**

IBM 425 SX/S 4MB RAM 120 MB HD	
w/mouse , svga, DOS,Windows	\$1,150.
IBM 6314 color display	405.
Digispeech	153.
Panasonic dot matrix printer KXP2023	189.
Sharp 27" s-video monitor XM-2710	595.
TV Link interface	495.
Advance multi-media cart	99.
All-in-one computer cart	89.
Software/supplies	800.
"CMC" Teacher stipend	200.
BASIC SYSTEM TOTAL:	\$4,175.

ADDITIONAL TOOLS

IBM Internal CD-ROM for value point computer	\$285.
Hitachi external TCDR 7000 CD-ROM with interface	\$708.
Pioneer CLD-V2400 laserdisc player	\$719.

The "CMC" system of tools allows the classroom teacher the use of the computer, laser videodisc player, and CD-ROM drive for whole group, small group, or one-to-one instruction. IBM Basic Skills software and third party compatible software is loaded on the hard drive for instructional use in all core subject areas as well as teacher productivity. Optical Data, "Windows on Science" laserdiscs and a variety of other LVDs are integrated to enhance science and social studies. Because the teachers can switch between components with just the push of a button, (for example, to change from the LVD player to the computer requires only the push of a button, and to change from the large screen monitor to the computer, just the push of another button) the teachers are willing to incorporate technology into their lesson plans. As one third grade teacher stated, "Having all the tools in my classroom gives me more opportunities to deliver a concept and develop higher level thinking skills." A variety of tools enables the teacher to meet the needs of students with different learning styles at the point of core instruction.

PHASE THREE:
1991-92
*Board Approval and
 Purchasing*

Early in May the newly created “CMC” system was demonstrated for the school board members with a verbal commitment for \$32,000 to fund the “CMC” pilot project. The purchasing of hardware and software for the six initial systems, one each for grades K-5, began. Initial basic software was purchased; however, money was held back so teachers could request additional software after assessing the needs of their students.

*Teacher Application
 and Selection for Pilot
 Project*

In May of 1991, K-5 teachers made application and six were selected as “CMC” teachers for the 1991-92 school year. The teachers selected had agreed to attend five days of training (three prior to school beginning and two during the year) and to document the weekly progress of the “CMC” project in a journal.

*The “CMC”
 Adventure Begins with
 Training*

The third week of August the adventure began with three days of intensive training. In order to make this a fun, relaxing learning experience, the training was developed like an adventure. To break the ice, teachers were given a backpack filled with supplies: a large handkerchief to wipe the sweat during the hot times, a visor for the bright spots, a journal, and several other appropriate items. The teachers and I kept a weekly journal of their classroom adventures. This was used to document and evaluate the success of the project.

Training was developed for the hardware and software to meet the individual needs of each grade level. In order to provide the maximum amount of hands on time, teachers were encouraged not to take notes. Each day they received a set of notes over every concept that was presented and these became part of a “CMC” Training and Classroom Manual. At the end of the three days, they were sent to the wilderness (classroom) to see which turns would take them to new heights. They were assured that weekly meetings would provide additional help and support.

School Begins

By the first day of school, the six systems of tools were installed in each “CMC” classroom. All of the teachers planned at least one activity using the system. Within a very short time they were creating, developing, and implementing many activities. Some activities even included the use of a combination of tools and/or manipulatives. “CMC” ideas and stories began to circulate. Teachers began to share how their visual learners now had a better chance of succeeding academically, how they would die if someone took their set of “new tools”, how much time they saved using an electronic gradebook and how the technology had enhanced cooperative learning and the self-esteem of the students.

*Year One
Evaluation:
Teacher
Observation/
Reflection*

The physical arrangement of the system in the classroom changed periodically as the teachers adjusted to having all the “new tools” in the classroom. During the second semester the systems appeared to have stabilized. Software and LVD requests began to arrive within a few weeks. Software of varying difficulty levels, particular concepts, and content areas which had not been targeted during the initial phase were requested. This was the first sign teachers were taking ownership. A kindergarten teacher had worked the computer into the classroom as one of her work centers and found very quickly that, “The use of the computer was good for reinforcement, reteaching, and enrichment with her students.”

By the end of the first semester, the teachers had become so involved and had developed such high levels of expertise in individual areas that they delivered the last two days of training to their “CMC” colleagues. Many shared how they could never go back to teaching as effectively without the variety of delivery the system of tools offered. Even drill and practice was fun using the software.

The latter part of the second semester the teachers were involved in a complete team evaluation. It is impossible to stress strongly enough how the “CMC” Project brought a group of K-5 teachers together as a team. Each time we met, teachers shared something from their journal or a new activity that had been successful or not successful with their students.

Although test scores were not available for quantitative evaluation, the teachers agreed that the ability to deliver instruction with a wide variety of tools had increased time-on-task and empowered both the teachers and the students to take ownership of learning. The ability to project instructional activities on a large screen monitor received the most favorable response. Whole group writing activities as well as math activities were enhanced with the use of the large screen monitor and students were producing at a greater level by using the computer to publish work.

As a final evaluation, the teachers were asked to decide if they would prefer to trade their system of tools for three or four computers networked into their classroom. They overwhelmingly agreed that they preferred the variety; however, they would like a few extra computers as soon as possible. The students were already asking if they would have a computer system in their classroom next year and teachers were calling and sending memos wanting to know how they could apply to be a “CMC” teacher. All the pilot “CMC” teachers expressed the same comment regarding the system: “The hardware is so easy to use and the training and support we received are the key to success. We never felt abandoned.”

Outside Evaluations

School board members had visited classrooms, talked to the teachers, students and campus administrators, and had been given periodic formal “CMC” updates throughout the year. They were convinced from all involved with the project that cooperative learning, peer tutoring, group and individual writing, and more involvement and focus during the learning process was evolving as a result of the integration of technology.

The teachers did agree that getting the entire expanded system at once was a bit overwhelming and they recommended that a first year “CMC” teacher be provided a basic “CMC” system (computer, printer, mouse, audio device, video interface, and 27” large screen monitor) with the agreement that an additional tool be added each year.

The overall evaluation led the board of trustees to fund ten more “CMC” classrooms at the K-4 campus. It did not hurt that we ended up taking some of the original \$32,000 back to them, since the project came in under budget and a decision was made to fund only a basic “CMC” unit the second year. During this first year of the “CMC” pilot project, a five year technology plan was being developed by the district and the integration of a “CMC” system in every classroom was included district wide for grades K-12 by 1997. The hardware selection is also consistent with the district’s five year technology vision and provides for expandability and networking capability.

**PHASE FOUR:
1992-93*****The Second Year
Applicants***

In the Spring of 1992, applications were given to all K-4 classroom teachers. Criteria had been established by the “CMC” team to evaluate who would be chosen for the next group of “CMC” teachers. Not surprisingly, we had far more applicants than systems. The ten teachers chosen agreed to attend three days of initial training and to spend one conference period a week with his/her mentor.

Trainers and Mentors

After the first year of “CMC” the district had six trained technology integration teachers. These teachers agreed (with a small stipend) to be a “CMC” trainer and mentor for the new grade level teachers. Each master teacher was assigned as a mentor at the appropriate grade level.

“CMC” training was modified the 2nd year to include the expertise of the new master teachers. During the morning session each of the three days, teachers were trained in the use of the hardware, all aspects of the software, and techniques of troubleshooting. The afternoon sessions were designated as mentoring sessions. The two new teachers met each of the three afternoons with their grade level mentor for hands-on practice, discussions of ways to restructure the classroom with the use of the new

technology, and the integration and implementation of the software into their grade level curriculum.

The mentoring and “in house” training dimension of the second year has proven to be a very beneficial outcome of completing the first year. The 2nd year teachers are supported on a daily basis by a peer who is just a few steps away. The “CMC” concept continued to flourish as grade level “CMC” teachers continued to work together to enhance student instruction and productivity.

First Quantitative Data

The district was able to gain the first quantitative data result through the 1992-93 NAEP scores. Although it is impossible to isolate the technology as the only variable, students in classrooms with “CMC” trained teachers and systems scored an average of 10 points higher.

Qualitative Data

The district is still struggling and searching for more reliable methods of assessing the effect of technology on instruction. Teacher and student interest and involvement are still the basic assessment tool; for example, kindergartners are on a computer at least once a day, first graders are mastering measurement, time and money concepts using math software programs, second graders are presenting research projects using multimedia, third graders are involved in activities learning how and when hurricanes occur and how to graph the information using their technology equipment.

**PHASE FIVE:
1993-94
Funding Provides
Fourteen New
Systems**

Although we are a small school district, the 1992-93 state technology allotment was enough to assure seven new “CMC” systems. With additional money provided by a corporate sponsorship project and matching local funds the district purchased a total of fourteen new “CMC” systems for grades K-4. Seven teachers were trained in July 1993 and began the first day of the 1993-94 school year as “CMC” teachers. The remaining seven systems were installed in the spring of 1994 when the new K-3 campus was completed. These seven teachers were trained in the summer of 1994 and will begin the new school year as “CMC” teachers.

Quantitative Data

When the “CMC” Project was initiated, the district planned to use TAAS and NAEP results to analyze the effect of technology integration on student achievement. Over the past two years, the times for testing, who is tested, and what is tested have changed annually. This year three teachers at the 3rd grade level had “CMC” classrooms. NAEP scores indicate that two of these teachers’ classes scored an average of 12% higher than the teachers’ children who did not have technology; however, the third

“CMC” classroom was below the grade average. Since technology tools are not used for testing, students who are using word processors and other technology information accessing equipment in their classroom must revert back to a pencil and paper methodology.

Not having a consistent evaluation instrument has been a detriment to evaluating the effect of technology integration on academic performance. Beginning this school year, all classrooms in grades K-5 will be technology equipped and with the stabilization of TAAS testing, a more valid comparison of the 4th graders tested during the '93-'94 school year with those tested during the '94-'95 school year will be available.

Qualitative Data

Evaluation of technology integration is still strongly dependent on student and teacher subjectivity. Students talk about “publishing” their work with a more mastered keyboard ability, using electronic media for research, and discussing technology applications at a higher literacy level. Teachers who had never turned on a computer a year ago have integrated technology into all aspects of their instructional environment at a very fast pace.

Advanced “CMC” Training

One of the major concerns of a long term project is avoiding stagnation. “Movers and Rappers” training was provided this summer for all teachers who had completed at least one year as a “CMC” teacher. This training involved restructuring the classroom into work centers for more extensive use of the computer system with small groups and individual activities, initial use of CD technology with a larger group of teachers, and increased use of multimedia for research and publishing.

Master Mentor Program

After successfully completing two years as mentors, these teachers are now identified as “master mentors”. They will work with the first year mentors and take ownership of some of the more technical problems at their grade levels. Their involvement in all aspects of “CMC” training has increased during the last twelve months.

Manor ISD completed the technology integration of one entire campus during the 1993-94 school year and all but one grade of the intermediate campus. Following the timeline of a five year district technology plan has been a tremendous asset.

PHASE SIX: 1994-95

Technology integration of all K-5 classrooms was completed by August 1994. During the 1994-95 school year plans will be made to purchase the number of “CMC” systems needed to complete all 6th grade

classrooms and some or all of the 7th grade classrooms. Training will take on a new dimension as the departmentalized aspect of the middle school environment becomes a factor. Since a few systems have already been installed at these grade levels, teachers are becoming more comfortable and most eager to become a “CMC” teacher.

FINAL COMMENTS

The success of the “CMC” program (47 technology classrooms) and the ability to stay on target with the five year technology plan is a result of the following:

1. Total support and commitment for technology from the superintendent, board of trustees, and district and campus administrators for technology.
2. Team work, dedication, commitment, and cooperation from many outstanding classroom teachers.
3. Customized training and positive support during all phases.
4. Careful planning and purchasing.
5. A “nothing is impossible” attitude from all involved with a continual focus on S.A.F.E.T.Y.

EDITORS’ COMMENTS

The six negative factors mentioned by the author at the beginning of this article occur all too frequently in school districts’ attempts to implement technology. Fortunately, school districts are now realizing that adequate and timely teacher training is essential for successful and effective integration of technology into the curriculum. There is one key element, still missing in many school districts, that will expedite technology integration and use: **a full-time technical support person on every campus.**

As with the implementation of any technology, teacher training and technical support were the keys to this district’s successful integration of technology. Having an “in-house” mentor was very beneficial to the teachers as they learned how to use the technology and how to integrate its use into the curriculum.

Another key to the district’s success in implementing technology was the step-by-step approach they adopted. They didn’t overwhelm the faculty by trying to do too much all at once.

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