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ABSTRACT

The paper describes three strategies featuring a microcomputer to promote the integration and acceptance of students with disabilities among their nondisabled peers. The first strategy is a cross-age tutoring program in which disabled, learning disabled, emotionally disabled, or mildly retarded students demonstrate computer use to nondisabled kindergarteners. Positive outcomes are noted for the special class students as well as for the kindergarten students. The second strategy involves an integrated primary class working in pairs on a simple data base management program. Positive interactions are reported. In the final strategy, a seventh grader with cerebral palsy using a word processor as a prosthesis was able to participate in a mainstreamed English class. Decreased isolation of the disabled student resulted as did a more realistic view of individuals with cerebral palsy. Software information is appended. (CL)

Strategies To Promote Integration And Acceptance Of Students With Disabilities Among Their Non-Disabled Peers, Using Microcomputers

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The microcomputer has many applications in education. Among them is promoting the integration and acceptance of students with disabilities among their non-disabled peers. The three strategies discussed here have been field tested informally. No formal assessment of student attitude has been performed, but observation suggests the viability of the strategies.

Strategy #1: Cross-age tutoring in the Special Day Class with disabled student as computer tutor.

A Special Day Class teacher, with upper grade students who have been assessed as having learning disabilities, emotional disturbance, or mild mental retardation, had been teaching her students to use an Apple IIe computer with a color monitor for over a year. A variety of CAI programs had been used. The teacher had noticed that the students were highly motivated when they were at the computer and that their time on task was greater than when they were performing paper and pencil tasks. The teacher now sought a computer activity which could now enhance her students' self esteem.

Meanwhile, the Kindergarten teacher at the same school had been working with her students on number and alphabet concepts. She wished that her students could have an experience with computers, which were reported to be intriguing. Unfortunately, her students did not have access to a computer.

The special education teacher then made an arrangement with the Kindergarten teacher. The Kindergarten students would come to the special education room, one at a time, one per day, for a computer experience. The Special Day Class students were to act as experts and

guides for the younger children. Each SDC student was assigned the role of tutor for 30 minutes per day for one week at a time.

Two pieces of software were selected for this project: Stickybear Numbers and Stickybear ABC. Stickybear Numbers allows the student to press any numeral on the keyboard. Then a set of that number of objects appears in color on the screen. Then a set of that number of objects appears in color on the screen. The objects are animated. If the student then presses the spacebar, the objects disappear, one by one, with each presses. When no object remain on the screen, and the student presses the spacebar, a new set of animated objects begins to appear, one per press of the bar. As objects appear on the screen, the number in the current set is displayed. Thus, this program helps young children to match sets to numerals and to add and subtract by one. In Stickybar ABC, the student is asked to select a letter. As a letter is pressed, that letter appears on the screen and an animated color object beginning with that letter is displayed. Thus, this program helps young children to match letters to initial letters of words. The program is very engaging and requires very few Keyboard skills.

As the Kindergarten students arrived, the SDC students instructed the younger students in the use of the programs and served as guides as the programs proceeded. The Kindergarten children were observed to be fascinated with the computer and engaged in the learning process. The SDC students were observed to be patient and kind. They clearly enjoyed their roles and exhibited no negative or inappropriate behaviors.

There were several interesting outcomes for the Kindergarten students participating in this project. First, they received experience using a computer and practice matching sets to numerals, adding and subtracting by one, and learning about letters and initial sounds of words. They had fun. They learned what a special education classroom is like, and that it is a "nice place." They learned that "special education" students can be helpful and capable. Finally, they experienced a feeling of elevated self-esteem for having been "chosen" for the computer experience.

For the students with disabilities, there were also several positive outcomes. First, they had positive experiences with non-disabled students. They practiced "being successful," while, in the past, they had frequently experienced failure. They enjoyed the role of the trusted and capable "computer expert," and their self-esteem then began to rise.

There are several points to remember when replicating this project. First, the tutor should be older than or the same age as the student he/she is tutoring. The student from the regular class needs to be less experienced at using the computer than the tutor. The positive outcomes for the student in special education will not result if the roles are reversed and the student from the regular class becomes the tutor.

Any computer program which the student with a disability has mastered would be appropriate for use with this strategy. The program simply must be viewed by both students as worthwhile and fun.

Strategy #2: Using a simple data base management program to focus upon similarities between students in regular classes and students with disabilities who are mainstreamed in those classes.

Dr. Lynn Fox of Cal State, San Diego has developed a series of materials based upon the premise that a student with disabilities is more likely to be accepted in the mainstream if he/she has just one friend who is well accepted in the class. Such friendships are likely to evolve when students view each other as having preference in common (Fox, 1984).

In this case, the setting is the regular classroom, where a single computer is located. For this specific project, it was a second-third grade class in which there were students with learning disabilities and one student with mild mental retardation. All of the students were having their first year of experience with the computer.

The software selected for this strategy was PES: File, a very simple data base management program. Actually, any simple data base management program could be used for a project like this one. Working as a "committee of the whole," the class designed the form to be used for a data base called "Our Class." The class selected the following fields for the form:

Name
Country of Birth
Languages
Street
Birthday
Favorite Ice Cream
Tennis Shoes (Y/N)
Hobbies
Eye Color
Favorite Story
Favorite TV Show

Working in pairs, the students entered all of the relevant data, with the help of a parent volunteer. Finally, the data base was complete and information was available on each member of the class. Students returned to the computer in groups of 2 to 4, again with the help of a parent volunteer. The students learned to do searches. For example, they searched for all class members who preferred chocolate ice cream and for all class members who liked to watch "Tom and Jerry" on TV. Searches were printed out, and the teachers used the retrieved data for lessons on creating graphs. Students with disabilities were grouped with well-accepted students.

There were several positive outcomes for the non-disabled students. First, they learned about the concept of the data base as a useful tool. During the search phase, they learned that students with learning disabilities or mental retardation share their likes and dislikes and consequently are more "acceptable." They also viewed the students with disabilities as competent and capable because they could use the computer. Finally, the students had positive feelings about being asked about themselves and their preferences.

For the students with disabilities, there were also positive outcomes. First, they, too learned about data bases. They perceived themselves as capable because they were able to use the computer. They had positive interaction experiences with the non-disabled children, which had not always been the case in the past. They, too, felt good about being asked about their preferences, and saw that they had interests in common with many children.

In addition, some unexpected outcomes resulted. There were simi-

lar benefits for other groups of students who frequently experience a sense of isolation: minority students, ESL students and quiet, withdrawn students.

We do not know if this project actually led to better relationships and new friendships in the class, but we can surmise that these would be likely. The teacher felt that it was a worthwhile experience.

Strategy #3: Using the computer as a prosthesis to allow students with physical disabilities to function in the regular classroom.

In this case, an informal experiment was conducted with a 7th Grade student with Cerebral Palsy. This student has severe motor impairment. He had spent his life in a wheelchair, has very little use of his hands, and has speech which is difficult to understand. His parents were anxious for him to have some integration experiences with his non-disabled peers in the regular classroom. They knew that he was cognitively capable of the work in the English class, but felt a degree of skepticism on the part of the staff.

This student brought his Apple IIc computer with him to English class. His preferred word processing program is Bank Street Writer. This particular program has a 40-column display which is easy to read and only rarely requires the use of more than one finger at a time. (Other word processing programs could be used as well. The Milliken Word Processing, is also quite simple to use).

This student accesses his computer with a head wand, which allows him to select and press keys on the keyboard by moving his head.

Although this is the preferred method of access for this student, there are many alternative access devices on the market today.

As other students completed their classwork with pencil and paper, the student with Cerebral Palsy used the computer. One lesson was observed in which the students were asked to identify synonyms from among four-word sets. With the word processor, this student could write his answers to the screen, and ultimately, to a printer. He required help managing papers, and for this an aide was available. Other students helped as well. The teacher was patient and understanding.

When this strategy is used, there were several positive outcomes for the non-disabled students. First, they had the opportunity to see someone with Cerebral Palsy as intellectually capable. They got a chance to know him and to interact as equals. They learned that students with Cerebral Palsy are people first, and are able to function in many ways despite their physical limitations.

For the student with Cerebral Palsy, there were positive outcomes as well. First, he was able to have an opportunity to attend a regular class, learn the content being taught, and to interact with the students. He enjoyed having others view him as a competent individual. The possibility of friendship came into play, whereas that was not possible when he was isolated in a special class. His self esteem was enhanced, as his classmates and the teacher learned about his abilities, his ideas and his feelings through his writing.

Conclusion: Microcomputers are so highly motivating and "socially acceptable" that they can become tools in the process of

bringing children together. The strategies discussed are but a few of many approaches which could be employed to promote the integration and acceptance of students with disabilities using microcomputers. These can be used in mainstream as well as in reverse mainstream solutions. It is, of course, critical that classes for students with disabilities be located on regular campuses if any of these strategies is to be employed. The potential for positive outcomes for everyone concerned makes it worthwhile for educators try these and other similar methods.

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Software

Bank Street Writer, Broderbund Software or Scholastic, Inc.

PFS: File, Software Publishing Company or Scholastic, Inc.

Stickybear ABC, Xerox Educational Publications

Stickybear Numbers, Xerox Educational Publications

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