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ABSTRACT

Using educational technology in reading instruction is one approach, among others, to assist students to increase reading skills. However, there are several reasons why technology is not increasingly used in the school setting, including lack of administrative support; failure to allocate a technology coordinator to help train teachers and coordinate technologies; a lack of funds and personnel to maintain equipment; and continual assessment of content acquisition through traditional methods. This paper discusses the following elements connected with technology use in schools: computer assisted reading instruction; formative and summative reading programs; planning a quality technology curriculum; and inservice education. (NKA)

Computers, Technology, and the Reading Curriculum.

by Marlow Ediger

COMPUTERS, TECHNOLOGY, AND THE READING CURRICULUM

The debate continues on the pros and cons of educational technology in reading instruction. It is one approach, among others, to assist pupils to increase reading skills. There are a plethora of reasons for advocating technology use. Certainly, technology is in rampant use around all in society. Supermarkets, banks, department stores, and very small places of business use computers and other technology to help in conducting business efficiently and effectively. In the educational arena, there has been some hesitancy in using instructional technology, but in most schools, it is there and can be readied for use in teaching reading. Ritchie (1996) wrote the following as to why technology is not increasingly used in the school setting:

* a lack of administrative support.
* inadequate staff development and technological support.
* low quantity, quality and access of technologies in the classroom.
* non-existent of cursory plans for adopting and implementing technology in the classroom.
* the failure to allocate a technology coordinator to help train teachers and and coordinate the technologies.
* a lack of funds and personnel to maintain equipment.
* continual assessment of content acquisition through traditional methods.

Computer Assisted Reading Instruction

Computer assisted reading instruction is a mode which has helped selected pupils to increase skills in reading. Pupils differ from each other in many ways and computerized instruction is an approach which is individualized. The learner may pace his/her rate of instruction. Thus, a single frame in computer use may be attended to as long as desired and needed. Once a computerized program has begun, a pupil may work independently. There are several modes which may be used here. Tutorial is a mode which provides reading instruction in guiding pupils to meet new objectives of instruction. The methods used may be quite repetitions but has interesting built in reward devices to motivate pupils to learn. The methodology tends to emphasize read a small amount of content on a frame, respond to a question covering content read such as a multiple choice test item, and notice the correct answer as given by the programmer. If the pupil is correct, he/she is rewarded. If

incorrect, the learner is still ready to go on to the next programmed item of read, respond, and check. Interesting drawings, such as a large smiley face may appear on the monitor to indicate reward for each correct response made by a pupil.

A second kind of computer program is drill and practice. There may be selected words which pupils need to develop as their basic sight vocabulary. These may well be developed through a drill and practice approach. When the words become a part of the pupil's sight vocabulary, they can increasingly become independent readers. Drill and practice of selected words in reading has always be important, maybe through the flash card method. These cards soon became tainted and smudged. Pupils might then recall a word through these markings, rather that through the configuration of the word, as should be the case.

Diagnosis and remediation as a third method of computerized reading instruction may be used wisely to help pupils overcome problems in print materials. Diagnosis and remediation programs attempt to find out what pupils specifically are doing incorrectly. Formerly, the teacher attempted to ascertain why pupils were reading content incorrectly. With computerized instruction, the teacher is released from helping that child to assisting another depending upon specific needs. Each learner is to be given the kind of assistance needed to achieve as optimally as possible. Reading is an individual matter and computerized instruction might well assist pupils to do as well s possible in reading, by remedying difficulties faced in the instructional arena. With common problems which readers reveal, selected needs of pupils may be met through collaborative endeavors. Thus by learning collectively, these pupils can achieve more optimally based on their learning style.

Fourth, simulation can be an interesting and exciting way for pupils to achieve more optimally in reading. Here, pupils might work individually or collaboratively in devising an answer to a problematic situation. The programmed problem presented on the monitor is developed as realistically as possible. A life like dilemma is presented, followed by choices for consideration. Generally, the choices are provided in multiple choice form. The pupil(s) are to select one of the four. They are then provided feedback on the monitor, based on their choice. An additional problem is given on the monitor, followed by four possible decisions as to what to do next. One choice from the four is made, followed again by feedback. The problems are presented sequentially, followed by feedback for each decision. In sequence, another problem is given whereby pupils need to

respond with an answer. The methodology is the same continuously; however, the content in the problem changes much as well as the decisions to be made involving one of the four multiple choice items. A considerable amount of reading is done within a realistic context. The fascination and interest of the problem challenges pupils to choose and make choices.

Fifth, a gaming model in computerized instruction can generate much enthusiasm among learners. A game may involve four words on a screen with a pupil selecting the one which is spelled incorrectly. If the pupil responded correctly, he/she is ready for the next sequential frame of four words. A reward motto may then appear on the frame such as, "Good luck!" If a pupil responded incorrectly, he/she sees the correct answer on the screen and is still ready for the next set of four words.

Two sides may challenge each other in a computerized game. Fair rules need to be developed. Healthy competition, not dog eat dog, need to be in evidence between the opposing sides to determine the winning side in the correct spelling of words (Ediger and Rao, 2000, Chapter Nineteen).

There are then a plethora of possibilities in using computer software in reading instruction. Software used should assist pupils to achieve objectives of instruction in reading. It must provide for individual differences and meet personal needs of learners. Each program needs to capture pupil interest and develop purpose for improving reading skills. The program being used needs to contain sequential content for readers. Motivation should increase with programmed instruction in reading. Pupils are then challenged to achieve increasingly complex objectives. Motivated learners are necessary to achieve as much as possible, individually, in reading.

Teachers and administrators need to select those computerized programs in teaching reading which are truly beneficial to the learner and do not represent busy work or the mundane.

Formative and Summative Reading Programs

In units of instruction or within the framework of state mandated objectives, computerized programs may well be used as formative measurement devices. They can then help to determine

* a change in course of action within the ongoing unit of study.
* an improved order of presenting content so that the pupil

benefits increasingly so, from the instructional unit.

* new ways of increasing energy levels for pupil learning.
* ways of varying learning activities in the curriculum to maintain and increase interest in reading instruction.
* approaches to guide pupils to perceive reasons for learning.
* means of remedying that which was done incorrectly.
* the entire design of determining the reading curriculum (Ediger and Rao, 2001, Chapter Twelve).

In contrast to formative evaluation, summative assessment stresses the end of unit or course modifications which need to be made. Certainly, at the end of the unit or course, summative evaluation needs to be used to ascertain changes which need to be made before the unit or course is taught again. These changes/modifications might well include the following:

* develop and use criteria to help decide which facet of computerized reading instruction should be kept and which omitted when using the unit of instruction again for next year's group of pupils.
* study and think through carefully how computerized instruction can be used more effectively.
* assess new computer and technology strategies to strengthen the reading curriculum.
* talk to teachers and school administrators about new programs of instruction which might well improve the teaching of reading.
* implement a multi-media strategy which may challenge pupils to achieve more optimally in reading.

Pertaining to technology use in the schools, Edwards (1994) wrote:

Schools not preparing students for the evolving world do them and society a disservice. The global information network is here. The basics have changed. Education must change to keep the US competitive in a world where the information exchange is the driving force. Solve problems --- don't buy toys. This is the most overlooked aspect of planning. Talking about chips and hard - disk size is not what planning is. Decide what problems you need to solve; then shop for technology to solve them. This part of the strategic plan will be your guide to the endless possibilities on the market

Identifying problems means focusing upon what your goals are now and in the future. (If not, back up several steps.) You will need to cross- reference school system needs so every piece of

technology fits into the total plan and expensive duplication is avoided. Do lots of research before plunking down money. it's a buyers market, so talk to all the vendors you can, asking where to see the technology in action, and asking those using it what they like and don't like. If a piece seems almost right, an alternative will be just right. School buyers do well to shop around. Many who do not jump into technology early feel overwhelmed by catching up. It you are among them, you have plenty of company. There is a lot to learn, but numerous resources are available. If you have a lot of catching up to do, remind yourself you'// never start any sooner and jump in. You'll soon be taking megabytes with the rest of them.

Planning a Quality Technology Curriculum

A key factor in developing a quality technology curriculum is the amount of planning therein. Computer programs need to assist in pupils in achieving objectives. They should not be purchased and used for the sake of doing so, but rather pupils are definitely helped in reading instruction. Technology needs to be integrated and become an integral part of the curriculum. The teacher needs to ask the personal question, "How might specific programs or technology in general guide pupils to achieve optimally. Active learning needs to be stressed. It is the pupil who will be interacting with each program or presentation. Optimal use must be made of each computer in the classroom so that each learner can benefit from these approaches in learning. Pupils from low income homes, in particular, need to have their fair share of compute instructional time. They tend to lack computers in ht home setting and technology is widely used in society. School and society should not be separated from each other, but be integrated entities. How to integrate harmoniously computer programs and technology with the rest of the curriculum will be a continual challenge to teachers. Integrate seamlessly will and is a problem for teachers. Inservice education needs to be available to teachers to make this blend.

Teachers need to have a knowledge of the psychology of learning and of research to manage the successful use of computer technology in the reading curriculum. The teacher's skillful use of the computer will assist to maximize and encourage its use. He/she may use computer services, also, to involve pupils individually in productive achievement when not being taught directly. Managing the classroom makes it so that those who are being taught directly by the teacher as well as those working on their own without instructional direction are

achieving as much as possible. While a teacher is working with a given group in reading instruction, the others also need quality learning activities to benefit fully from the curriculum. To increase the effectiveness of instruction, a multimedia approach may be used; this adds sound, video, pictures, and music to the printed script within the framework of programmed materials of instruction. There is a much better chance of pupils retaining what has been learned if a multimedia approach is used in the reading curriculum. An increased number of senses are then used by pupils such as sight and sound. Thus, hypertext, sound, animation, still images and video become an inherent part of computer and technology use.

Inservice Education

Ample opportunities should be provided for teachers and school administrators to continually grow in technology use. Workshops may be planned and implemented; however, needs of participants may not be met here due to teachers and administrators operating at different levels of achievement in technology use. The author suggests the following approach in which the needed technology is available in a suitable room. Participants may sign up in groups to come to the room for instruction by a person well versed in school technology use. That person needs to be able to provide help and information to these who ask for it. An approach which should be avoided is where there are too many teachers and administrators working on technology problems at a given time. The number should be low, perhaps five participants for one technology specialist. Participants should feel very free to ask questions and receive assistance without feeling minimized. The technology specialist must take adequate time to answer questions and provide help without being biased against anyone. Each participant should have questions answered about problems in technology use. In fact, the specialist should encourage questions rather than being abrupt with queries from teachers and school administrators.

Ample opportunities should be given to assessing the worth of the specialist to improving the school curriculum. A ten point scale may be used n the assessment process with ratings continued from excellent to poor being on the graduated markings. Each of the ten items needs to be defined such as excellent meaning ---- the specialist was readily available, helpful, and took time to explain the assistance given. Poor --- the lowest rating -- the specialist was too preoccupied with other

things to provide help, did not seem to understand my questions, and was unable to supply needed information.

When a small group of five are receiving instruction from the specialist, they should be able to receive the one on one training necessary. A large group of participants makes a situation whereby the one attempting to help participants finds the range very wide in guidance needed. There are too many needing help and it is impossible to meet anyone's needs in general. Participants in small groups may have a wide variety of kinds of assistance needed, for example,as in multimedia computing, including

* how to do desk top publishing with image affects including scanned photographs of charts, maps, live art, and graphs, as well as drawings.
* how to convey information through sound effects. Sound cards, with built in amplifiers, will possess the quality of a stereo in the home setting. These sound cards make CD ROMS sound loud enough to be played back on the speaker. Trainees feel more involved and interested with quality sound effects.
* how to show information in several formats in book form. The computerized book form allows the participant to secure information with the help of hypertext. Hypertext is important in multimedia computing.
* how to do animation as in moving graphic images. Computer generated moving images, as in the movement of a reptile, assists pupils to understand essential involved features, being discussed by the teacher.
* how to use videos in teleconferencing and in teaching complex tutorials.

There are a plethora of advantages in using multimedia including the following:

* the graphs and diagrams aid in attaching meaning to content presented and are integrated in context.
* sophisticated ideas/skills can be presented through multiple approaches.
* the pupil may learn at his/her own pace.
* a learner might well learn on his/her own since multimedia is relatively easy to operate.
* live situations may be viewed at the desired speed and repeated as frequently as desired.
* ample opportunities are available for collaborative work (See Premila, 2001).

Using computer assisted instruction can certainly help pupils to achieve more optimally. It needs to assist pupil

achievement when traditional materials used in teaching/learning do not suffice or when computer assisted instruction can teach subject matter/skills more meaningfully. Technology is widely used in the societal arenas and will continue to make rapid inroads in the education process

Finally, technology will have greater intelligence. This intelligence will be displayed in several ways. First, the technology will have more features and greater capacity. Second, it will have capability to learn from the user, so that it can customize its services to fit the user's learning and interest. Future technology will not only provide data bases but also knowledge bases. And technology will be able to stay abreast of that information most valued to the user and alert him or her to its availability. Integration, interaction, and intelligence. These are the three features we can expect of technology in the future. And they will change the way technology is employed in the schools (Mehlinger, 1996).

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