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NOTES FOR THE GUIDANCE OF AUTHORS

The Editor is always pleased to receive for consideration articles on aspects of educational technology, media use and research likely to be of interest to readers. Topics of interest include: computer assisted instruction, learning resources centres, communication, evaluation, instructional design, simulation, gaming, and other aspects of the use of technology in the learning process. Two primary forms of contributions are welcomed: refereed articles, and notes and non-refereed articles. It is important that contributions conform to the notes below.

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1. Contributions for this category are welcomed from all members. Writers are encouraged to use a familiar, casual style. Jargon should be avoided.
2. Contributors to this section surrender to the editor the responsibility of final copy edit. Articles will not be returned for author approval prior to publication.
3. Contributions to this section do not require additional notes or references. If these are included they must adhere to the style guidelines for refereed articles.
4. Include your name, position, institution and mailing address.
5. Type contributions on 8 1/2 x 11 paper using a 60 stroke line, and double-spaced. Do not break words at the end of a line.
6. Non-refereed articles should be from one to five pages in length. Notes of upcoming events or other news should be one paragraph in length.

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1. Manuscripts should be 5-20 double spaced, typed pages.
2. Include an abstract of about 100 to 150 words.
3. The author's name, position, institution, and mailing address should be on a separate page.
4. Authors should send three copies.
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7. **Main headings** should be centered and typed in upper case. **Secondary headings** should be typed at the left-hand margin, using upper and lower case underlined.
8. All tables, diagrams, figures, or photographs should be submitted in camera ready format. Diagrams, tables, and figures should be provided on separate sheets of paper. The position of each item in the text should be indicated as follows:

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9. References in the text should employ the author/date format (eg: Kowal, 1982). All references should be listed at the end of the paper in alphabetical order. The American Psychological Association Style Manual (2nd edition) should be referred to by all authors to ensure consistent reference style.
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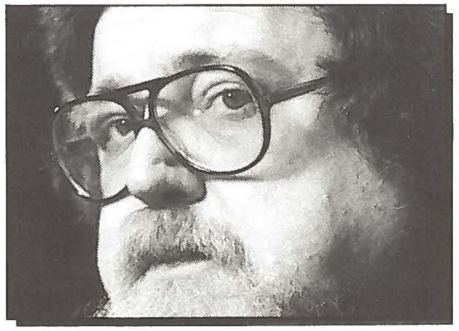

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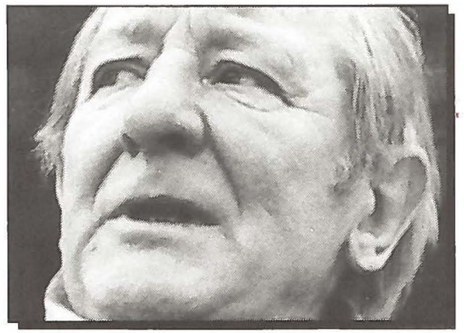

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Educational Technology in the Twilight Zone

by Denis Hlynka, Editor

With this issue of CJEC, I conclude three years as editor, and relinquish the task to Dr. Robert Bernard. It is perhaps appropriate, then, for a final editorial to present a personal view of the future of our field.

The fall 1985 television season introduced to the North American television audience a remarkable television clone. THE TWILIGHT ZONE is a new anthology series of science fiction television, directly based on the extremely popular series of the same name which first was seen in 1959. On the first new show, a story was told of a man who accidentally phones home (shades of ET?) only to be confronted by his own voice. But two souls cannot occupy the same body, so the story becomes a struggle for the dual personality in all of us . . . the struggle between good and evil . . . the hidden alter ego which we all conceal.

Psychology documents this characteristic and even gives the concept a name . . . schizophrenic. Psychology also tells us that the schizophrenic characteristic is not necessarily limited to two characters existing in one body, but even three or more.

What might be the fate of the educational technologist in the twilight zone . . . that vague, ambiguous dimension located somewhere between light and darkness, between reality and fantasy?

I perceive us as exhibiting just such a split personality. I perceive that same struggle taking place within the field of educational technology for the rest of the century. But our condition is even more serious, because we exhibit not merely a split personality, but a multiple personality.

It was in 1922 that the Italian dramatist Luigi Pirandello published his remarkable intellectual comedy with the curious title of SIX CHARACTERS IN SEARCH OF AN AUTHOR. The title should be especially thought provoking for educational technologists, since we are six professions in search of one unified field.

Our first profession is that of the audiovisual teacher, an individual who seeks to improve teaching through the theoretic justification of a concrete-abstract model.

Our second profession is that of the technologist, an individual who encourages adoption of the current new technology. Today it is the computer; yesterday it was the television and the day before yesterday, the radio. But the character is the same.

Our third profession is that of the instructional designer. He is grounded in psychology, and stresses the importance of a systematic design-develop-evaluate paradigm for developing effective and efficient teaching programs, systems, products, and packages.

Our fourth profession is that of the distance educator. He combines a specific technology with a systems approach to provide long distance correspondence communication.

Our fifth profession is that of the resource specialist, the librarian, the media consultant. This individual is our liason between theory and practice, between the professor and the teacher. With only a slight variation, he is the salesman, the one who "sells" the hardware and the software which the other "characters" need to survive.

Our sixth profession is that of the researcher. This individual may be in mass media, in sociology, in education, in psychology . . . it doesn't really matter which. What does matter is the focus on whether research can inform practice. We know the answer, but again it doesn't matter. We ask the question anyway.

And so we have six "characters." In the "twilight zone," they seldom talk to each other. Often they don't even know that they exist within the same body. They each have their own organizations. In Canada, the first belongs to the American based AECT (Association for Educational Communications and Technology), the second belongs to ACIT (Associate Committee on Instructional Technology), formerly to ETRAC (Educational Television and Radio Association of Canada), the third belongs to DID (Division of Instructional Development), the fourth belongs to CADE (Canadian Association of Distance Education), the fifth belongs to CSLA (Canadian School Library Association), and the sixth belongs to CSSE (Canadian Society for Studies in Education).

And any leftovers belong to an organization called AMTEC.

In the "twilight zone," some of the characters usually know about the others, but sometimes they don't. Each group holds a regular conference. Several of them have their own journals or newsletters. Yet, at bottom, they all talk about the same things.

In the meantime, the rest of the educational world ignores them, or tolerates them.

But lest anyone accuse me of painting a negative picture of the field of educational technology, let me quickly point out that in the "twilight zone" nightmares have a habit of taking control. Only in the "twilight zone" is such a degree of ambiguity tolerable and possible. We in educational technology have no need for concern, because we live in the REAL world.

President's Message

Benjamin Franklin once wrote to a friend: "I am writing you a long letter because I do not have the time to write you a short one." What I am writing now is of medium length. . . .

First, let me say that anyone who missed our annual conference in Calgary in June missed a great one! Bob Sivertsen and his magnificent crew arranged everything perfectly, even the weather. Having experienced Bob's role the previous year, I had some inkling of what was involved; believe me, the entire team deserves our thanks and admiration.

One thing that struck me about the '85 conference planning team was their diversity of background. I know it was no accident that the team included people from all levels of public education and training, government agencies and private industry. Indeed, this mix is consistent with the diversity of membership in our organization, and this diversity is perhaps worth some brief comment.

Any attempt to categorize the occupation of our constituent members by type of work, type of enterprise, level of enterprise, etc. runs the double risk of occupying too much space on paper and alienating those whose occupation will have been omitted. In short, the work would be exhausting but not necessarily exhaustive. Given the fact that we have a diversity of membership, the question is: does this diversity represent a strength or a weakness? Most national organizations stand for a cause for which they will lobby shamelessly. For example, the National Rifle Association (NRA) uses a clip of President Reagan in its television advertising: its cause? — fighting gun control. Because the NRA has this clearly focussed objective it is seen as a strong organization. As a comparison, consider AMTEC's position with respect to copyright. Since our membership includes both producers and consumers of curriculum materials, it is unlikely that AMTEC would ever be as vociferous about copyright as NRA is about gun control. Does that make AMTEC weak? Not necessarily. Public standards on issues will always be perceived in context, and if AMTEC is known as a national organization with a diverse constituency, its statements will be accepted as a reasoned view. Can AMTEC, therefore, have a cause? We share a fundamental goal, namely to improve the quality of instruction. This may manifest itself in curriculum design, delivery systems and a host of other activities. Yet the fundamental goal of our enterprise remains the same. This enterprise is under attack and has been for a decade, especially in the public education sector. On a scale of Expansion-Maintenance-Survival-Extinction, I suspect we are hovering somewhere between Maintenance and Survival. So we have a cause? Yes. First, to confirm AMTEC as the national body that speaks for the advancement of instructional quality through media and technology, without representing vested interests. Second, to use our combined voice to nudge us back at least confortably onto the Maintenance range of the scale. Our ongoing efforts in publicity and membership can help us in the first area, and communication (CJEC; Standards) can help in the second. Can our diversity be considered a strength? On balance, I think so.

Speaking of strengths, we are all looking forward with great anticipation to our 1986 annual conference. The Toronto site will prove attractive to members from all over Canada, and the heavy concentration of local media people should make it the best-attended conference in many years. The planning committee under Nels Auger is working very hard to make June 14-18, 1986 a memorable event for us all. Plan to be there.

Finally, we would be remiss not to take this occasion to thank Denis Hlynka for his work as editor of CJEC over the past three years. Under his careful husbandry the journal has continued to grow in stature. The editorial task is being taken on by Bob Bernard of Concordia University in Montreal, and we wish him well.

Ed Crisp
President, AMTEC

MEDIA NEWS

New CJEC Editor

This is the last issue of CJEC under the editorship of Denis Hlynka. With the next issue, Vol 15, #1, Dr. Robert Bernard of Concordia University will take the post of editor.

EIC (Employment and Immigration) Program

Employment and Immigration Canada (EIC) is continuing to support the growth of cooperative education in Canada.

Cooperative Education 1985/86, an option of EIC's new Job Entry Program, is aimed at helping school boards, colleges and universities cover the additional administrative costs of creating new cooperative education projects or expansion of existing work/study projects. Employment and Immigration Canada will contribute up to 85% of such costs in the first year and 75%, 55% and 35% over the subsequent three years for approved projects.

How successfully young people make the transition from school to work depends on their cognitive skills, knowledge, abilities to seek out and pursue job opportunities, and on the demand for such competencies in the labour market.

Employment experience, it is reasoned, may lead to a practical understanding of principles learned in the classroom. This experience may provide a wider knowledge of career alternatives, an opportunity to test occupational inclinations, personal maturation and perhaps an income which many young people need in order to remain in school.

Cooperative Education has proven to be an effective process in preparing secondary and post-secondary students for the eventual entry into the labour force. It formally integrates academic learning and on-the-job related work experience, thereby increasing the graduate's chance of obtaining satisfying employment. Employers are strong supporters of work/study programs. Canada needs to increase the number of these programs so that more students may participate.

Interested school boards, colleges and universities may obtain additonal information by contacting their local Canada Employment Centre. Applications will be available by late August, 1985. The closing date for submissions is November 30, 1985.

W.J.H. Poole
Director
Youth Employment Directorate

An Ethnic Broadcasting Policy

OTTAWA/HULL — The CRTC published broadcasting policy guidelines that reflect Canada's linguistic and cultural diversity (Public Notice CRTC 1985-139).

This follows an extensive consultative process that included a series of public hearings throughout Canada in March 1985. Approximately 3.2 million Canadians of various ethnic origins were represented by a broad spectrum of national and provincial organizations and individuals as well as numerous representatives from the broadcasting industry.

"Ethnic programming services are an integral part of broadcasting today and

Continued on page 29.

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Some Effects of Logo With Emotionally Disturbed Children*

by J.O. Michayluk and D.H. Saklofske

Summary

In this exploratory research study, four children who were classified as emotionally disturbed were introduced to the LOGO computer program as part of the schools' ongoing structured-success program. Students worked on the computer at their own rate and individually for the one half hour per week, 9 week study period. Teacher's and researcher's observations, interviews with the children and program output suggested that LOGO had a salutory effect on the therapeutic and academic process. The results are further discussed in terms of LOGO as a motivator, socializing agent, and educational tool.

Introduction

The work described here is based on the LOGO program developed by Seymour Papert and the MIT LOGO Group (Papert, 1972a, 1972b, 1972c, 1980; Papert and Solomon, 1972). Originally created by Papert for children, LOGO incorporated an easy to learn, but rich and expandable vocabulary to reflect such key computer science ideas as local and global variables, naming, recursion, procedurization, editing, etc.

Ease of use and a solid Piagetian base ensured interest in LOGO as a research tool. Since its development, LOGO has been used with the physically handicapped, the learning disabled, the emotionally disturbed, the gifted, and the delinquent (Watt, 1982). In school settings, the research has ranged across all age groups and most subject areas. Although it is clear from the literature that LOGO has been widely accepted as a research-teaching tool, this same literature also points out that the exact role that LOGO and its related activities have to play have not yet been fully delineated.

* In order to protect the anonymity of participants, all names used in this paper are fictious.

The authors are with the
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Review of the Literature

As indicated in the literature, the use of LOGO in the schools has increased dramatically during the past few years. Some of these studies have emphasized the observational or subjective components (e.g. Watt, 1979, 1982; Solomon and Papert, 1976; Lawler, 1980); other studies have attempted to include an objective measurement component (e.g. Milner, 1973; Statz, 1973; Howe, O'Shea, and Plane, 1974; Michayluk and Yackulic, 1983); yet other studies have focussed on a variety of special populations. For example, LOGO has been used with handicapped and learning disabled students (Weir, 1979; Watt and Weir, 1981; Papert and Weir, 1978) with some success.

Of special interest to the researchers was the suggestion made by Larivée that LOGO could be used as a therapeutic tool with juvenile delinquents. Noting that the deliquents were often concrete operational thinkers and incapable of either seeing or resolving contradictions, Larivée and his collaborators (Larivée and Michaud, 1980; Larivée and Gendreu, 1980; Larivée, 1979, 1980, 1981) have suggested that the LOGO program could be used in conjunction with traditional therapy to hasten the therapeutic process with juvenile delinquents. Similarly, other studies (Muller, 1982; Weir and Emmanuel, 1976; Weir, 1981; Furst, 1983) have suggested that computer programs such as LOGO might prove to be effective with severely emotionally disturbed and autistic children. Emotionally disturbed children, it seemed, responded favorably to the immediacy of results and the non-human environment (no personal rejection nor threatening judgment) provided by LOGO. Interest by the researchers in this aspect of the literature led to this study with emotionally disturbed children.

The Study

An elementary school with a structured success program for severely emotionally disturbed children was chosen for this study. As many as ten children who are designated as emotionally disturbed (high cost funding) are taught by a teacher and a teacher-aide using a point-based, structured-success approach. In general, children earn points for appropriate behavior; the earned points can then be "cashed-in" for a variety of goods and experiences. In addition, children in the program are mainstreamed as soon as possible right in the school. This step is achieved with little difficulty, since some form of structured-success is found in virtually every classroom.

Table I
Available Psychometric Data

Subject	Sex	Birth Date	WISC-R	Reading Level
John	M	74/07/19	Verbal — 111 Performance — 114 Full Scale — 113	Verbal Reading ruled good. Comprehension rated low. **
Sam	M	71/12/24	Verbal — 85 Performance — 95 Full Scale — 89	Estimated at grade one level. **
Tina	F	73/11/20	Verbal — 100 Performance — 98 Full Scale — 99	Schonell Word Recognition Test — 2.4 grade equivalent.
Lon	M	73/06/03	Verbal — 92 Performance — 104 Full Scale — 97	CTBS Vocabulary—3.9 grade equivalent. CTBS Comprehension—3.8 grade equivalent.

** Teacher estimate.

The Subjects

Four children who were designated as emotionally disturbed were selected by the teachers and the researchers for the study. The three male and one female subjects had all been initially diagnosed as hyperactive, and all had been prescribed the drug, Ritalin. The available psychometric data on the subjects is summarized in Table 1.

One male subject was re-evaluated by his doctor, using placebos, during the last half of the study and found to be just below the criteria established for designating hyperactivity. His last two computer sessions were accomplished without any sort of medication.

The Method

The four subjects were put in pairs, and each pair was initially allowed two half-hour sessions per week on the Apple computer. For reasons which will be discussed later, it was eventually decided to have each subject work on the computer individually, that is, for one half-hour per week. Each session was closely supervised by one of the researchers.

The teacher and the teacher-aide were asked to observe and closely monitor the behavior and the achievement of the subjects during the research period (nine weeks). Typically, each computer session with the subjects was immediately followed by a meeting between the researcher and the teacher and/or teacher-aide, at which time information was exchanged and strategy for the next session was planned.

The computer sessions consisted of an introduction to the graphics capabilities of Apple LOGO. In the graphics mode of LOGO, a small triangle called a turtle draws a line when given commands of forward or back, and changes its heading when told to turn right or left. Initially, the subjects experimented in a trial-and-error sort of fashion, coming up with interesting but unproportioned designs (See Figure 1). With tutoring, the subjects eventually learned to write simple procedures and to put these procedures together into more complicated procedures. The researchers also introduced the subjects to recursion, for motivational purposes (all subjects liked the patterns which shifted and changed), although it must be pointed out that none of the subjects really grasped the meaning of recursion.

The reader might be interested in the fact that, although the LOGO study was never envisaged as being part and parcel

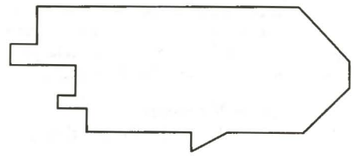


FIGURE 1. A random design.

of the regular structured-success program, the subjects immediately assumed that it was. Consequently, being able to work on LOGO twice a week quickly took on the dimension of reward for appropriate behavior.

The Results

The subjects came from a variety of backgrounds. One subject had two hyperactive siblings and a mentally ill parent; another subject had over-controlling parents; another was put into a foster home because he was unmanageable at home; and in yet another case, having been an abused child, the subject showed virtually no attachment to any member of the family, the one exception being the family pet. It is not surprising, therefore to find that each subject reacted rather differently to the LOGO experience. These reactions are discussed below under general headings drawn from the literature.

LOGO as a Motivator

One of the strengths of LOGO is that children using it are dynamically active. This usually translates into interest and concentration, even with hyperactive children (Muller, 1983). The four children in this study were no exception. Except for a few minor outbursts of frustration (caused by an inability to spell), the children showed few signs of hyperactivity or a lack of concentration.

As an incentive, LOGO proved particularly effective with one male subject, *(Lon) whose behavior at school was characterized as passive-aggressive. The incidence of appropriate behavior, as judged by the number of earned points, increased dramatically prior to each LOGO session. Although the point count was inconclusive for the three remaining children, the teachers felt that their behavior was positively influenced, nevertheless.

At 12 years of age, Sam was the oldest subject in the study. He was very small for his age, perhaps because of an HGH deficiency. Sam's problems were judged by the teachers to be the most severe, both emotionally and academically. When he first entered the LOGO study, he had just been given up by his parents and placed in a foster home. This experience, coupled with a grade one reading level, was having deleterious effects on his self-concept and his behavior.

His interest in LOGO was immediate, to the point where the teachers said it would have been disastrous for him to lose a session. Although it was difficult to establish that LOGO led to more appropriate behavior, on one occasion, when Sam was having a particularly bad morning, ***he removed himself*** to the time-out room as a precaution against losing his LOGO time.

LOGO as a Socializing Agent

The literature generally indicates that children learn to work together, using LOGO, with those "catching-on" first often acting as tutors to the others (Watt, 1982; Michayluk and Yackulic, 1983; Furst, 1983). With this in mind, the subjects were paired, in the hope that when one was working at the keyboard, the other would aid him. The researchers soon realized that the concentration these hyperactive subjects displayed while working directly with LOGO did not transfer to the situation where they were expected to watch and help someone else:

> While Tina worked on the computer, John was unable to settle down. Despite several suggestions by the researcher to sit down and make helpful suggestions to Tina, John refused, preferring instead to pace nervously back and forth. When it was Tina's turn to help John, she did not show the slightest interest in his work, preferring to draw cartoon-like characters in her notebook.

After four weeks, it was decided to have individual sessions with the subjects. At this point the teachers reported increased interactions among the four in the classroom and on the playground. They tended to discuss their computer experiences constantly and, according to the teachers, "to the point of distraction." This interaction was particularly significant, since the teachers reported that the

four subjects had little to do with each other prior to LOGO.

In another instance, LOGO seemed to be a prime factor in reducing passive-aggressive behavior:

> Lon came from an environment which was characterized as over-controlled. Lon's reaction to it was to exhibit apathy and disinterest. The teachers described his behavior as passive-aggressive; the school counsellor said that she found him completely baffling. It was with some surprise, then, that on the first session the researcher was met by a smiling, bright-eyed youngster, bubbling with enthusiasm! This enthusiasm continued throughout the entire study. Lon's performance and behavior during the LOGO sessions were normal. The teachers noted, too, that Lon would emerge from his unemotional and unmotivated state each time a LOGO session was imminent.

LOGO as an Educational Tool

The hyperactivity of the subjects was severe enough to preclude any pre-and post-study testing. Nevertheless, several important academic changes were observed.

None of the children understood such simple geometric concepts as ***right angle*** and ***circle.*** With the aid of LOGO turtle geometry, all subjects learned that a right angle had 90° and that four right angles equalled 360°, and, a circle equalled 360°. As well, two of the subjects were unable to spell such simple words as ***circle, repeat,*** and ***square*** at the beginning of the program. It was observed by the researchers that it was second nature to them to type these words into a program by the end of the study.

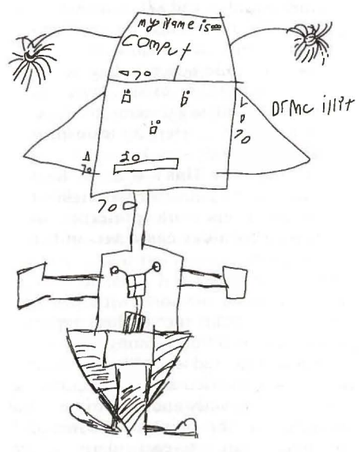


FIGURE 2. A proposed graphics project.

Another observed result of exposure to LOGO came near the end of the nine weeks, when the teachers acquired several CAI programs. It was reported that the four subjects involved in this study were more competent and relaxed when working on the computer; they learned more rapidly, solved more problems, and were more independent than the others. In other words, they had probably become "computer literate."

LOGO and Self-Esteem

Miriam Furst (1983) found that the computer had a useful role to play in enhancing the self-concepts of her mainstreamed K-8 children.

> It's exciting to see what happens when children share their accomplishments with others. Children who were thought of as "losers" begin to be seen in a different light. They have acquired a skill valued by others and that changes the way they view themselves. (Furst, 1983, p. 15)

The researchers' observations agreed with those of Furst. In addition, there were also several serendipitous occurences which illustrated how the computer can prove to be a concept builder:

> Sam had been telling the teachers that he was the "dumbest kid in the school." At the computer session he became frustrated and pounded his fingers hard on the keyboard. The screen lit up with error messages. Sam was aghast at what he had done. The researcher simply said, "I don't know what you've done, but you must be pretty smart. I've been working on the computer for years, and I've never had error messages like that." Sam preened with pleasure and settled down to work.
>
> In another session with Sam, the computer would not load the LOGO program. After several unsuccessful attempts by the researcher, and by Sam, it was suggested that the session be terminated. Sam persisted and the computer loaded the program.
>
> "I fixed it," said Sam. Then he turned with a smile to the researcher and said, "Hey guy, if you have anymore problems with this computer, just call on me!"

Some General Observations and Conclusions

1. LOGO seems to be particularly effective with hyperactive children because (a) it provides immediate feedback, and (b) it is perceived by the children as being non-threatening and non-judgmental. Of particular interest to the subjects in this study were the turtle graphics; the subjects showed absolutely no interest in the text mode of LOGO.

2. It was noted that the subjects responded best when they were allowed to develop their own designs and projects (with help). Occasionally, a subject's proposed project would be too elaborate and would have to be modified (Figure 2). From time to time, a chance design would fascinate the subjects, as was the case when Sam used a recursive program with very large number inputs. The resulting ***Star Wars*** type of design had his eyes riveted to the screen.

3. The subjects, once having programmed and saved some procedures, exhibited a certain amount of creativity in linking them together into a more elaborate program. Tina put two boxes and two circles together to make a car; Lon designed an apartment by stacking boxes one on top of the other; and, John's

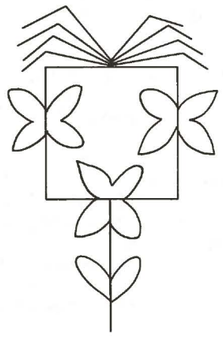


FIGURE 3. John's spider in a flower-box design.

graphic design used a square, a flower, and a spider (Figure 3). Also of interest was John's house (Figure 4), not so much for its complexity or creativity as for the fact that the entire design was programmed "mentally" without a single error (Figure 4).

4. The researchers were concerned about the effects of Ritalin on the performance of the subjects. For example, Tina took her Ritalin shortly before her LOGO session. Consequently, she often appeared lethargic. John, on the other hand, was put on Ritalin one week and placebos the next. Even though only the doctor knew which week was which, the researchers correctly identified the placebo week in each case; John made many more typing errors when he was being given the placebos.

It should be pointed out that the teachers, having seen the children prior to Ritalin, had no concerns in this regard. To them the medication aided rather than hindered performances.

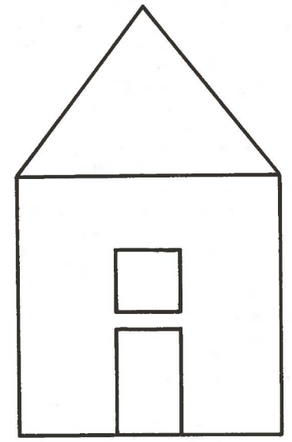
5. The researchers were also concerned about the role they played in the study; that is, did the fact that the researcher was male and a professor affect the results of the study?

> Sam was just informed that the researcher was planning to take a ski trip. Sam threw his arms around the researcher's waist and cried, "Take me with you, take me with you!" Both the teacher and teacher-aide expressed surprise at this response, saying that was completely uncharacteristic.

In Sam's case one wonders whether the motivation and interest exhibited was entirely LOGO related, or a function of some researcher related variable.

6. And finally, based on the literature, and this study, the researchers feel that LOGO is a useful and versatile tool for use with emotionally handicapped children. LOGO (or at least the computer) gives a child prestige and respect from his peers; and by sharing this prestigious experience with others (peers, teachers, parents) the child's conception of self is probably enhanced. As expressed by Furst:

> Eventually they (the children) come to see themselves in a more positive way. The "loser" begins to feel like a winner. He begins to glimpse the possibility that things can change for him and that he is capable of doing things that are of value to himself and others. (Furst, 1983, p. 15)



```
TO HOUSE
BOX 50          RT 90
FD  50          FD 20
RT  30          LT 90
TRI             FD 20
LT  30          LT 90
BK  50          FD 20
RT  90          LT 90
FD  20          PU
LT  90          FD 30
FD  20          PT 90
RT  90          FD 3
FD  10          PD
                BOX 10
                HT

                END
```

FIGURE 4. John's house.

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UPDATE: Television and Children: A Bibliography

by Carmen Luke

This is an update of a more comprehensive bibliography published previously in CJEC (Fall, 1982; Winter, 1983). Over the past few years, there has been a significant increase in published studies based on an 'interactive' theory of the viewer and the medium. Recent quantitative and qualitative research demonstrates that viewers are not passive blank slates but, instead, actively interpret and organize TV information on the basis of prior knowledge about the world in general, and about TV in particular.

TV research is in the process of what Thomas Kuhn calls a "paradigm shift". The move away from behaviorist to cognitive/interactive research models is paralleled by a similar reorientation in reading research, developmental and educational psychology. Practically, what this means is that the pretest-exposure-posttest model is now seen by many researchers as methodologically and conceptually problematic. As Kuhn suggests, changes in basic approaches within a research community occur when "anomolies" develop. Characteristic research problems appear unresolvable with existing models. From decades of "effects" studies, several such problems have emerged. Researchers appear unable to resolve, for instance, the relationship between televised violence and aggressive behavior. As well, the relationship between children's TV habits and their acquisition of print competence has yet to be fully clarified.

A variety of alternative approaches have emerged. Ethnographic studies, for example, have been undertaken to observe and assess (1) children's interaction with TV, (2) group interaction while viewing, (3) subsequent play patterns, and (4) the development of cognitive and social strategies. While such studies are by their very nature situational and therefore, cannot be taken as indicative of universal age-specific TV habits or TV learning abilities, this kind of research appears to be a fruitful alternative to the traditional measurement of TV effects.

This kind of qualitative research, moreover, can better account for individual and shared group background knowledge. The background knowledge which the child brings to the viewing situations is considered by many researchers to be a far more significant indicator of children's perception and comprehension. Many of the researchers noted in this bibliography are seeking this kind of a more comprehensive and contextual account of why and how children view TV, and what is learned.

It seems, then, that this next generation of media and educational research on TV and children will identify "effects" not as direct outcomes of particular TV exposure. Rather, the qualitative aspects of televiewing — family communication structures, the variety of social and linguistic interaction which occurs during viewing — are likely to become central research concerns. As well, we can justifiably expect that 'educational' research on TV and children will be influenced by other current developments in film and video criticism. The application of semiotic and literary theory is opening up new and ambitious avenues for the analysis of media codes, symbol systems, and messages.

Alexander, Alison; Wartella, Ellen and Brown, Dan. "Estimates of Children's Television Viewing by Mother and Child." **Journal of Broadcasting**, Summer 1981, 25(3), 243-252.

"Comparisons among several measures of children's television viewing revealed few age differences in ability to produce consistent self-report viewing data but wide discrepancies between mother and child viewing estimates." Children's self-reports are consistent but generally underestimate their actual viewing time. Accuracy of self-reports does not consistently increase with age. Mothers tend to underestimate younger children's viewing time, but mothers' estimates of children's viewing at all grade levels underestimates actual viewing amount. The number of TV sets in the home, number of siblings, or mothers' absence because of work did not influence the original correlation, and did not influence the discrepancy between mother/child viewing estimates. The authors caution researchers to be suspect of mother and child self-reports of TV viewing.

Baxter, Leslie A., and Kaplan, Stuart J. "Context Factors in the Analysis of Prosocial and Antisocial Behavior on Prime Time Television." **Journal of Broadcasting,** Winter 1983, 27(1), 25-36.

This study investigated two context factors within which televised antisocial and prosocial acts occur: 1) motivation for actor's behavior, and 2) the portrayed importance of the act. "Female acts more than male acts were portrayed with internal motivation for prosocial acts regardless of act importance." Portrayal of act importance did mediate frequency of male and female antisocial acts. Male behavior was more likely to be antisocial compared to female initiated acts. Sex difference disappeared when antisocial acts are portrayed as high importance in content analyses to move beyond frequency counts of enacted behaviors, and stress the need to include context factors such as the portrayal of motivation and enacted importance of behaviors. A recognition of contextual TV information as a mediating factor in viewers' understanding of and response to TV's messages has important implications for research on TV's socialization effects on children. Children's observation and imitation of TV behavior focuses not only on one unit of behavior, but involves the processing of sequences of behaviors in relation to portrayed motives or levels of importance. Studies of children's social learning from TV, then, must attend to the context provided by TV's narrative structures, and rely less on frequency counts of both on-screen and children's behavior.

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Breen, Myles and Corcoran, Farrel. "Myth in the Television Discourse." **Communication Monographs,** June 1982, 49(2), 127-136.

The authors concur with Gerbner's opinion that TV has assumed the preeminent cultural role of story-telling, of mythologizing ideology, and of monopolizing the creation and mass perpetuation of cultural myths. Although this article does not explicitly focus on children in relation to TV, it does provide a thorough explanation of the role of TV in promoting contemporary cultural myths. It holds particular significance for studies of TV and children, since children are more prone to believe that TV's narratives and advertising 'myths' are true.

Bruffee, Kenneth, A. "CLTV: Collaborative Learning Television." **Educational Communication and Technology,** 30(1), Spring 1982, 26-40.

In agreement with current assumptions about the 'social nature' of televiewing, the author proposes an educational model that would utilize TV to center and facilitate small group learning. It is suggested that "collaborative learning television would promote learning by taking advantage of the social nature of watching television and the social nature of learning. Viewers would be organized into semi-autonomous learning groups so that learning would occur through the focused conversation of a community of peers." This engaging, at times perhaps too abstract, discussion fails to provide concrete information about program (CLTV) implementation, instructional methods, age group applicability, group structuring, evaluation, and so forth.

Buerkel-Rothfuss, Nancy L.; Greenberg, Bradley S.; Atkin, Charles K.; and Neuendorf, Kimberly. "Learning about the Family from Television." **Journal of Communication,** Summer 1982, 32(3), 191-201.

The relationship between children's viewing of communication behaviors of TV families and children's expectations about behaviors in real family settings is examined. TV family roles are particularly salient to children, and enacted family behaviors can be a prime source for children's learning about family relations. To incorporate the complexity of context within which TV viewing and social learning takes place, the authors used variables in four categories: 1) TV content: high affiliative behavior in family shows, low affiliative, high conflictual, and exposure to all types of family shows; 2) Children's perceptions: realistic family portrayal, and what children thought they had learned from TV; 3) Parental behavior: viewing restriction, guidance towards certain shows, parent/child co-viewing, parental negative/positive comments about TV portrayal of families, intra-familial communication about being a family member; 4) Family behavior: supportive, compliant, opposing, and ignoring. Control variables were grade, sex, race, SES, siblings, and total viewing time. Questionnaires were administered to 648 fourth, sixth and eight grade students, with an equal distribution of male and female, black and white children. The overall results suggested that "children who frequently watch family shows appear to believe that families in real life show support and concern for each other." The more mediating control that parents exert, the higher children's beliefs about 'support' in real families. Frequent parent/child co-viewing related significantly to children's beliefs about real life compliance behaviors in families. Parental positive comments about TV families enhances children's beliefs of support and compliance behaviors in real life; parental negative comments correlated with stronger beliefs about opposing behaviors in real families. The authors conclude that parental involvement with children's televiewing and intrafamilial communication can greatly influence children's learning about social roles and family behaviors from TV.

Bybee, Carl; Robinson, Danny; and Turow, Joseph. "Determinants of Parental Guidance of Children's Television Viewing for a Special Subgroup: Mass Media Scholars." **Journal of Broadcasting,** Summer 1982, 26(3), 697-710.

This study examined the kind of TV guidance provided by parents who are mass media scholars. The relationship between the nature of that guidance, the beliefs about the effects of TV held by parents, and the characteristics of their scholarship is discussed. Questionnaires containing 18 statements requiring an evaluative response, and 14 questions were sent to 784 mass media scholars throughout the U.S. Of 486 respondents, 200 were parents of children under 18, 86% of the respondents were male, the median age of respondents was 39, and the average age of children was 8. Three dimensions of 'guidance' were discovered: 1) restrictive, 2) evaluative, and 3) unfocused. Restrictive guidance was more frequently used with younger children, and unfocused guidance more with older children. Parental age did not correlate with any guidance dimensions, but parental sex and child's age related significantly, although in varying patterns, to guidance. Female parent/scholars were found more likely to provide guidance than males. Overall, in contrast to previous research on non-scholar parental guidance patterns, this study found scholar/parents more likely to employ restrictive guidance. Evaluative guidance — the most critical and effective form of guidance — "had the smallest possibility of being carried out by mass media scholars . . . no matter what their teaching, research, or publishing orientation." This finding, the authors found "somewhat disturbing."

Cantor, Joanne. "Modifying Children's Eating Habits Through Television Ads: Effects of Humorous Appeals in a Field Setting." **Journal of Broadcasting,** Winter 1981, 25(1), 37-47.

Thirty-seven three to nine-years olds (25 males; 12 females) were studied to investigate the difference in appeal to children between serious and humorous food advertisments. Two groups were formed and both were exposed to TV programming in which two advertisements varied: one a serious public service announcement (PSA) advocating fruit as a dessert and avoiding sweets, the other a humorous version of the same message. The results showed that children were more likely to choose fruit over sweets after exposure to the serious PSA rather than the humorous version. When the serious PSA was followed by an advertisement promoting commerical sweets,

children's choice of dessert was modified in favor of commercial sweets.

Cantor, Joanne and Reilly, Sandra. "Adolescents' Fright Reactions to Television and Films." **Journal of Communication,** Winter 1982, 32(1), 87-99.

In this study the emotional effects on adolescents of frightening TV content and movies are studied. Mothers' and adolescents' perceptions of mass media 'fright experiences' are compared. 63 sixth-grade and 210 tenth-grade students were asked to fill out a questionnaire containing 10 "frightening media" questions, in addition to a 17 page 'media habits' questionnaire. The aim of this survey was 1) to determine the frequency of adolescents' fright reactions to mass media, and 2) to assess their remembered fright experiences as children. All sixth-graders' mothers and 18% of 10th graders' mothers agreed to be interviewed by telephone. The general finding was that mothers underestimate the frequency of their children's fright reactions to mass media. Recollected childhood fright reactions were reported as more enduring than recent (1-2 yrs. prior) reactions; this trend, the authors suggest, is due to adolescents' cognitive maturity in coping ability with media induced fear, and understanding the representational nature of the media. Regret over watching a 'scary' movie/TV experience was more prevalent with sixth-graders. Significant correlations were found between mothers and daughters, as opposed to mothers and sons. On the basis of comparing mothers' and adolescents' responses to media induced fear in youths, the authors conclude that family communication about frightful experiences is generally poor. Further research on children's fright reactions to media should focus on younger children, since childhood fright reactions were reported as more enduring, and may well have more lasting emotional consequences.

Christenson, Peter G. "Children's Perceptions of TV Commercials and Products." **Communication Research,** October 1982, 9(4), 491-525.

Previous research of children's perceptions and responses to TV commercials is surveyed. Christenson then reports on his own study conducted with 90 children in 1st, 2nd, 5th, and 6th grade. Three experimental groups were formed to which subjects were randomly assigned: 1) no commercials, 2) commercials, and 3) consumer information processing (CIP). This latter sample was exposed to the same commercials as group 2, but their viewing was preceded by a two minute video segment on advertising intent and credibility. All groups watched two animated Saturday morning cartoons. Subjects were subsequently interviewed on a one-to-one basis and were asked product-related questions to which responses were rated on 4 and 5 point scales. Six and seven-year olds exposed to CIPs showed more "unexpected" critical responses to commercial truthfulness and credibility than anticipated. The author suggests that since brief audiovisual messages (e.g., PSA's) can influence children's knowledge and perception of TV information, repeated exposure to PSAs as part of commercial programming should ideally be included in state, federal or network policy.

Collins, A. "Recent Advances in Research on Cognitive Processing Television Viewing." **Journal of Broadcasting,** 1981, 25(4), 327-334.

Recent research reflecting changing trends in TV research are reviewed and discussed. In psychological research, Collins notes, the trend is reflected in increasing concerns with individual construction of meaning, rather than seeing meaning as a function of an external stiulmus (TV). Developmental research is focussing more on "the different degrees of completeness and complexity at which constructive cognitive processing may take place." Shifts in mass media research are reflected in increased concern with audience use of TV, and a de-emphasis in concern about TV's effects. Overall, a subtle, although significant research reorientation has emerged that is less preoccupied with TV content and viewing outcomes, and is taking a more cognitive, information processing approach. Collins explicates the main problems TV research has addressed, and discusses the implications emerging out of the new perspective.

James, Navita and McCain, Thomas A. "Television Games Preschool Children Play: Patterns, Themes and Uses." **Journal of Broadcasting,** Fall 1982, 26(4), 783-800.

This ethnographic study investigated if and how preschoolers use TV based ideas in their play. 36 three to seven-year olds (4 black; 32 white) from a lower middle class suburb of Columbus, Ohio were studied for 7 consecutive weeks (approx. 110 contact hours) during the summer. "Mickey Mouse" was watched daily throughout the summer session in the daycare center by almost every child. "Star Trek" was watched by a few five-year old and older boys who rarely watched more than 5-10 minutes of the program; "Sesame Street" was the least frequently watched. Most TV based play was not directly influenced by programs watched in the daycare center. The most popular games, in order, were Batman, The Bionic Man, The Bionic Woman, Captain Marvel & Isis, Starsky & Hutch, Emergency, and Star Trek. Superhuman, high-action characters were most frequently adapted from TV for play content. Older preschoolers developed more complex game plans with more complicated plots and of longer duration. The daily viewing of Mickey Mouse, which was "enormously popular," generated little if any play beyond the immediate viewing. Four and five-year olds selected TV content for play most frequently. The use of TV content in play was found to decrease after age 5 when TV verbal content increases. Preschool boys played TV games more often and adapted a greater variety of TV content. Girls used TV content more in language-oriented or small motor skills situations; boys tended towards more action oriented and gross motor skills activities. Major play themes were: 1) good guys vs. bad guys, 2) doctor/fireman, 3) house and family, 4) follow the leader, 5) pretend that I am . . ., 6) singing, entertainment, dialogue games. The authors conclude that TV is a source of content for preschoolers' play. TV based games are not all 'new' games, but many have their roots in Anglo-American culture which TV merely re-presents. Developmental differences are the strongest predictors of how preschoolers use TV content and what they choose. A positive relation between the use of TV content in play is proposed: it can promote prosocial behavior by serving as a play/idea framework, "helping children to have fun, learn more about their feelings and abilities, introduce more variety in their play and interact with others."

Desmond, Jon D. and Jeffries-Fox, Suzanne. "Elevating Children's Awareness of Television Advertising: The Effects of a Critical Viewing Program." **Communication Education,** January 1983, 32(1), 107-115.

Recent research on critical viewing skills curricula is reviewed. Next the authors report on a study they conducted to assess what instructional methods are most effective with early elementary school age children in teaching critical viewing skills. 176 kindergarten, first and second grade students (75% Black; 20% Caucasian; 2% Hispanic) were sampled. Children in groups of 20 were pretested one week before the experimental instructional units were administered. Three modes of instruction were used: 1) lecture, 2) audio-visual, and 3) role-playing. The role-playing approach produced the most significant increase in awareness about commercials for all age groups. Awareness scores were greatest for younger children, since their baseline awareness about TV commercial intent, truthfulness, etc. was lower than that of older children. The authors suggest that critical viewing skills curricula based on the principles of child development can significantly increase children's critical understanding of TV information. Utilization of role-playing techniques, for instance, are particularly effective for instructing 5 and 6 year olds to become more critical viewers.

Donohue, Thomas R., Henke, Lucy L., and Meyer, Timothy P. "Learning About Television Commercials: The Impact of Instructional Units on Children's Perceptions of Motive." **Journal of Broadcasting,** Summer 1983, 27 (3), 251-

This study demonstrated that children in the early stages of Piagetian cognitive "concrete operations" are able to understand TV advertising motive and intent. Direct instruction was found effective in enhancing cognitive awareness in six and seven-year olds; these findings contrast with previous research which demonstrated comparable understanding in ten and eleven-year olds. Two instructional units were designed: 1) role playing, and 2) traditional (discussion and a 15 minute video presentation promoting awareness of advertising motives). 75 six and seven-year olds from a middle class elementary school in central Connecticut were pretested on "a standard battery of classic Piagetian tests" to avoid using age as the sole predictor of developmental stage. Both groups demonstrated increased awareness of commercial intent; the role-playing approach produced significantly higher levels of understanding; the traditional approach resulted in a significantly greater ability to articulate TV advertising motives. Children at higher congitive developmental levels profited more from the instructional units than those at lower levels. The authors suggested that for those children who are about to enter, or who have entered the concrete operational stage, "the impact of an instructional unit is potent and of great significance in light of its implications." This study supports and reflects current research efforts to design congnitive developmental measures rather than rely on age as predictors of cognitive development. It is a significant and noteworthy contribution to qualitative research on TV and children.

Dorr, Aimee. "Television and Affective Development and Functioning: Maybe This Decade." **Journal of Broadcasting,** Fall 1981, 25(4), 335-345.

This essay is part of a collection of papers that review and assess ten years of research on TV and children which the Journal of Broadcasting put together as a theme issue. Dorr reviews a decade of research on "the relationships between children's and adolescents' television viewing and their recognition of emotions, empathy, emotional arousal, habituation, emotional reaction to characters, and personal stages." A research agenda is proposed to study the link between comprehension of TV content and TV impact. Dorr suggests that "actions which promote youth's understanding of TV programming are desirable even if understanding has not been demonstrated to be related to impact." Viewers' involvement with TV characters in ongoing series needs further research to facilitate understanding of how and when this occurs, and how involvement contributes to exposure effects. This kind of research is particularly important with respect to very young viewers who do get involved with characters in continuing series such as cartoons, Sesame Street, or Mr. Rogers' Neighborhood. Studies on TV use and gratification, Dorr suggests, might benefit from further development, "particularly as it might lead to an understanding of the relationship between uses and effects and to an ability to provide alternative activities of programming which still satisfy needs." Research conducted in the 1970's indicates that a viewer's motives for viewing can predict certain aspects of TV effects; but, as Dorr notes, these patterns of relationships (i.e. use motives influencing effects) are not universally applicable and only effect "some of the people some of the time." Dorr points out that it is time to "ferret out 'which people when'."

Faber, Ronald J., Perloff, Richard M., and Hawkins, Robert P. "Antecedents of Children's Comprehension of Television Advertising." **Journal of Broadcasting,** Spring 1982, 26(2), 575-584.

This study compared role taking skills and Piagetian logical operations skills in children to determine which developmental skill is a more reliable predictor of ability to comprehend advertising intent. 67 children (35 first graders; 32 third graders) were individually interviewed using Ward, Wackman & Wartella' (1977) measures and coding scheme. Children's role-taking abilities were measured by asking open ended questions about a short story; response to questions required children's ability to take a variety of character perspectives and understand constraint relationships among characters. The results showed that role-taking abilities correlated significantly higher with understanding advertising intent than the physical skills of logical operations. The effects of grade level, gender, previous TV exposure, and the presence of siblings were analyzed as potentially influential variables, and only grade level was found to be significantly related to understand advertising intent. The authors suggest that children need to have developed the social and cognitive skills of role-taking and understanding others' perspective before they can comprehend advertising motives.

Greer, Douglas; Potts, Richard; Wright, John C.; and Huston, Aletha C. "The Effects of Television Commercial Form and Commercial Placement on Children's Social Behavior and Attention." **Child Development,** June 1982, 53(3), 611-619.

This study investigated preschoolers' attention to 30 second commercials during a cartoon presentation, and their social behavior after viewing. The study also aimed to determine "the effects of commercial interruptions on children's social behavior and attention patterns." 64 subjects (32 female and 32 male) from a university preschool were observed in pre and postviewing free-play sessions. Social behavior was scored for aggression, imaginative play, prosocial interaction and general activity. Commercial salient features were defined as high action, rapid scenery and character change, and frequent use of camera techniques. Commericals were clustered or dispersed within a 12 minute segment of Captain Kangaroo. High salience features (frequent visual change and high action) maintained higher attention; males were more attentive than females; no overall difference in attention was found

between clustered or dispersed commercials. Although violent and aggressive features were absent in the commercials, high action features did produce increased arousal in subjects, which the authors suggest may increase the likelihood of increased aggression in social situations.

Husson, William. "Theoretical Issues in the Study of Children's Attention to Television." **Communication Research,** July 1982, 9(3), 323-351.

This article is a comprehensive and informative overview of the main issues involved in current studies of children's attention to TV. The author surveys and discusses the variety of meanings of "attention" as applied in current cognitive and behavioral research on children's attention to TV. "Television" is specified according to the variables — perceptual and thematic — generally focused on in studies of children's attention to TV. The potential relation between age-related information processing abilities of children and developmentally-specific attention levels is discussed. The author favors a cognitive-based theory for studying children's attention to TV, and stresses the practical implications of including the context of the viewing environment in any televiewing research model.

Huston, Aletha C.; Wright, John C.; Wartella, Ellen; Rice, Mabel L.; Watkins, Bruce A.; Campbell, Toni, and Potts, Richard. "Communicating More than Content: Formal Features of Children's Television Programs." **Journal of Communication,** Summer 1981, 31(3), 32-48.

The aim of this study was to identify what combination of production techniques — formal features — constitute different types of children's programs such as: 1) animated and live, 2) humorous vs. serious, 3) Saturday a.m., daytime educational, and primetime children's programs. Exemplary children's programs broadcast by three commercial networks and by PBS during November, 1977 and February, 1978 were sampled and analyzed. Formal features are categorized at two levels: 1) action and pace, and 2) rate of character and scenery change. Saturday a.m. cartoons had the highest rate of fast action and low rates of dialogue and moderate action. Saturday a.m. programs rely heavily on attention provoking features (rapid visual and auditory pace) and minimize the use of features that require viewer reflection. Daytime educational programs make frequent use of child dialogue, action, music; visual shift levels are low; and much verbal information is provided. Children's primetime programs have the highest rates of adult dialogue and have higher frequencies of moderate action than either educational or Saturday a.m. animated programs. Live Saturday a.m. shows have the highest rate of rapid action, visual and auditory shifts. Humorous programs used more non-human dialogue, singing and noise than serious shows, whereas serious ones had higher rates of child dialogue and visual change than humorous programs. The authors suggest that, since very young children's TV diet consists of "cartoons and live programs designed for children", such viewing experiences may set the standards for what children expect from TV. The intentional use by producers of 'fast pace' features in children's entertainment programs may negatively predispose them towards developing interest in slower paced and more language oriented programs. Yet, other evidence also suggests that the young outgrow the perceptually salient "hype" of children's programs, and include at a very early age, adult and family programs in their daily viewing. The authors point out that children's programs need not rely on high action attention-getting formulas, as European productions demonstrate. But American producers have "found a formula that works, and they rarely depart from it . . . This formula is defined by formal production features as much as or more than by content."

Krendl, Kathy A., and Watkins, Bruce. "Understanding Television: An Explanatory Inquiry into the Reconstruction of Narrative Content." **Educational Communication and Technology,** Winter 1983, 32(4), 201-212.

The authors argue against the traditional passive model of the TV viewer, and propose an alternative, interactive model of televiewing based on concepts derived from schema theoretic approaches to text comprehension. As with reading print, the authors suggest, 'reading' the TV 'text' relies on individuals' narrative scheme with which information is processed. Comprehension and learning from TV, then, is dependent upon an integrated network of background knowledge which is brought to the viewing situation, and whereby viewers actively select, reject, and classify incoming information. This study "assumes the existence and use of a TV narrative schema which respondents bring to a viewing situation." The central research question was "to explore the nature of comprehension in terms of perceived demands by imposing high demands on some viewers, and low demands on others." 60 fifth graders from a rural public school in Michigan were sampled. Four groups were formed and exposed to four differently edited 15 minute video narrative segments: 1) Entertainment — one group with remote control to stop, one without stop; 2) Educational — one group with stop, one without stop. The general findings indicated that subjects brought to the viewing situation an organizational strategy, "suggesting something like a TV schema among the 5th graders involved in this study." Subjects assigned to the experimental treatments (task oriented) "consistently displayed more 'mental effort' in encoding and integrating the program content." Their recall "included more analytical statements and . . . more abstract reconstructions." The Entertainment viewing group (no task demands) produced low levels of invested mental effort. In all viewing conditions "children attempted to assign meanings to schemes that were out of place." Children in the Entertainment/no stop group consistently scored highest on the criterion variables. The least amount of mental effort invested was by children in the no stop/Entertainment group. All "subjects instructed to view to learn tended to include more action units in their reconstruction than subjects who viewed for entertainment." The authors conclude by suggesting that cognitive processing effort and consequent level of learning of TV information are amenable to outside influences. "The process of attending to and learning from TV then becomes a function not only of the messages sent, but of the perceptual set with which the messages are received and interpreted."

Levin, Stephen R.; Petros, Thomas V.; and Petrella, Florence W. "Preschoolers' Awareness of Television Advertising." **Child Development,** August 1982, 53(4), 933-937.

Three, four, and five-year olds' abilities to differentiate between videotaped TV programs and TV commercials were examined. 72 preschoolers were studied who were asked to use auditory and visual cues to identify differences between content. The results indicated that preschoolers can demonstrate a significant awareness of the difference between regular programming and commercials when their responses require only minimal verbal expression. Children's ability to distinguish between advertising and programs increases with age correlative to increased verbal and cognitive capacity.

Lindlof, Thomas R. "A Fantasy Construct of Television Viewing." **Communication Research,** January 1982, 9(1), 67-112.

The author provides a comprehensive overview of current cognitive affective theories of fantasy, discusses current approaches to the study of televiewing, cognitive involvement and learning, and proposes three procedures for documenting and analyzing "televiewing involvement." Lindlof suggests that TV viewing research should rely less on empirical observational studies as a sole source of data, and incorporate more subjective self-report data. He proposes that beyond existing empirical models, a more comprehensive and informative account of the viewing experience can be compiled if viewer/subjects are given the conceptual tools and opportunity to "consciously report their experiences." This proposal is particularly relevant for studies of child viewers whose perception and comprehension of TV information is more heavily mediated by fantasy and imagination than the adult viewer.

Loughlin, Meagan, and Desmond, Roger J. "Social Interaction in Advertising Directed to Children." **Journal of Broadcasting,** Summer 1981, 25(3), 303-307.

Two 30-second studio produced TV commercials were shown to 48 first graders, and 51 third graders (49 boys; 50 girls). One commercial depicted peer interaction in the promotion of a puppet, the other portrayed a single child interacting with the puppet. Voiceovers for both commercials were the same; price of product, product description, and places of purchase were included in both versions. Subjects were interviewed immediately after viewing. The results indicated that peer interaction in TV advertising aimed at children increases their liking for commercials, but does not increase product desirability.

Moore, Roy L., and Moschis, George P. "The Role of Family Communication in Consumer Learning," **Journal of Communication,** Autumn 1981, 31(4), 42-51.

Traditionally, TV consumer socialization studies question how TV advertising effects children's consumer values and behaviors, and how parents mediate this process. This study, by contrast, questions whether and how TV mediates parental effects on children's consumer behavior. To assess TV influence on children, and parental mediation of those influences, a four-fold typology of family communication patterns is used: 1) laissez-faire: minimal parent-child communication; 2) protective: parental stress on obedience, social harmony, and minimal concern with conceptual matters; 3) pluralistic: parental encouragement of discussion of ideas with children, fostering of children's creativity and exploration, de-emphasis on obedience and authority, stress on mutual respect and interests; 4) consensual: stress on reciprocal and one-way communication, children's interests are encouraged provided they do not conflict with a family's hierarchy of opinion and internal harmony. The general finding was that "media influence may be most direct in those families in which social harmony and deference to parents is the pattern of parent-child interactions." In socio-oriented families, the authors suggest, children are encouraged to derive from TV "apporpriate consumer behaviors" which, in turn, may lead to materialistic values. It is suggested that materialistic orientations develop in these families because parents place a higher value on children assessing their consumer behaviors in relation to the perceived effects of their actions on others. Concept-oriented families encourage differential and varied exposure to alternative media such as newspapers which, in turn, promotes the learning of consumer knowledge, not mere behaviors. Differential media exposure results in the acquisition of more varied consumer competencies and values. The study concludes with the suggestion that consumer socialization is not solely a function of TV's mediating effects on children's attitudes and behaviors, but that TV directly and indirectly effects the kind of mediation parents provide in the overall family communications environment.

Morison, Patricia; Hope, Kelly; and Gardner, Howard. "Reasoning About the Realities on Television: A Developmental Study." **Journal of Broadcasting,** Summer 1981, 25(3), 229-242.

The authors found that children's "reality-fantasy judgements about television shift with age, from a focus on physical features and a rigid assessment of actuality, to a sensitivity to the plausibility of characters and plotline and an appreciation of authorial intent." Eighteen 2nd, 4th, and 6th grade students (9 male; 9 female) were studied. All students attended the same school in a working class, multiethnic suburb of Boston. Subjects were individually interviewed by one experimenter for 30 minutes and were asked to judge the reality of TV on the basis of forced-choice comparisons of 12 pairs of programs. Children based their judgements on TV-real life comparisons and on TV-specific knowledge (difference between programs). It was found that facility with TV-specific criteria as a comparative base increased with age.

Palmer, Edward L., and McDowell, Cynthia N. "Children's Understanding of Nutritional Information Presented in Breakfast Cereal Commercials." **Journal of Broadcasting,** Summer 1981, 25(3), 295-301.

Drawing on Piaget's developmental stage theory, the authors suggest that the cognitive abilities of five and six-year olds limits them to focus upon a single dimension (e.g., "big") of an advertised product. TV commercials promoting the notion of a 'balanced breakfast' fail to be understood by this age group who are often the target audience of breakfast cereal commercials. The authors suggest that cereal and food advertising should attempt to phrase their messages in relation to "a child's basic education in the fundamentals of nutrition."

Pezdek, Kathy, and Hartman, Eileen, F. "Children's Television Viewing: Attention and Comprehension of Auditory versus Visual Information." **Child Development,** 1983, 54(4), 1015-1023.

The relationship between children's attention and comprehension of visual and auditory information is examined. Sixty 5-year olds watched a 20 minute edited videotape of Sesame Street, and were then asked comprehension questions. The videotape sequence contained: a) visual segments, b) auditory segments, and c) mixed modality segments. Children were divided into three equally numbered experimental and control groups: a) availability of toys during viewing, b) recorded music while viewing, and c) no toys or music while viewing. A 35 item comprehension test was administered immediately following viewing. Questions utilized recall, and were ordered to correspond to the order of the videotape segments. The authors found that 5-year olds' comprehension of and at-

tention to TV information is far more sophisticated than previously assumed. Children were found to be able to distribute their attention effectively to process both auditory and visual information while simultaneously attending to other activities. The authors suggest that their findings support current notions about children's acitve participation in TV information processing.

Postman, Neil. **The Disappearance of Childhood.** New York, N.Y.: Delacorte Press, 1982.

Postman argues that the advent of print literacy, which required formal schooling for transmission to the young, brought about "the invention of childhood." TV, by contrast, is eroding childhood since understanding or learning from TV requires no formal instruction, and because it gives children total access to adult information. Unlike school (print) knowledge, which children acquire in stages correlative to culturally constructed stages of childhood, Postman claims that TV is a "total disclosure of the medium" — one that exposes adult concerns such as sex and violence to children regardless of their age-related abilities to deal with such information. Postman argues against biologically determined childhood, siding with Aries (1962) in his contention that during medieval times childhood was non-existent. Because formal schooling was absent, and since the young mingled with all age groups, children had unmediated access to the same social information as adults. Aries' claims have been disputed; Postman's insistence that childhood is a social construct and his rejection of contemporary developmental paradigms may draw much criticism from readers. But his suggestions that TV has blurred the child/adult distinction by creating an information environment for the "adultified-child" and the "childified-adult", is, indeed, thought provoking. The implications drawn from his well documented historical discussions are heavy handed and, at times, incredulous. TV may be contributing to a radical change in the concept of childhood, but is hardly "disappearing" it. TV has not yet eliminated institutional schooling for print.

Rapaczynski, Wanda; Singer, Dorothy G.; and Singer, Jerome L. "Teaching Television: A Curriculum for Young Children." **Journal of Communication,** Spring 1982, 32(2), 46-55.

This study reports on "the adaptation of a critical viewing curriculum first used with children in third through fifth grades for use with children in kindergarten through the second grade." Eight 40 minute lessons, initially designed for third to fifth graders, were reduced to six 30-45 minute lessons, and the material simplified to suit five to seven-year olds. 91 children participated in the project; children were pretested one week prior to the first lesson and post-tested the week the final lesson was taught. A TV Comprehension Test was designed which required that children circle responses to multiple-choice items, most of which were pictures rather than print. The objectives of the six lessons were: 1) "Introduction to TV"; 2) "How TV Programs are Made"; 3) "Real and Pretend on TV"; 4) "Effects and Special Effects"; 5) "Action and Aggression on TV"; and 6) "Commericals". Two lessons were taught per week; classroom activities and some homework was assigned to enhance learning. Pretest and post-test score comparisons indicated that the adapted curriculum did effectively improve young children's knowledge about TV. Older children scored higher on the pretest and showed less significant gains on the post-test. For all grades, TV comprehension improved in all areas covered by the curriculum. The very youngest children confused actors' names and their roles. No significant scored difference was found in relation to gender. The authors suggest that, if a TV curriculum is adapted to the cognitive capacities of preschoolers and early elementary age children, they can benefit from instruction about TV. Post-testing to determine long-term effects of the curriculum was not administered.

Selnow, Gary W., and Bettinghaus, Erwin P. "Television Exposure and Language Development." **Journal of Broadcasting,** Winter 1982, 26(1), 469-479.

This study investigated the role of TV as a language model. The authors hypothesized that since TV lacks a feedback and reinforcement capacity, TV's influence on language development and usage must occur through observational processes. 93 preschoolers (42 girls, 51 boys) were studied. All were children of students or faculty at a large midwestern university town, and all attended the same daycare center. All subjects spoke English as a first language; no bilingual children were included in the sample. The average daily viewing time for subjects was 2.8 hours; the national average for preschoolers is 4.7 hours/day. A significant inverse relationship between TV exposure and language development was found. The authors could not determine, however, a casual relationship on the basis of the data, but offer two explanations: 1) TV viewing may displace alternative language building experiences, or 2) TV language may contribute to lower language performance scores. Moreover, less linguistically developed children may prefer to watch more programs with simplistic language structures which may, in turn, contribute and reinforce an already existant low level of language development. This study supports the environmentalist language development theories. It is suggested that the relationship between heavy viewing and diminished language development would be more significant if the sample were drawn from the general populace — not from a university community.

Singer, Dorothy G., and Singer, Jerome L. "Television and the Developing Imagination of the Child." **Journal of Broadcasting,** Fall 1981, 25(4), 373-387.

The authors suggest that preschoolers and early elementary school age children fail to comprehend much of what they see on TV, that they are easily confused by TV information, and that this misperception and confusion leads to a distorted understanding of "the real world." Moreover, the data on very young children and TV viewing suggests that televiewing "seems to preempt self-play time and may impede creativity."

Tucker, David E., and Saffelle, Jeffrey. "The Federal Communications Commission and the Regulation of Children's Television." **Journal of Broadcasting,** Summer 1982, 26(3), 673-669.

The intent of this study was to examine children's TV broadcasting using a systems theory model as an analytical framework. FCC regulations of children's TV from 1970-1981 are examined. Provided is both a thorough and well-documented historical review and analysis of policy issues and decisions for children's programming. The deregulatory climate in the U.S., the authors note, has support for the development of quality children's programs, yet has minimized progress towards regulating children's programming and advertising on network TV and local stations. As the authors conclude, the FCC "creates many outputs, but few outcomes."

Turow, Joseph. **Entertainment, Education, and the Hard Sell: Three Decades of Network Children's Television.** New York, N.Y.: Praeger Publishers, 1981.

In this book Turow surveys children's programs on the three major networks aired between 1948 and 1978. Programming trends during the three decades are identified, and the development of a current dominant format for children's programs is discussed. Turow contrasts the historical development of program formats and content to developments within the industry, and draws implications for the future of children's TV.

Washlag, Jacob J. "Stability in the Popularity of Television Programs among Children and Adolescents." **Journal of Broadcasting,** Summer 1982, 26(2), 711-716.

This study examined the popularity of network primetime and Saturday morning programs broadcast during the 1975-6 season. 100 fourth, 100 sixth, and 100 eighth graders were surveyed at three month intervals, and were asked to mark a checklist of programs they watched. Specific program choices on the checklist and specific program preferences by children are not provided in this report. The authors found that program popularity "was quite stable and increased as the season wore on, especially among younger viewers."

AMTEC ANNUAL ELECTIONS

Nominations are requested for the elections to be held in 1986 to fill two positions on the AMTEC Board.

The positions are:

1. **Vice-President (President-Elect)**
   This is a three year term, beginning in June, 1986 at the Annual Conference. There will be one year as Vice-President, one year as President and one year as Immediate Past President.
2. **Member-at-Large (Director)**
   This is a three year term beginning at the Annual Conference in June, 1986.
   All nominations must be received by the Chairman of the Nominating Committee by January 30, 1986.
3. **Secretary Treasurer**

Procedure

1. **If you wish to nominate someone:**
   Nominations may be made by any five AMTEC Members providing the nominee is a member of AMTEC and has signified his/her willingness in writing. A brief biographical sketch of the nominee must be sent to the Chairman of the Nominating Committee along with the nomination.
2. **If you wish to be nominated:**
   Indicate this to five AMTEC members who will arrange to nominate you by sending a letter of their intention and your biographical sketch to the Chairman of the Nominating Committee. You must be a member of AMTEC.

All nominations must be received by the Chairman of the Nominating Committee by January 30, 1986.

Send nominations to: **Bill Hanson**
Chairman Nominating Committee
Past President, AMTEC
Supervisor of Instructional Materials
The Calgary Board of Education
Media Services Group
3610-9th Street S.E.
Calgary, Alberta T2G 3C5

L'ASSOCIATION des MEDIA et de la TECHNOLOGIE en EDUCATION au CANADA
ASSOCIATION for MEDIA and TECHNOLOGY in EDUCATION in CANADA

AMTEC

On Behalf of

THE COMMONWEALTH RELATIONS TRUST

Commonwealth Relations Trust Travelling Bursary: Call for Applications

Canadians working in educational media are fortunate this year in being able to apply for a bursary from the Commonwealth Relations Trust, which was established by a private donation in the 1930s to promote a common understanding and a unity of ideals between the United Kingdom and other countries of the Commonwealth, through the extension of human contacts and first-hand experience of current conditions. AMTEC has been asked to sponsor an annual award for educational broadcasters which pays for a three-month study visit to the U.K., beginning in the spring of 1986. Other bursars visiting the U.K. will be broadcasters, adult educators, trade unionists, and librarians from several Commonwealth countries.

The Bursary will provide:

a) one adult return fare, by the most direct and economical means, to the U.K.;
b) allowances for local travel and other out-of-pocket expenses;
c) daily maintenance allowance on a generous scale for a period of three months from date of arrival.

Candidates should:

a) offer assurances that they will not suffer financial loss as a result of taking up the award, but will continue to receive a salary;
b) be communicators in their profession and in a position to influence opinion in their field of endeavour;
c) have a reasonable level of education in order to make the best use of their stay in the U.K., and be able to act on their own initiative;
d) not have been previously to the U.K., except for a short holiday visit.

Applications should include:

a) a short statement of the applicant's proposed objectives in applying for a bursary, what she or he hopes to obtain from the experience, and what they feel they can contribute to the aims of the Trust;
b) the special area or areas of study to be pursued;
c) any known contacts in the U.K.;
d) previous travel abroad, including any visit to the U.K.;
e) address to which correspondence should be sent;
f) a full curriculum vitae, including education and work experience, with dates.

The award winner will be expected to prepare his or her own program, obtaining advice about whom to visit, well in advance of his or her arrival in the U.K. by the end of April, 1986. A ten-page report must be submitted on conclusion of the visit.

If you would like to apply for this award, please forward the documentation described above to:

Merrill Fearon
Chairman, AMTEC Committee for the CRT Bursary
c/o The Provincial Educational Media Centre
7351 Elmbridge Way
Richmond, British Columbia V6X 1B8

Deadline for Applications:
Friday, May 23, 1986

BOOKS

Greenfield, Patricia Marks. **Mind and Media Effects of Television, Video Games and Computers.** Cambridge, Mass.: Harvard University Press, 1984.

Reviewed by Patricia Dolan Lewis

Research based, yet written for the non-scholarly reader, **Mind and Media: The Effects of Television, Video Games and Computers** is one of the latest books dealing with media and the developing child.

Author Patricia Marks Greenfield includes standard research on television, film, radio and print; then expands the topic into the newer areas of video games and microcomputers. The continuing theme among the diverse media is their effects on a child's cognitive and social development.

"Television and Social Reality", (chapter 4), one of the major effects issues today, is a short but up-to-date analysis of current research. Sex-role stereotypes, representation of minority groups, consumer behavior and behavioral influences are all considered. The focus of the chapter, however, is on positive effects of television viewing and techniques to make television a positive experience.

If **Mind and Media** has a weakness, it is this stated objective: to consider media from a positive perspective. Studies which show positive effects, critical viewing techniques which have positive results are emphasized in the research presented. Although the reader may recognize that these studies were selected to support the author's fundamental premise, one may underestimate the negative effects of the media. One may also over-estimate the effects of literacy programs or critical viewing skills.

Literacy, whether it is film, television or computer literacy, involves understanding the symbolic code of the medium. This point is illustrated very well in the chapter on visual skills and television viewing. It makes one point of particular significance for the newer media. Children with more sophisticated viewing skills learn more when watching television or film. Unlike print literacy, which children generally learn in skills, visual literacy is learned independently. To become TV literate, most children deduce the symbolic code of the medium by watching programs. Obviously, if children are to learn efficiently and comprehensively from older as well as newer media, they should be taught basic symbolic codes for interacting with the medium.

The information on computer and video games is generally more speculative than the material on the much-researched field of television. For the computer illiterate or the video game avoider, it is an easy-to-read introduction to the subject. The additional attraction of video games is considered, but the conclusions are a bit superficial. Based on small informal surveys of computer game players. Greenfield concludes that time on the computer is time away from television. This she says is good because the computer is often an interactive medium. Violence in media is discussed, but the limited amount of research inhibits serious discussion.

Educators will be particularly interested in the comments on word processing and multimedia education. The section on children using word processing provides some striking examples about the usefulness of the technology in composition classes.

Patricia Dolan Lewis is adjunct instructor at Madonna College, Detroit Michigan.

Barcus, F. Earl. **Images of Life on Children's Television.** New York: Praeger Publishers. 1983.

Reviewed by Patricia Dolan Lewis

Based on the assumption that children learn values, sex roles and social patterns of behavior from television, Barcus has presented the theoretical and procedural framework for an extensive content analysis of children's television programming. The book also presents the results from an analysis of 50 hours of network and independently owned station programs geared to the child audience.

Essentially, **Images of Life on Children's Television** provides a framework and guidelines for further study. The results section focuses on three areas of analysis. First, Barcus considers how the sexes are portrayed with particular emphasis on recognition and respect as factors for evaluating the portrayal. Second, the author considers the portrayal of minority and ethnic groups. Finally, he reviews the portrayal of the family and kinship relationships on television. In addition to presenting the results of the current study, the book includes summaries of the research relevant to the particular topic.

Many scholarly articles present the results of content analyses, however, few of the articles explain the procedures used to define and code the data into various categories. Reading this book will assist the researcher in developing and implementing a content analysis because it helps to clarify the distinctions between groups and codification procedures.

Content analysis is an obligatory procedure in evaluating the effects of television on the child. It is obligatory because it provides the specific data on what the television is actually showing. Attempting to imply effects of television viewing without first determining the program content is certainly dubious. Compiling content analyses, however, is a long, expensive project. Reading **Images of Life on Children's Television** will reduce the initial planning necessary to implement content analyses in children's television.

CJEC Editor co-author of new textbook on Videotex

Harper and Row (New York) has just published the VIDEOTEX AND TELETEX HANDBOOK by Paul Hurly, Matthius Laucht, and Denis Hlynka.

From the Media Periodicals

by Richard Ellis

BRITISH JOURNAL OF EDUCATIONAL TECHNOLOGY, 16:2, May 1985

Mc Cormick, R. "Students' views on study at the radio and television universities in China: An investigation in one local centre."
Barker, P. "Information technology, education and training."
Barker P.G. and Wilford, J. "A practical introduction to authoring for computer-assisted instruction."
Wooler, S. and Wisudha, A. "An educational approach to designing computer based career guidance systems."
Hosie, P.J. "A window on the world."

COMPUTERS IN EDUCATION, May 1985

Storad, C.J. "A role for simulations in mathematics."
Walpole, P.O. and Hess, G. "Writing in the computer literacy class."
Cieply, S.M. "Computer programming contests."
More, G. "National software evaluation database."

COMPUTERS IN EDUCATION, June 1985

More, G. "Of scribes, electrons and the law."
Myers, P. "Computers and English: High schools and colleges."
"Secondary science software survey."

EDUCATIONAL COMMUNICATION AND TECHNOLOGY JOURNAL, 33:1, Spring 1985

Kerr, S.J. "Asking new questions about technology and the social world of education."
Heinich, R. "Instructional technology and the structure of education."
Daiute, C. "Issues in using computers to socialize the writing process."
Stewart, A. "Appropriate educational technology: Does appropriateness have implications for the theoretical framework of educational technology?"

EDUCATIONAL TECHNOLOGY, 25:6, June 1985

Rust, V.D. and Dalin, P. "Computer education Norwegian style: A comprehensive approach."
Jonassen, D.H. "Interactive lesson designs: A taxonomy."
Church, G.D. and Bender, M. "School administration and technology: Planning educational roles."
Caulley, D. and Douglas, M. "Evaluating instructional film on video: Suggestions for feedback before the final print."
Flaherty, D. "Computers and the new culture: Where are the role models?"

EDUCATIONAL TECHNOLOGY, 25:7, July 1985

Smith, P. and Dunn, Samuel. "Tomorrow's university: Serving the information society."
Telem, M. "The school computer administrator."
Larsen, R.E. "What communication theories can teach the designer of computer-based training."
Frager; A.M. "Video technology and teacher training: a research perspective."
Ally, M. "A team approach to computer courseware design."
Elkins, R. "Attitudes of special education personnel toward computers."
Spitzer, D.R. "The educational technologist as a problem-solver."

EDUCATIONAL TECHNOLOGY, 25:8, August 1985

Summers, E.G. "Microcomputers as a new technological innovation in education: growth of the related journal literature."
Earle, R.S. "Teachers as instructional developers."
Hocking, J. "The computer in higher education: Not just another mechanical device."
Witthuhn, J.L. "Planning for technology: The key to successful implementation."
Fedale, S.V. "A videotape template for pretesting the design of an interactive video program."
Schwandt, L.C. and Wiederanders, D.E. "Microcomputers and the ultimate goal of education."
D'Souza, P.V. "Computer literacy in today's society."

JOURNAL OF COMPUTER-BASED INSTRUCTION, 12:2, Spring 1985

Locatis, C. and Carr, V. "Selecting authoring systems."
Tatsuoka, K.K. and Eddins, J.M. "Computer analysis of students' procedural 'bugs' in an arithmetic domain."
Perez, E.C. and White, M.A. "Student evaluation of motivational and learning attributes of microcomputer software."
Steinberg, E.R. and others. "Computer-presented organizational/memory aids as instruction for solving Pico-fomi problems."
Munro, A., and others. "Instruction intrusiveness in dynamic simulation training."

JOURNAL OF COMPUTER-BASED INSTRUCTION, 12:3, Summer 1985

Bangert—Drowns, R.L., and others. "Effectiveness of computer-based education in secondary schools."
Nesbit, J.C. "Approximate string matching in response analysis."
Harrison, A., Jr. and Musial, D. "Computer-based instruction for school board members — a potential solution to the problem of implementing national training programs."

MEDIA & METHODS, 21:8, May/June 1985

Dunitz, Robin J. "Interactive museums."
Shields, C. "Your school oughta be in pictures."

MEDIA & METHODS, 21:1, September/October 1985

Neights, G.M. and Jobe, H.M. "Dynamic district-wide computer program planning."
Levinson, M.S. and Walcott, J.G. "On-line databases — a school project."
Storad, C.J. "The role of simulations in the mathematics classroom."

Mediography

MEDIA ON TELEVISION AND CHILDREN

by Nancy Lane

The effects of television on the viewer — particularly the young viewer — is a subject of research, discussion and debate. Listed below are a number of programs relevant to the topic.

ACTION AND VIOLENCE Motion Picture, MTI/Magic Lantern 1981 12 min., sd., col.
From the series "Getting the Most out of TV" this program focuses on the difference between action as seen on television and real action, and the staging of television violence.

CHILDREN AND TELEVISION — A SERIES Videorecording, UMITV 1976 3 programs, 29 min. ea., sd., col.
This series discusses the impact of television on children.
Titles are: "Big Bof or Big Bird"
"Human Mirrors"
"Minds or Eyeballs."

HELPING CHILDREN DEAL WITH TELEVISION Motion Picture, MFDD/VEC 28 min., sd., col.
This program examines the effects of excessive television watching on children.

THE IMPACT OF TELEVISION Motion Picture, EBEC/VEC 1980 20 min., sd., col.
The focus here is on the effects of television on the behaviour and activities of the audience.

MAGIC IN THE SKY Motion Picture, NFB 1981 57 min., sd., col.
This film investigates the impact of television on the Innuit people.

ON TELEVISION: THE VIOLENCE FACTOR Motion Picture, FI/VEC 58 min., sd., col.
The results of 30 years of research on the violence factor in television is the subject here.

QUESTION OF TELEVISION VIOLENCE Motion Picture, NFB 1972 56 min., sd., col.
The effects of television violence — a report on the hearings of the U.S. Senate Subcommittee as filmed by the National Film Board.

SHOCK WAVES Motion Picture, MTI/Magic Lantern 1984 36 min., sd., col.
Depicts how television affects society. Uses case studies and interviews.

THE TELEVISION EXPLOSION Motion Picture, Timelife/Marlin 57 min., sd., col.
The past, present and future of American television is the subject of this Nova program. Includes the social impact and implications of the future.

A TV GUIDE, THINKING ABOUT WHAT WE WATCH Motion Picture, CF/Gordon Watt 1978, 17 min., sd., col.
Explores television shows and commercials to question the values and realities presented on the television screen.

TV, THE ANONYMOUS TEACHER Motion Picture, ECUFLM/Marlin 1976 15 min., sd., col.
Television has a strong influence on children. This program interviews experts who are concerned with the effects.

MEDIA IN EDUCATION AND DEVELOPMENT, 18:1, March 1985

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Microcomputers in the School Media Center

by L.F. (Len) Proctor, Ph.D.

Rationale

There are at least three good reasons why teacher librarians, media specialists, and classroom teachers should be knowledgeable about the use of microcomputer technology in elementary and secondary school systems.

First, within the context of the school environment, the media center has traditionally been seen to be the logical place to assemble both the required print and non-print resources needed to support the school curricula. Microcomputers have hardware components. These components are subject to the same concerns of acquisition, utilization and maintenance as other educational media. Similarly, microcomputers have software components (programs) which are subject to the same concerns of selection, acquisition, organization and utilization as print resources.

Second, when the recent advances in electronic components and the attendant advances in mass storage technology, are combined with communications advances, this new technology will change the way that media centers operate and interact with their clients and teachers interact with their students.

Third, with the advent and ready availability of the microcomputer to the consumer in the marketplace and the pervasiveness of microcomputer utilization in science, business, and industry; the current impact of the microcomputer on education is only beginning to be felt. Educators in general and media specialists in particular will have to come to terms with this new educational innovation. The most important question to be answered here is, "to what use will this innovation be put?"

There are at least three answers to this question. In the first case, there is a need to teach "about" computers, ie. computer architecture, computer programming and computer systems. Courses of this nature would be necessary for teachers who will be responsible for teaching computer science in the schools. In the second case, there is need to teach specific content "through" the use of computers, ie. the use of computers by all teachers at all grade levels as an audiovisual device which is useful to facilitate the teaching/learning process. In the third case, there is a need to teach "with" computers, ie. use of computers as an extension of one's own capabilities or as a personal productivity tool.

For example, word processors can facilitate the creative writing process because they make the process of successive revision relatively painless. Telecomputing can open up new avenues of communication and remove the barrier of distance between the user and the source of information. Database managers can extend memory capabilities and promote the refinement of searching and sorting skills. Finally, spreadsheets can simplify many tasks that require the use of mathematics.

Focus of the paper

The purpose of this paper, therefore, was to review current thinking, on the subjects of microcomputer hardware selection, microcomputer software selection and the utilization of microcomputers in the school media center. The results of a survey of the professional literature related to the automation of school library services, K-12 has previously been reported by Twaddle (1979). Givens (1981) conducted a survey of media centers throughout the U.S. to determine how computers are being utilized by these centers, the levels of satisfaction with present services and whether or not the services being provided by the computer are cost effective. Both these studies however have concentrated their efforts largely on main-frame systems. This paper focuses, therefore, on the microcomputer.

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HARDWARE SELECTION

One of the most objective assessments of the issues related to the selection of microcomputer hardware was the summary of a Minnesota Educational Computing Consortium (MECC) study presented by Haugo (1981). While his report was concerned specifically with the management applications of microcomputers, the same basic considerations are still pertinent to any other applications situation. With regard to the actual specification of hardware and software for media center application, John Blair, Computer Applications Librarian for the Medical Sciences Library at Texas A & M University, has presented one of the most lucid explanations of the world of microcomputers. Blair's descriptions have appeared in a series of articles in the journal, **On-line.**

The components

Briefly stated, a microcomputer consists of a "black box" that is made up of a number of elements. The black box portion contains the central processor (CPU), logic and memory units. Technical arguments abound with regard to how fast the "brains" (CPU) of the microcomputer should be able to operate and how large the memory size should be. After extensive investigation carried out by MECC, Haugo (1981) reported that MECC concluded the processor speed of the current crop of microcomputers, when compared to large mainframe computers was slow, but for most of the potential daily applications in the school setting, speed was not a critical factor, and therefore adequate. As far as memory size was concerned, 32K of random access memory (RAM) was estimated to be adequate for most of the potential practical applications. However, it was noted that the memory size can easily be increased to 64K or 128K at minimal cost. This minor change would result in decreased processing time for some applications that required the performance of extensive sorting routines.

To be useful, in addition to the "black box", a microcomputer must have a way to be communicated with, and a way to display the results of its operations. These devices are known as peripherals or input and output modes. The most common input mode is the typewriter keyboard which is often seen directly attached to most microcomputers. However, several other input modes are possible and desirable. They may take the form of a disk drive, upload/download connection from another computer, light pen, graphics tablet, game paddle and/or microphone. While cassette tape systems have been used in the past as storage devices, they have almost totally fallen by the wayside because of their slowness and their linear approach to the handling of data.

The most common output mode is the television screen which may also be permanently attatched to the "black box" or appear in the form of a standard television set. Disk and cassette output storage modes are also available. In addition to these peripherals, a hard copy printer can be very useful.

In any event, while it is possible to debate the merits of each of these devices at length, there is no way in which to specify which microcomputer system should be purchased for a media center because it "depends on your special needs" (Sharp and Smith, 1980, p. 20). The important point to be made here is that in terms of hardware selection and availability, suitable equipment exists which can be assembled to meet specific needs at an affordable cost.

SOFTWARE CONSIDERATIONS

The school media specialist who is thinking about starting to use a microcomputer (or who has been presented with one), will quickly discover that programming or creating the software for a microcomputer is not a trivial task. Just as in the production of a television program, a motion picture or slide tape set, the creation of each item of software is time consuming and expensive. The wise microcomputer user will follow the first law of instructional development: first, adopt; if you can't adopt directly, then adapt; and only if you can't adopt or adapt, develop.

Compatibility

The selection of commercially prepared and packaged software (programs) for microcomputers presents some special problems for the school media specialist. As Woolls and Loertscher (1982) point out, there is no single, widely accepted set of manufacturing standards in existence. This means that the software is not interchangeable. It cannot be used on any machine in the same way that a cassette audiotape will function in any manufacturers' hardware. "This variety of hardware dictates equal variety among software and predicates the first criterion for the selection of microcomputer software — the programs you purchase must be compatible with your computer" (Woolls and Loertscher, 1982, p. 22). The implication is, that for the present time at least, the software for the microcomputer is not only applications dependent, but it is also machine and/or system dependent.

Preview privileges

The situation is further complicated by the fact that traditionally, media center specialists have been able to order non-print materials with "on approval" privileges. It would only seem natural to expect the same process to occur when searching for microcomputer software. However, as reported by Glotfelty (1982), this was not to be the case. Media specialists and librarians "have found that not all computer producers are willing to submit educational programs for preview. Printed reviews are helpful, but today's tight budgets necessitate checking the appropriateness of materials for the needs of each situation before purchase" (Glotfelty, 1982, p. 91).

Summary

To conclude this discussion of hardware and software selection, it has been suggested that given specific parameters, several appropriate pieces of hardware will arise to fit the needs assessment of any situation. Secondly, it has been further suggested the real essence of the microcomputers for education involves the programs that run on the machines. "The tricky decision to make is what software (program) is best for a particular application", given the machine dependent nature of the available commercial software (Blair, 1981, p. 91).

Many individuals, when first investigating the use of microcomputers are likely to be most impressed by the equipment, and overlook the fact that in the long haul, their main investment will be in software. As computer needs grow, more software is purchased. The cost, along with the cost of training "will probably dwarf the cost of the hardware" (Falk, 1981 p. 29).

The remaining portion of this paper has outlined several ways in which microcomputers may be used in a media center and has identified some commercially available off-the-shelf software that would fulfill the needs of a specified application.

APPLICATIONS PACKAGES

"What libraries do often boils down to hierarchies of file management, namely, where a certain item is located on the shelf and in the ordering, circulation, or processing procedures" (Blair, 1982a, p. 19). "A micro can handle almost any textual transaction involved in library operations" (Blair, 1981, p. 91). But according to Lundeen (1980), "In the area of applications software, there is a vast array of programs being marketed for a wide range of applications, but there is little available that is written specifically for libraries" (Lundeen, 1980, p. 184). However, there are a number of small business accounting programs, for example, The Controller by Apple, that can be readily adapted to process order initiation, order receiving, and the inventory control of instructional resources.

Data-base creation and management packages

Operating at the most elementary level, Sugranes (1980) was able to use a free, public domain, Apple II user program called File Cabinet to create a bibliographic database which contained a listing of the holdings of her media center. Students were able to gain access to the entire collection by author, title and subject.

This program was also used to produce curriculum related bibliographies for the teachers in addition to being used to control the entire AV equipment inventory. From a listing of media center resources, it could easily be determined what projects were checked out to which particular department.

A more sophisticated version of the same type of program is known as the DB Master, which is distributed by Stoneware Microcomputer Products. This program, as described by Blair (1982d), is an excellent tool for the school media specialist. It incorporates powerful report generation facilities and versatile screen formating commands. Multiple primary and secondary search keys for both printing and displaying records are easily designed by the first-time user. The documentation is helpful in that it has many tutorial exercises available. These are important factors that make the design of one's own files and file management systems a fairly easy task.

The most elaborate circulation system described in the literature was the system devised by Betty Costa (1981), (Costa and Costa, 1983) who is a library media

specialist. Both of the previously described systems, when used to set up an on-line catalog for a large school media center, could run into storage capacity or convenience problems in this application. To avoid this concern, Costa's system has taken advantage of the larger storage capacity of a hard disk system. However, a customized program was required to handle the operation of the system. While this was not difficult to obtain, it makes this system one step removed from the off-the-shelf packaged program.

Each of these examples demonstrates the file management capabilities of the microcomputer. When used correctly, they can update a circulation file, an acquisitions file, an overdue list or an equipment inventory listing and generate the revised versions of the lists with a minimum of clerical effort. In addition, special utilities packages for programs such as DB Master will generate management statistics and, if it is required for reporting purposes, turn these statistics into computer generated graphs or charts.

Telecomputing

The electronic universe is in fact a community of computer users. The common denominator is the telephone line. Through that medium, mainframe, mini, and micro computers (and the people who own or use them) can "talk" to each other. Thus, anyone who owns or has access to any kind of computer may join the network by plugging into a telephone jack, turning on the equipment, and dialing a telephone number (Hurly, Laucht and Hlynka, 1985).

When viewed from this perspective, it can in fact be seen that today's online information industry has evolved from the remote data processing services that began in the late 1950's as a low-cost alternative to buying or leasing a mainframe computer because, in the pre-microchip era, only big government and big industry could afford to have their own on-site mainframe computers. While smaller organizations may have needed the power of that particular type of computer, cost factors made a time-shared system the only viable alternative. The result was the creation of a delivery mechanism, ie. a well-developed system of computers, specialized software, standards, protocols, electronic packet-switching networks, and other industry components capable of reliably transmitting information from one computer to another. Once the delivery mechanism was in place, it was only a function of time before individuals and companies began to find ways to use this system for something other than transmitting the day's banking transactions to a remote mainframe computer. Thus the only obstacle inhibiting the expansion of this embryonic network was the cost of the equipment needed to make use of the delivery mechanism.

The advent of the microcomputer permitted this obstacle to be overcome and subsequently, the electronic information industry began its period of rapid growth and development.

During this period of rapid growth and development, a bewildering array of systems and services have developed almost overnight. Observing the players jostling and jockeying for positions in the industry is a fascinating activity to watch, but a difficult situation to classify into a unified system for descriptive purposes.

Three databases however, currently fit into the description of the term "information utility". They are The Source, Compuserve and the Dow Jones News/Retrieval Service. Two main features serve to distinguish an information utility from other types of organizations. First, it offers a system of information retrieval that has been designed to be used by the average user rather than by a professional researcher. To serve the needs of this type of client, the database contains information on a wide range of subjects rather than indepth treatment of any one subject. Second, in providing access to a database, each utility also offers services. These services may include such things as electronic mail delivery, banking, shopping, real-time communication, game playing with other system users and the opportunity to write and run programs on the mainframe computers.

On the other side of the coin, encyclopedic database organizations offer the user access to "in depth" types of information. The major companies that fall into this category are DIALOG, BRS, and ORBIT. Each organization can be thought of as a convenient delivery system or gateway service that enables the user to search over 200 databases, covering everything from chemical formulas to dissertation abstracts, on-line. In this context, these companies are essentially information brokers. They strike a contract with an independent company that developed the database, repackage the information according to the needs of their particular system and offer it to the user on a fee for service basis. From the user's point of view, they are helpful, intermediary agents who handle all of the billing of telephone lines and computer time, customer services, and royalty arrangements with the database developers.

Decision-making aids

Strazdon (1981) has described the use of the VisiCalc program. VisiCalc is an electronic spreadsheet which is formatted like a matrix. The regular version can handle up to 63 columns and 254 rows. Extended versions are readily available. With this program, the user can type in labels, numbers and formulas at each intersection of the columns and rows. Once the matrix is set up, the program automatically does the desired calculations and either stores the results or displays them on the printer. With the VisiCalc program the user can add, subtract, multiply and divide values anywhere on the worksheet. It has a built-in library of functions such as sum, average, and repeat. Some of the applications of this program listed are tallying the number of volumes of books and audiovisual materials cataloged, the number of interlibrary loans transacted, and the various types of materials circulated.

Budget analysis can also be done. For example, the total expenditures to date and the percentage of the budget spent can easily be determined. Or, if it is desired, the expenditure on books and periodicals by department and subject, and the expenditure on non-print materials by department and subject can be derived. Perhaps an even more important capability is the ability to deal with "what if" questions when developing both short term and long term plans for the media center. For example, what if the media center receives a fifteen percent increase in budget next year, the rate of inflation is only five percent and the retail price increases at an average of only three and a half percent? How much more will be able to be purchased in categories a, b, and c? Idealistic? Perhaps, but it's food for thought.

Word management packages

A word processing system for a microcomputer is a program that permits the typing of normal text into the microcomputer which in turn is displayed on the screen. Most systems will permit the editing and printing of the text as hard copy in any manner desired by the writer. The text can also be stored on disks (or magnetic tape, if one has the patience) for an indefinite length of time. In essence, the program functions as an electronic "cut and paste" system. For the media center specialist, this feature alone becomes priceless for handling documents such as procedures manuals, guides, reading lists, holdings lists and bibliographies, all of which seem to be in need of constant revision. When the word processor is combined with a letter quality printer, letter perfect work can be produced, ready for the duplication process. "Even if the micro is never used in any mode except that of the word processor, efficient use in that mode alone can justify the cost" (Pratt, 1980, p. 19).

An appreciation of the popularity of word processing capability of microcomputers can be gained by even a cursory examination of the trade journals. For example the July-August, 1982 issue of **Peelings II** reviewed ten word processing packages which are available for the Apple II microcomputer alone. Today, there are in excess of 130 word processing packages for the Apple. Similar patterns are observable in virtually all the other popular brands of micro's.

TEACHING APPLICATIONS

If microcomputers are to be located in the media center, it is only reasonable to expect that some form of instruction relating to the use of this resource will occur. In fact, according to Davies (1979), "Today's school library media specialist is a teacher in the broadest sense of the term — in training, in certification, in attitude, in function, and in commitment. The responsibility of this position extends far beyond organizing and maintaining a media collection, important and basic though these services surely are" (Davies, 1979, p. 63).

Teaching about computers may follow two tracks, computer literacy and computing literacy. Computer literacy refers to students learning how a computer works and how to program a computer. **Computer literacy** is treated as an end in itself.

On the other hand, **computing literacy** refers to students learning how to use microcomputers as tools for the enrichment of their personal and professional lives. Computers are seen as aids to solving problems and extensions of human abilities such as memory. There is no reason why student volunteers in the school media center could not be taught to use any of the previously described file management or word processing packages to assist in the operation of the media center.

The teaching role adopted by the school media specialist will be a function of the educational environment, personal expertise, and enthusiasm. The media specialist may adopt the role of "teacher buff" (Grossnickle and Laird, 1981). In addition to providing regular services to staff and students, this assumed leadership role requires the devotion of a substantial amount of time, energy and effort to developing in-service training workshops for colleagues. Alternately, the media specialist may elect to ignore this new educational innovation. After all, Kemp et al. (1980) have observed that the track record for the adoption of media in the classroom has been littered with unfulfilled expectations. Similarly, given time, there is not any foreseeable reason why the microcomputer will not go the same route.

Somewhere, between these two extremes, a reasonable position exists. Tact and understanding however, must prevail. It is not unusual for the math or science teachers to consider the microcomputer their private domain. Business educators and affiliated disciplines may have similar views. Typing teachers have been known to complain that elementary students, who have become familiar with a microcomputer, already knew how to type prior to coming to high school (Vickery, 1981). Everyone knows that high school is the proper place to learn this skill — not elementary school! Following this line of reasoning, English teachers could have a field day berating anyone who promoted the use of "Dictionary" programs by students to correct the spelling of their themes, reports and essays. Heresy! Yes?

RECREATION

The drawing power of microcomputers for both young and old, has been demonstrated by such organizations as the Menlo Park Library in California. "The library reminds me of a poolroom of years ago because that was the local hangout for kids. Now they hang out at the computers" (Harvie, 1981, p. 604). This project began when a couple of local businessmen donated five micros to the library. By late fall, 1980, the National Science Foundation had been convinced to provide a $224,000.00 grant so that everyone in Menlo Park could have hands-on microcomputer experience.

"Although playing games was the most popular ComputerTown activity, users did spend eight percent of their time programming. Some children with previous programming experience refined games they had created, using ComputerTown as a test site where they could receive the advice of and support from other youngsters. High school students completed their programming homework and a few enterprising pupils created programs to tackle difficult math assignments" (Harvie, 1981, p. 604). Some children came to associate libraries with computers. Harvey reports their surprise at not finding micros in branch libraries. Similar experiences have been recorded by Vickery, (1981) and others.

As an isolated instance, the previous description is not important in itself. Rather, it is suggested that this is not an isolated case. Similar programs seem to be rapidly gaining in popularity both in North America and throughout the developed world.

Media center specialists should be knowledgeable in this area, not because it is popular, but rather as Rawitsch (1981) suggests because computers are "thinking" machines, and thinking is what education is all about. Second, many teachers believe that students learn best by doing and microcomputers can help us "do" more in the classroom, than ever before by simulating the actual outcomes of real world concerns. Third, computers make it easier to meet the special needs of students through individualized instruction. Finally, computers are bringing learning into homes at an increasing rate. Parents are beginning to demand similar opportunities for their children during the school day.

CONCLUSIONS

Given the nature of computers, their pervasiveness in science, business and, their current accessibility to the consumer market, their impact is only beginning to be felt. Educators in general and media specialists in particular will have to come to terms with this new educational innovation. The most important question to be answered by the media specialist is, "to what use will it be put?"

Several possible answers were suggested. First, microcomputers have great potential for being able to reduce the amount of time a media specialist has to spend performing clerical tasks. Secondly, a whole new area has opened up in which to develop expertise. Both computer literacy and computing literacy are likely to receive considerable attention in the foreseeable future. Finally, media specialists have a powerful motivational tool at their disposal. Perhaps, through interacting with the microcomputer and the "things" necessary to fuel this hardware, students will begin to view the media center as an important information source, rather than a place to be avoided.

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Microcomputers and Cognitive Development: The Need for Research

by Lois Baron

Introduction

The microcomputer is rapidly making its way into North American homes and schools. Microelectronics has created a tool with widely accessible, multifaceted capabilities. It can, for example, produce graphics that are very life-like in nature. Communication between the microcomputer and the individual operating it can be an active, interactive process. The microcomputer can even bring to individuals capabilities of a non-computing nature. These are only a few of the functions of the microcomputer that have softened the 'computer' in its name and made it a device capable of being used by even very young children.

The pace of the microcomputer's introduction into society, and particularly into schools, has been very fast. Researchers must grasp the moment *now* to study the use and development of this new, sophisticated medium. Doing so at this time may influence the direction of microcomputers in education. It will, hopefully, prevent misuse and misunderstanding of the effects of this technology on children, particularly on their intellectual and emotional development.

It was almost three decades after television's inception before any substantial research efforts were made in the field of children and television. The research came "after-the-fact", at a time when people were concerned that children were being manipulated by the medium. The television industry had already charted its course, and the question was how could it be changed.

Research and development in the field of microcomputers and children must take advantage of the infancy stage of the field.

Standards have not yet been set. Unlike what has occured in the television-children domain, policy decisions regarding the use of microcomputers in schools can still be made as a result of investigation into this area. Research and policy can progress simultaneously and would be a positive service to education.

In the United States, microcomputer use is already seen as "scattered, random among schools, districts, and states, and unincorporated into long range plans" (Dickerson & Pritchard, p. 7). In a 1974 survey, 26% of all U.S. schools used computers for instructional purposes (Molnar, 1981). It had been predicted that by 1982 the figure would jump to 70% (Diem, 1981), and that the percentage would increase steadily throughout the decade. This appears to be a universal phenomenon. It prompts concern that education (research and practice) must seize its chance now to get in on the ground floor of this period of development of sophisticated technology in the schools. Bourgue (1982) predicts that "computer literacy tomorrow will be almost as important as reading skills are today" (p. 47).

In the following sections I will consider, first, creative problem-solving in general; second, computer programming and problem-solving; and third, the interface between humans and technology. Finally, I will discuss today's urgent need for computer literacy.

Creative Problem Solving

One of the main goals of education is to take theories of learning, cognition, and development, and to implement them into curriculum designs that allow children to develop higher order mental skills and strategies (Winn, 1981). The interaction between teaching and learning is supposed to be a creative process between the teacher (be it a person or a machine) and the student (Rainsberry, 1975).

Theories of learning, instructional design, and psychological development have not only contributed to our understanding of the information processes involved in the learning environment, but have also assisted in creating more optimal conditions in which learning and creative problem-solving can occur. Whichever school of thought one wishes to borrow from (be it Bloom, Polya, Bruner, or Gagné) the higher order skills involved in problem-solving generally include such processes as planning, abstraction, generalization, and understanding. Piagetians believe that children ought to develop these skills in an "active" way. Piaget investigated the acquisition of knowledge and generally concluded that to develop cognitively, children must internalize the structure of events they come into contact with. The internal representation characteristics of any given child depends upon the stage of development and the already existing schemata or mental operations within the child's own cognitive structure. An essential point made by Piaget is that there must be constant give and take between external stimuli and the child's own conceptions of the world — the child is not seen as a passive learner in the Piaget learning context. The environment is set up to encourage cognitive development and formal reasoning skills.

Vygotsky (in Levin & Kareev, 1980) speaks of a similar concept — the idea of 'proximal development'. Essentially, Vygotsky reinforces Piaget's thoughts on the importance of creating learning environments that allow for interplay between external and internal processes. It is the task of the psycho-educational researcher and instructional designer to investigate the nature of these processes and to attempt to create suitable learning environments. These will be environments where maximal learning can take place and where children themselves not only have opportunities to "represent what they have come to know" (Eisner, 1982, p. ii), but can also begin to understand their own thought processes. This latter self-regulatory skill (metacognition) is developmental in nature and is seen as a positive feature of cognitive skill transfer (Flavell, 1976).

The above is a cognitive approach to teaching and learning. Its main premise is the "support of the *internal* processes of learning" (Lipsitz, 1982, p. 11). This support, it must be stressed, is given within a context of active involvement on the part of the learner. It promotes strong intrinsic motivation and the development of such creative thinking skills as discovery, formulation of problems and generation of ideas, and evaluation.

Eisner (1982) states that what we seek in education is "to liberate rather than to control" (p. 56). He suggests that we must introduce children to a variety of forms of representation in order to develop in them the necessary skills of literacy. Children must, he says, be allowed to manipulate and have opportunities to use various media of expression in order to develop cognitively and inventively.

Programming and Problem-Solving

The computer can play an extremely valuable role in the encouragement of a child's cognitive development. It provides, for example, the opportunity to formulate ideas, to generate solutions to problems and to evaluate these solutions. Because of the nature of the machine, these processes promote formal reasoning.

As educators recognize the need to go beyond drill and practice exercises with the computer, emphasis is being placed on teaching the skills of programming to children. Doing so accomplishes the goal of making the computer the intellectual tool of the child rather than vice versa.

With the advent of inexpensive and extremely portable microcomputers, the possibility of teaching programming skills to children of all ages is readily available. A truly 'interactive' experience between computer and child allows the child to write simple programs, invent, and problem solve. Such creative interaction leads to both the support and development of information-processing capabilities (*not necessarily their acceleration!*) and in turn to researchers' better understanding of the thought processes of children under such teaching-learning circumstances.

Research possibilities in the cognitive domain are numerous. However, examination of the various ways of putting the microcomputers into the hands of children must be done first. Research and development is badly needed to refine and develop programming languages that children can learn to use. Ershov (1981) stressed this latter point in his keynote address to the World Conference on Computers in Education.

Kahn (1973) presents a model for interactive computer programming as problem-solving. According to Kahn, programming consists of two main processes, 'restructuring' and 'coding'. Essentially, interactive programming becomes a form of communication between individual and machine. The individual develops thinking skills through planning and solving problems. These tasks involve flowcharting, sequencing, and debugging skills which when exercised support the development of the individual's information-processing capabilities. Kahn supports teaching children programming because the nature of the system "makes the process of thinking concrete and visible to the child" (p. 8). This kind of active, 'hands on' approach to teaching young children is certainly consistent with Piagetian thought.

Programming a computer supports many of the intellectual and motivational components which make learning a positive developmental experience for the child. It involves many problem-solving techniques that not too many other tasks can offer children, and it does so in an exciting way. The advent of microcomputers has allowed educators to put the tools of creative experimentation into the hands of children. But we must go beyond prepared computer programs for children and teach *them* to author their own. As Critchfield (1979) says, "to deliver instruction via computer programs, but not teach students to program themselves would be like reading books to students, but never letting them learn to read for themselves" (p. 25).

Seymour Papert and his research group at M.I.T.'s Artificial Intelligence Laboratory have demonstrated that one can borrow from the schools of psychology, epistemology, education, and computer science to develop in children the cognitive skills of computational logic and other problem-solving strategies. His research team has developed a programming language called LOGO which even very young children have learned to manipulate. The work of the LOGO group is documented in numerous 'LOGO Memos' which support the general aim of promoting problem-solving skills through programming (Papert, 1971a, 1971b, 1971c, 1973, 1976; Papert & Solomon, 1971; Solomon, 1975; Solomon & Papert, 1976; Goldstein & Miller, 1976). "Two major themes (highlight the LOGO work) — that children can learn to use computers in a masterful way, and that learning to use computers can change the way they learn everything else . . ." (Papert, 1980, p. 8). Watt (1982) describes four projects which are in the process of examining the use of LOGO to teach cognitive skills such as problem-solving. The "Lamplighter Project" is particularly interesting. It has demonstrated that even first and second graders can learn to write simple programs. As Watt reports, and this may be as important a result of the experience as learning to program, "competition, cooperation, communication, problem-solving, programming, geometry, and artistry all happened at once" (p. 132).

Most of the research on LOGO, children, and microcomputers appears to be still in the developing stage. There is definitely room for more research of this kind. Not only is there proof that even young children have the ability to learn from the microcomputer, but it is also clear that we can learn about children's learning processes by having them "experiment" with the technology.

The Interface Between Humans and Technology

What has been discovered from the schools of cognitive-developmental psychology and education (in terms of theories of teaching and learning) and what has evolved as a result of research in certain laboratories of computer science (particularly in the area of artificial intelligence) both have important contributions to make in terms of our understanding of the development of literacy and the cognitive skills that allow individuals to make sense of stimuli around them. There are definite similarities between facets of data processing (including searching, sorting, deleting, and summarizing) and the human processes of problem-solving. Children who are involved in problem-solving tasks not only develop better understanding of their own mental abilities, but also develop insight into the functioning of a technology whose 'magic' they can learn to control. This is a circular process. It recognizes that increased skill with the computer will develop the cognitive structures of those children who come into contact with the technology. As Seymour Papert (1980) states, "computer presence could contribute to mental processes . . . influencing how people think" (p. 4). Papert continues by saying that the idea is that of giving children "objects to think with" (p. 11) — cognitive tools. This is the key to developing a truly creative and stimulating learning situation. Not only are children able to practice their problem-solving skills, but the computer makes them aware of their own thought processes through immediate feedback (Kahn, 1973).

A truly 'interactive' encounter with the computer provides the type of active learning environment of the Piagetian school. Here the child proceeds at his/her own pace and level of development, calling upon already-existing mental operations and developing new ones, building analytical skills, and 'learning about lear-

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ning'. Computer logic and human logic do not necessarily become one, but they complement each other as the child grows and learns.

The Need for Computer Literacy

There is rarely an article in the field of computers and education that does not stress the need to supply children (and ultimately society) with knowledge about computers. The advent of microcomputers has made this an even more urgent need. "The literature predicts that computer literacy will be the next crisis in education . . . the potential for computer illiteracy poses a challenge to the educational community which must *not* be ignored" (Dickerson & Pritchard, 1981, p. 7).

Molnar (1981) defines computer literacy as "what a person needs to know and do with computers in order to function competently in our society" (p. 27). It is the 'do' that is the all-too-often forgotten element of computer literacy — a function that is strongly stressed in this paper. Watt (undated) sees one category of computer literacy as being that of learning to program — a skill of problem-solving, analyzing, and predicting outcomes.

The main issue here is that it is not sufficient to teach children *about* microcomputers; what the computer can do for them must transfer into what they can do with the computer (keeping in mind that the essential element is cognitive skill building). Computers may be a powerful 'tool' for learning, but they can also be a very effective medium of expression. When the latter goal is reached (through whatever instructional method one chooses to employ), the control is no longer in the hands of the technology, but rather in the hands of the child. Learning and thinking become active, creative processes controlled by the learner!

Designing such environments and taking into account cognitive-developmental and other individual differences is a worthy goal for educators in the field of microcomputers and education. If children are denied the opportunities to create, to program, to 'represent' through such a form of representation as a microcomputer, then they are being denied the chance to develop creatively and education will be losing an opportunity to use one of the most sophisticated media of expressions available. "Educators must take the lead in showing how this can be done by exploring the many possible ways in which computer use can enhance subject matter learning and student creativity" (Critchfield, 1979, p. 18).

Conclusion

There is strong theoretical support for investigating further the interaction between computers and children. As emphasized in the introduction, researchers must seize the opportunity now. Microcomputers are everywhere, and it is our responsibility to set the stage for their sound use in the school system. We can only do so through research studies. There is now a real dearth of work in the microcomputer and children area. There are many questions to be answered: What can these sophisticated tools offer children and in turn what can young learners bring to this new mode of representation? At what age can microcomputers be introduced to children? At what age can children successfully learn simple programming techniques? Solving such research questions while keeping in mind the notions of learning, development, and instructional design as previously outlined, will in turn serve both education and society in general. In his report to the National Institute of Education, Hall (1981) called for more research into what children can do with computers. Such research is necessary in order to establish policy strategy. This need for research has been expressed internationally as countries recognize the impact of microcomputers on society and the need to establish guidelines for their introduction and use in schools.

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the Commission is confident that the policy will encourage the development of these services and will enhance the variety and broaden the scope of the Canadian broadcasting system for all Canadians'' said CRTC Chairman André Bureau.

''The Commission was encouraged by the very positive contribution of all parties and the depth of the discussion at these hearings. The spirit of cooperation between all levels of the public and private sector was of great assistance in the Commission's understanding and appreciation of the issues involved. In this regard, the Commission acknowledges the participation and support of the Honourable Jack Murta, Minister of State for Multiculturalism, to the success of this consultation''.

On October 1 1984, the Commission called for public comments on ''A Proposal for an Ethnic Broadcasting Policy for Canada''. This call was in response to a growing demand to increase ethnic broadcasting services, the use of new communications technologies, the scarcity of broadcast frequencies, the limited channel capacity of some cable systems, and the evolving nature of the Canadian broadcasting system. Further to the call the Commission held regional public hearings in Vancouver, the National Capital Region and Toronto on 12, 19 and 26 March respectively. The Commission received submissions from 107 parties of whom 57 appeared at the hearings.

New Publication

Film Canadiana 1983-84, Canada's national filmography, has been published by the National Library of Canada, the National Film, Television and Sound Archives, the National Film Board of Canada and the Cinémathèque Québécoise. This authoritative catalogue includes bibliographic data on over 2500 Canadian films produced in 1983 and 1984, a variety of useful indexes (subject, director, producer, production company, feature films, coproductions), and an indespensable directory of Canadian producers and distributors with up-to-date addresses and phone numbers for over 1500 film organizations.

Film Canadiana is an essential reference source for all organizations and individuals concerned with Canadian film. Direct orders and payment ($20/catalogue, plus provincial sales tax, if applicable, payable to the Receiver General for Canada) to: Customer Services, National Film Board of Canada, P.O. Box 6100, Station A, Montreal, Quebec, H3C 3H5.

Fifth Canadian Symposium on Instructional Technology

The Fifth Canadian Symposium on Instructional Technology will be held May 5-7, 1986 in Ottawa. The theme is ''Computer-Assisted Learning — The Next Five Years.'' Topics will include expert systems, innovations, non-traditional approaches, retraining and skills upgrading, technology transfer, CAL today and in the future. Sessions include presentations, poster sessions, equipment displays and demonstrations by manufacturers. The conference is sponsored by the Associate Committee on Instructional Technology of the National Research Council of Canada. For further information contact L. Forget, Conference Services, National Research Council of Canada, Ottawa, Ontario, K1A 0R6. Telephone (613) 933-9009.

Association of Canadian Publishers

The Association of Canadian Publishers has just announced publication of the DIRECTORY OF CANADIAN PUBLISHERS IN EDUCATION.

The directory profiles thirty outstanding Canadian publishers currently active in the educational field, publishers of all sizes, both general and specialized, and from all regions, who are committed to producing quality learning for all ages across the country. The wide range of learning resources produced by these companies is impressive, and addresses the need for both core and support materials for many disciplines and at all levels.

Canadian educators have demonstrated their commitment to using Canadian learning materials in our schools. The Association of Canadian Publishers has responded to this commitment. The DIRECTORY OF CANADIAN PUBLISHERS IN EDUCATION will be a valuable resource for educators in Canada. For further information contact Debbie Rogosin at the Association of Canadian Publishers, (416) 361-1408 or write 70 the Esplanade, 3rd Floor, Toronto M5E 1R2.

LEADERSHIP AWARD

ASSOCIATION for MEDIA and TECHNOLOGY in EDUCATION in CANADA

AMTEC Leadership Award

The premier award given by AMTEC is the Leadership Award, a handsome engraved gold medallion. There may be no more than two recipients in any one year, and it is given in recognition to outstanding service in the field of educational media. Following are the general criteria for the award:

1. The nominee must have been active in the educational media field for 10 years or more.
2. The nominee may have been active at either local, regional, national or international level.
3. The award may be presented to one who is active, retired or deceased.
4. Nominations may be made by any member of AMTEC. However, the names of two other supporting nominees are required.
4. The nomination must include a brief biographical sketch of the nominee as well as any other information which will be useful to the selection committee in making their decision. This should include the educational background and the reasons why the nominator feels the award should be made.

Presentation of the award(s) will be made at the AMTEC Annual Conference Awards Function. This will be part of the annual conference in Toronto in June 1986.

Nominations must be submitted to the awards chairman by February 10, 1986. The initiator of the nominations is responsible for introducting the recipent at the annual conference. Address all nominations to:

David MacDougall
Director of AV and TV Services
Sheridan College of AA & T
1430 Trafalgar Rd.
Oakville, Ontario L6H 1L1

L'ASSOCIATION des MEDIA et de la TECHNOLOGIE en EDUCATION au CANADA
ASSOCIATION for MEDIA and TECHNOLOGY in EDUCATION in CANADA

The Educational Media Producers and Distributors Association of Canada

L'Association des Producteurs et distributeurs du media d'education du Canada

The AMTEC Achievement Award Call For Nominations

The AMTEC Achievement Award is presented in recognition of outstanding ability in promoting the use or creative development of audio visual media in the classroom in the kindergarten, elementary, secondary, post-secondary or training environments. The successful recipient(s) will have made a significant contribution to the learning process employing audio visual media in the classroom.

The AMTEC Achievement Award is sponsored by the Educational Media Producers and Distributors Association of Canada (EMPDAC). The following are the general criteria for the Award:

1. The Award is in the form of an engraved plaque or plaques awarded annually by AMTEC at the National Conference.
2. The Award can be made to up to 5 recipients per year.
3. Nominations may be made by any member of AMTEC or EMPDAC. Nominations are made by the nominator submitting a letter to the AMTEC Achievement Award Chairman. The nominating letter and accompanying documents should indicate the following:
   a. The name, address and telephone number of the nominator and the nominee.
   b. A brief biographical sketch of the nominee.
   c. A comprehensive description of the nominee's contribution including:
      i. The purpose of the contribution
      ii. Implementation and timeline details.
      iii. The utilization strategy and/or creative development of the contribution.
      iv. Evaluation of the success and/or results of the contribution.
   d. Names, addresses and telephone numbers of the three individuals who are familiar with the nominee's contribution and who are willing to act as references for the nominee.
4. The AMTEC Achievement Award's Committee is appointed by the AMTEC Board and consists of at least three persons one of which will be a present member of the AMTEC Board.

Nominations for AMTEC's 1986 Achievement Award should be forwarded with the documentation noted above to:

Barry Brown, Ph. D. AMTEC Achievement Award Chairman
Chairman, Department of Communications,
Continuing and Vocational Education
College of Education
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Canadian Journal of Educational Communications

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Complied by David Thirlwall

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AMTEC Leadership Award

The premier award given by AMTEC is the Leadership Award, a handsome engraved gold medallion. There may be no more than two recipients in any one year, and it is given in recognition to outstanding service in the field of educational media. Following are the general criteria for the award:

1. The nominee must have been active in the educational media field for 10 years or more.
2. The nominee may have been active at either local, regional, national or international level.
3. The award may be presented to one who is active, retired or deceased.
4. Nominations may be made by any member of AMTEC. However, the names of two other supporting nominees are required.
4. The nomination must include a brief biographical sketch of the nominee as well as any other information which will be useful to the selection committee in making their decision. This should include the educational background and the reasons why the nominator feels the award should be made.

Presentation of the award(s) will be made at the AMTEC Annual Conference Awards Function. This will be part of the annual conference in Toronto in June 1986.

Nominations must be submitted to the awards chairman by February 10, 1986. The initiator of the nomination is responsible for introducting the recipent at the annual conference. Address all nominations to:

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