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Computer Literacy: A Global Perspective

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Abstract: The advent of the Information Superhighway and the introduction of the personal computer into the classroom has changed the definition of computer literacy. In this paper, we want to examine aspects of computer literacy and present a new definition applicable to teacher education.

INTRODUCTION

The discussion of the Information Superhighway and the increased role of computers in all areas of life show how important it has become for children to be prepared for the fast changing world. It is also obvious that for children to be computer literate, their teachers must be computer literate as well. At the same time, the meaning of the term "computer literacy" appears to be changing as fast as computer technology itself (see Duckett, 1992).

Since 1992, we have been involved in studying various aspects of computer literacy and its application to teacher education (Mitchell & Paprzycki, 1993; Paprzycki, Mitchell & Duckett, 1994). In this paper we wish the results of our current study on the perception of the role of computer literacy as it relates to teacher preparation and discuss the implications these results present for teacher education.

SURVEY METHODOLOGY

During our studies, we took advantage of the increasing use and availability of global computer networks. We used selected listservs to disseminate our survey questionnaires. To increase the number of responses, data was collected twice (during early fall, 1992, and late spring, 1993). Because of the length of the survey, it was split into two parts with the first part being sent to the selected listservs and the second part being sent to interested individuals. A detailed description of the research methodology has been previously discussed (Mitchell, Paprzycki, & Duckett, 1994).

SURVEY RESULTS

A total of 76 individuals from 12 countries (Australia, Brazil, Canada,Germany, Ireland, Israel, New Zealand, Poland, Puerto Rico, South Africa, Turkey and the United States) responded to the first part of the

survey; 69 responded to the second part of the survey. Fifty-eight of the 76 participants were teachers or lecturers. Sixty-five were involved at the university or college level with an average of 17 FTE in the various departments. An average of 5 FTE were involved in teaching "Computers in Education" issues courses. 52 of the participants had some form of training with computers or with "Computers in Education" issues.

The respondents indicated that there are limited requirements for individuals to be computer literate prior to becoming certified. Nineteen of the respondents indicated that there was a computer literacy requirement for teacher certification; 15 indicated that computer literacy was at least recommended. Twenty-one indicated that a computer literacy requirement was not being considered at this time.

These results do suggest that this requirement is increasing or that more programs are requiring/recommending a computer literacy element in the teacher certification process. This result is also corroborated by the data in Table 1 where the clear concern about computer literacy is indicated as part of

Table 1 Concerns for Computer Literacy

Level of concern	Great concern	of some concern	concern	little concern	no concern	no answer
in general	26	22	11	12	1	4
as part of teacher education	18	23	11	14	2	8

teacher education and even more so as a general education requirement.

Participants in the study were asked to indicate the degree of their current situation with regards to the learning of skills and/or knowledge of the subject as it is currently being taught and how they would prefer it to be taught. The results indicate that there is a shift from a marginal inclusion of computers in the curriculum to a major incorporation of materials (see Table 2).

Previously, we determined that the actual definition of computer literacy depended on who made the definition and in what context the definition was being made. In the second part of this study, we sought to identify the specific parts of the computer literacy definition. As indicated in Table 3, respondents felt that computer usage and the inclusion of computers into the overall curriculum is a low priority at the present time. Respondents also indicated that there should be a high priority on such usage. The results also suggest that part of this curriculum should be prior to pre-service teacher programs, i.e., the general education curriculum. Finally, with respect to teacher education programs, the results suggest that there should be a shift from the development of an understanding of the computing process (programming languages and the physical setup of computers) to one of an understanding of how to use computers in a number of settings. Also, teachers should be able to evaluate software for its application to education settings rather than being able to prepare or develop such software.

CONCLUSIONS

The recent discussion in the United States for an information superhighway will have a dramatic impact on teacher education. It has already been documented that many teachers have to turn to their students for information about computers. The results of this study suggest that the current emphasis on computer literacy does not match the direction computer usage will take in the coming years. The results also suggest that teacher education programs should focus on the development of skills that allow teachers to use computers more effectively and efficiently.

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Table 2 Computers as part of the curriculum

Key to responses

1 = No emphasis   2 = A little emphasis   3 = Moderate emphasis   4 = Strong emphasis

		Currently Taught				Prefer to See Taught			
		1	2	3	4	1	2	3	4
1)	The use of computers in education is incorporated into curriculum studies where applicable.	10	33	18	6	1	0	16	50
2)	Computer literacy as a requirement for teacher certification.	34	18	11	5	4	5	27	32
3)	Computer literacy as a required subject for pre-service teacher education.	30	23	4	10	4	5	20	38
4)	Students are encouraged to learn computer skills in their own time.	9	26	25	9	3	9	28	29
5)	Students are taught computer skills as part of course work.	10	32	18	9	2	2	19	46
6)	Students are encouraged to use computers whenever it applies.	13	28	19	9	1	0	16	52
7)	Students are encouraged to word process assignments in preference to turning in hand-written ones.	5	32	19	13	1	3	18	47

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Table 3 Components of Computer Literacy

		Currently Taught				Prefer to See Taught			
		1	2	3	4	1	2	3	4
8)	... influence and impact of computers on society.	21	28	18	0	4	11	33	19
9)	... software applications	8	25	24	12	0	5	24	39
10)	Requiring pre-service teacher education students to be computer literate upon entry into service teaching	19	25	17	7	2	2	24	39
11)	... setup computer equipment and load software.	21	29	11	8	1	10	29	29
12)	Knowledge and ability to use a computer network.	29	24	10	5	5	12	31	20
13)	Develop the knowledge of and the ability to use e-mail.	27	20	15	7	2	3	25	39
14)	Legal implications of software copyright abuse.	30	26	10	3	6	8	30	25
15)	Use of computers and software in the curriculum.	17	27	14	10	3	5	15	45
16)	Using computers as an administrative tool.	20	31	15	2	6	9	24	29
17)	A criteria to measure the competence of computer usage.	36	18	7	3	7	18	22	17
18)	The effect of computers on education outcomes.	27	32	7	1	7	18	25	17
19)	The use of the computer as a teaching tool.	18	27	18	3	4	3	19	39
20)	Using computers to solve problems.	23	29	12	5	1	4	32	31
21)	What is a computer and how does it work?	27	26	14	2	3	29	31	6
22)	Evaluation of educational hardware and software.	32	24	8	5	0	9	33	27
23)	Ability to use an authoring software package.	33	19	10	4	5	14	23	21
24)	Emphasis on the study of high level computer programming languages	19	25	11	13	12	14	15	25
25)	Documentation of instructional software	24	33	8	2	7	16	26	17
26)	The use of computer-assisted instruction.	23	35	8	0	6	10	36	14
27)	The use of computer-managed instruction.	24	24	11	5	5	13	31	15