

Student Teachers' Use of Computers During Teaching Practice in Primary Classrooms

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Abstract

It is argued that teacher readiness is crucial to realisation of national goals for educational computer use and that preparation of student teachers can make an important contribution. This study investigated student teachers' dispositions towards computers and their use of computers in primary school classrooms during a final year practicum. The student teachers generally viewed computers positively but lacked confidence in their knowledge of computers. While they were nervous about using computers in classrooms almost two thirds did use a computer at least once during a four week practicum and were more likely to do so if the supervising teacher modelled such use. The most frequently experienced problems in using computers were organisational. Based on the findings of this study it is suggested that preservice courses should focus on pedagogical issues associated with computer use and should provide students with opportunities to observe and practise classroom computing.

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Introduction

Acceptance of the presence of computers in schools is widespread, although there are differing views of the roles they might play. Papert (1993) has suggested that computer technology has a potential to produce a revolution in education similar in scope to the changes experienced in medicine during the past century. In a more cautious prognosis, Cuban (1992) noted the widespread and rapid adoption of computer technology by schools but commented on the variation in the use made of computers in classrooms and anticipated incremental change rather than revolution.

Even writers who have raised issues concerning the ideological dimensions of educational computing appear to have accepted the increasing presence of computers in schools as a given. Bowers (1988) argued strongly for teachers to accept responsibility for helping students to become reflective about the impact of technology on culture and Chandler (1990) drew attention to the need for teachers to be aware of the underlying ideology of computer tools while conceding the effectiveness of computers for certain tasks.

Against the background outlined above, and considering the increasingly common use of computers for business and domestic purposes, it is not surprising that governments have taken policy initiatives relevant to educational computing. In Australia, the assembled Federal and State Ministers of Education have recognised the need for development in students of skills of information processing and computing among a list of common and agreed goals for schooling (Australian Education Council, 1989). The Queensland Department of Education (1991) has identified the effects of rapid technological change on learning and teaching as one of eleven key issues for education and has listed as one of four goals for schooling that information technology for learning and teaching is integrated into educational programs.

Achievement of these goals requires that two conditions be fulfilled. Firstly, schools must have access to computer equipment for classroom use. Secondly, teachers must be adequately prepared to teach with and about computers.

Fowler (1992) reported that more than 80% of primary schools in a sample taken across six regions in three Australian states had computers deployed in classrooms. These results suggest that the first condition is being met to some degree.

Evidence from other studies supports this view but suggests that fulfilment of the second condition presents a more serious challenge. Russell (1992) found that student teachers returning from a practice teaching session reported that most of their supervising teachers had access to computers but that they had not observed the use of computers during their time in the schools. Prideaux (1989) suggested that, on the basis of available data, Australian schools are well advanced in an adoption phase in which computers are acquired but that implementation in which computers are used extensively, is not so advanced. He argued that "emphasis should be placed upon changing the practices of teachers to maximise the benefits the new technology can bring"(p. 87).

Other authors have observed that most teachers have "little experience or knowledge upon which to base their use of the computer in their classroom instruction" (Novak & Knowles, 1991, p. 43) and have suggested that inservice opportunities should address strategies for implementation of computing in schools (Haywood & Norman, 1988). While not denying the need for inservice, Bitter and Yohe (1989) consider that preparation of teachers for effective

computer use requires more time than is available in a typical inservice program and emphasise the role of preservice teacher education. Gooler (1989) supports inservice as the key to long-term development of teacher use of technology but argues that the "initial mindsets" of new teachers are formed in preservice courses and "may be carried over to the professional life of the teacher"(p. 20).

On the basis of the evidence cited above, it seems likely that the determining factor in achievement of the stated goals for computers in Australian education is the preparation of teachers rather than the supply of equipment. Moreover, preservice preparation appears to be crucial and consequently the computer-related preparation offered in preservice teacher education merits careful examination.

Gooler (1989) identified the principal conceptual issue in preparation of teachers for technology use as a focus on technology as content or as instructional tool. Other issues included how and by whom technology should be taught, the availability of resources and the ability of teacher educators to model technology use in the processes of instruction. The latter appears to be a key issue in the preparation of teachers and is itself dependent upon access to suitable hardware, software and training (Bitter & Yohe, 1989; Criswell, 1989).

Preparedness for computer use among student teachers entering courses has been investigated both in the UK (Summers, 1988; Summers, 1990) and in Australia (Wilson, 1990). In each of these cases, a substantial minority of students surveyed (24% to 43%) admitted to negative feelings about computers. A majority had little or no experience of computer use and fewer than 20% rated their knowledge of computers as better than 'little'. However, both British and Australian students agreed that knowledge of computers was 'important' for teachers. Fortunately, these studies reflect the position of the respondents at entry to teacher education courses where the potential exists for the issues to be addressed. Similar responses closer to graduation would be of greater concern.

If it is desirable that teachers have the capacity to make effective use of computers then it appears to be necessary for courses which prepare teachers to provide for development of the necessary knowledge, skills and attitudes (Summers, 1990; Wilson, 1990). One aspect of teacher education worthy of consideration in this regard is practice teaching which has been identified by both teachers and student teachers as a very significant component of their training likely to impact on later professional practice (Feiman-Nemser & Buchmann, 1985; Lanier & Little, 1986).

In reviewing research on beginning teachers' use of computers Downes (1993) found that, while personal confidence was not a key factor in computer use with children, an important factor was the extent to which beginning teachers had used computers with children or observed such use during their training. Case studies of beginning elementary teachers use of computers led Novak and Knowles (1991) to conclude that such use would be enhanced if teacher preparation programs included structured field experiences involving instructional use of computers.

Several studies have investigated use of computers by student teachers during teaching practice. Case study methods were used to investigate computer utilisation by preservice secondary teachers who had completed a required computer literacy course (Diem, 1989). The data indicated that while students had technological knowledge, lack of attention to computer use in methods courses had left them unable to effectively integrate computers into their subject areas. Moreover, the supervising teachers did not generally use computers or encourage student teachers to do so. Diem expressed concern at the lack of commitment by

university methods lecturers and cooperating teachers to developing skills in the instructional use of technology.

Dunn and Ridgway (1991a, 1991b) examined the use of computers during initial and final teaching practice sessions for the same cohort of 103 student teachers. The proportion of students using computers rose from 45% in the initial practice to 71% on the final practice with almost 80% of the latter qualifying as more than token usage. However, the authors consider this to be unacceptably low since 12% of responding students would graduate with no experience of using Information Technology with children and the experience of those who had used the computer was generally limited to a narrow range of applications. A recent study by Downes (Downes, 1993) investigated the use of computers by student teachers in practice teaching at three different stages in a preservice education course. There were significant increases in frequency of use during practice teaching later in the course, but there were still fewer than 50% of student teachers using computers in their final practice teaching session. The most significant factor influencing student teachers' use of computers with children was found to be the supervising teachers' use with children.

It has been argued that, while there is reason to believe that schools generally have the equipment to address significant government supported goals related to teaching with and about computers, teachers may not be adequately prepared for educational computer use. It is important to address this problem through inservice opportunities for current teachers, but it is essential that future teachers be adequately prepared through their preservice courses. Practice teaching is an important component of preservice teacher education and the use of computers within the practicum may offer both an indication of student teachers' preparedness for such use and an opportunity to influence future patterns of use.

Background

The principal objective of the study reported in this paper was to investigate the dispositions of final year student teachers towards educational use of computers especially as evidenced through their use of computers in their final teaching practice session. As an adjunct, the study sought to obtain limited information about the availability and use of computers in primary schools involved in the practicum.

All undergraduate students at the University of Southern Queensland are required to take the one semester (45 contact hours) course, Introduction to Computing. As experienced by Diploma of Teaching students, the course includes computer systems terminology and operations, use of general applications (word processor, database and spreadsheet) and an introduction to educational computing (classroom applications, educational software and Logo programming).

Teaching practice forms an integral part of the three year preservice Diploma of Teaching course and each practice teaching session is associated with a unit in the course. In the final semester student teachers undertake a 25 day practice teaching session in small, often isolated rural primary schools, where classes are most often multi-age composites. Students are expected to observe the supervising teacher for the first three days but thereafter are responsible for all planning and teaching in the class.

Methodology

Survey

Data were gathered using a questionnaire based on those used in earlier studies (Dunn & Ridgway, 1991a; Wilson, 1990). It comprised mainly multiple choice questions and was arranged in three sections.

Section A dealt with personal data about students and their experience of and attitudes to computers. Students were asked to respond to items about prior use of computers at home and school, feelings about computers, personal knowledge of computers, nervousness about using computers in classrooms, importance for teachers of knowing about computers and the potential of computers for educational use. The items in this section were based on those developed by Wilson (1990).

Section B related to the school and supervising teacher for the practice teaching session. Items sought responses about age and gender of teacher, type and size of school, availability of a computer in the classroom and use of the computer by the supervising teacher during the observation phase.

Section C related to the practice teaching experience. Items dealt with frequency of computer use with the class, types of software used, problems experienced, reasons for non-use of a computer and perceptions of gain in confidence with computers. Lists of software types, reasons and problems were based on those developed by Dunn and Ridgway (1991a).

Sample

A total of 170 final year Diploma of Teaching students participated in the practice teaching session in September 1991. In the week following return from the practicum the questionnaire was distributed, without prior notice, to students attending the scheduled lecture for the subject with which the practicum was associated. Time was allowed at the end of the lecture for voluntary completion of the questionnaire and 107 responses (63%) were returned.

Data analysis

Statistical analysis was performed using SPSS-X. Cross-tabulation was used to generate a range of two-way tables which permitted examination of the relationships between variables. Where questions allowed the selection of more than one alternative, the multiple response facility was employed. Tests of significance were performed using chi-square.

Results

Characteristics of student teachers

Most of the student teachers (86%) were female and 84% were under 25 years old. Of the 39 students (36%) who had access to a personal computer at home 26 (67%) indicated that they used it 'often' or 'very often'. Only 30 students (29%) had used a computer 'often' or 'very often' at secondary school and 40 (39%) had little or no experience of computers at school. The latter group were mainly mature age students who had completed secondary school before personal computers were widely available in schools.

Student teachers were asked to rate their current knowledge of computers from 'none' to 'very good'. Most (55%) placed themselves in the middle category, claiming 'little' knowledge of computers, 8% rated their knowledge of computers as 'very little' and 37% considered it 'quite good' or 'very good'. Evidently these student teachers perceive themselves as better informed about computers than those studied by Wilson (1990) who found that 34% perceived their knowledge as 'little' or 'none' and only 16% claimed more than a 'little'. However, it should be recalled that the student teachers in the present study are on the point of graduation and have had the benefit of a semester course on computers.

Despite their collective lack of experience with and knowledge of computers, 68% of the student teachers in the sample recorded their feelings about computers as 'fairly positive' or 'very positive' with only 16% expressing negative feelings. These results are more positive

than the corresponding values of 41% and 24% reported by Wilson (1990). Almost two-thirds (63%) of these student teachers regarded it as very important for teachers to know about computers and none thought it not important.

A majority of student teachers in the sample (62%) admitted to some degree of nervousness about the use of computers in the classroom although most of these (47% of the sample) were only 'a little nervous'. Those who admitted to nervousness were asked to select those reasons which applied to them from a supplied list. The results appear in Table I.

Insert Table I about here

That so many of the sample cited 'having to learn a programming language' as a reason for nervousness about using computers is a source of both surprise and concern. While the required computer course did include a substantial component of Logo programming, the balance of the course emphasised non-programming applications of computers such as word processing. The three most frequently selected reasons for nervousness are related to technical aspects of computing, suggesting that these student teachers view computing as overtly technical. It was noted with some relief that the common perception of computers being associated with mathematics does not appear to present a problem for these students.

Respondents to the questionnaire rated the potential usefulness of computers at different levels of education with the results shown in Table II. Most of these student teachers perceive computers as having potential to be useful in education at all levels, although it is evident that they expect the technology to be most applicable in the secondary school and of more limited value with very young children. This may be related to the results of Table I which suggest that many of the student teachers see computing as an area requiring a technical approach which is more likely to be accessible to older children.

Insert Table II about here

Characteristics of schools and supervising teachers

Of the schools to which student teachers were assigned for this practice teaching session, 32% were one or two teacher schools with multi-age classes and 72% of the supervising teachers were women. According to student teachers estimates, 64% of the supervising teachers were in the age range 25 to 39. Seventy-five percent of student teachers reported that there was a computer available in the classrooms where they worked.

Table III displays the frequency with which supervising teachers were observed using a computer with the class during the three day period before student teachers assumed responsibility for the class. Of the supervising teachers with access to a computer in the classroom a majority (64%) were observed using it at least once and a few teachers whose classroom did not have a computer managed to access one on at least one occasion. If these teachers are typical of the profession it is possible that anecdotal reports of computers lying idle in classrooms may be somewhat exaggerated.

Insert Table III about here

Computer use during teaching practice

Responses to a question about student teachers' frequency of computer use in the class during practice teaching are summarised in Table IV.

Insert Table IV about here

The proportion of non-users in this study (37%) is higher than the 29% reported by Dunn and Ridgway (1991b) for student teachers in their final practice teaching session. In that study

they recorded 65% of student teachers making 'reasonable usage' (defined as once a week to every day) but the results for the group in this study are disappointingly lower at 41%. The proportion rises to 50% if only those students who had access to a computer in the classroom are included but for the same group 26% did not use the computer at all. Surprisingly, almost one-third (31%) of students working in classrooms without computers used one at least once.

As might be anticipated, student teachers were significantly more likely to use a computer with the class if there was one available in the classroom ($c2 = 16.95$, $df = 5$, $p = 0.0046$) but the strongest influence was whether the supervising teacher had been observed using a computer ($c2 = 51.1$, $df = 10$, $p < 0.0001$) confirming the finding of Downes (1993).

Student teachers who did not use a computer in class were asked to select the reason(s) which applied from a supplied list. Table V presents the results. The pattern of responses is similar to that reported by Dunn and Ridgway (1991a) in their study of student teachers on initial teaching practice. However, the student teachers in the present sample had studied a core subject on computing and were on their final teaching practice. It is concerning to note the number who perceived themselves to be lacking in expertise or confidence for using a computer in class. Reasons selected by students showed no significant variation ($p < 0.01$) with factors such as availability of a computer in the classroom, use of a computer by the supervising teacher or gender of the student teacher.

Insert Table V about here

Those student teachers who had used a computer were asked to indicate the type(s) of software from a list with the results shown in Table VI. The general pattern of software types used was similar to that reported by Dunn and Ridgway (1991a, 1991b). Software use was examined for sensitivity to the same factors considered in respect of reasons given for not using the computer. The only significant ($p < 0.01$) link was between use of adventure games and use of the computer by the supervising teacher in the observation phase of the practice teaching session ($c2 = 9.4$, $df = 2$, $p = 0.0092$). This may be a result of work related to the game being initiated by the supervising teacher and continued by the student teacher.

Insert Table VI about here

It is encouraging to note that the most frequently cited types of software, word processing and adventure games, represent language based activities rather than the mathematical or technical focus often associated with computers. Taken together with the use of simulation packages the overall pattern of software use suggests a predominant use of computers for open ended activities involving higher order thinking rather than development or reinforcement of skills.

Table VII summarises responses to a question about problems which were experienced by student teachers who used a computer with the class.

Insert Table VII about here

Both studies by Dunn and Ridgway (1991a, 1991b) found that a majority of students (58% and 64%) experienced no problems using computers in the classroom. However, classroom management is identifiable as a key issue among the problems reported in those studies as it is here.

Discussion

On the basis of results obtained from the sample, it is possible to describe a typical student teacher from the cohort participating in the practicum.

She is about 20 years old. Although her experience of computers in her own schooling and in other contexts is limited, she has positive feelings about computers and considers that they have a good deal of potential for educational use especially with older children. While she thinks it is very important for teachers to know about computers she lacks confidence in her own knowledge. She is nervous about using a computer in the classroom because she believes that computers are complex and that using one will require her to learn a programming language.

For her final practice teaching session she is assigned to a small school in a rural area where she is required to take responsibility for all teaching in a multi-age class for four weeks. The supervising teacher is a woman about 10 years her senior who, in the 3 days allowed for preparatory observation of the class, uses the computer which is available in the classroom just once.

Despite her nervousness, our student teacher arranges for the children to use a computer in the classroom. The children work mainly with the word processor and an adventure game. The problems she encounters are mostly to do with organising the class to accommodate small groups of students working with the computer in turn.

Results obtained in this study are consistent with those published previously (Diem, 1989; Dunn & Ridgway, 1991a, 1991b; Summers, 1988; Summers, 1990; Wilson, 1990). While the total numbers of student teachers studied are still too small to permit generalisation, there seems to be a consistent pattern emerging and the typical student teacher described above would probably not be out of place in any of these studies.

If this picture is accurate then the positive attitudes of student teachers towards the classroom use of computers and their efforts to use computers during practice teaching are reason for optimism. However, there is cause for concern when it is observed that about one third of student teachers do not use the computer during practice teaching, up to half are unsure of their knowledge of computers, and two-fifths of those who used a computer during teaching practice associate use of computers with problems in classroom management.

Bitter and Yohe (1989) have suggested that adoption of technologies in classrooms will be more effectively promoted by preservice courses than by inservice. Gooler (1989) has argued for the importance of 'initial mindsets' of newly graduating teachers. The data from this survey suggest that the prevailing mindset of these student teachers is that computers are potentially of significant use in their professional practice but they are not sufficiently confident in their knowledge of computers or in appropriate ways to manage their use in the classroom.

It has been suggested that preservice teacher education courses should include elements which ensure that graduates have practical skills in the use of technology, a grasp of underlying principles which will facilitate adjustment to continuing changes in the technology available in schools and capacity to integrate technology with existing topics in a variety of subjects (Bitter & Yohe, 1989). Additional desirable elements include software evaluation skills and practical experience in classroom use of computers (Criswell, 1989). On the evidence of this study the list should be extended to include strategies for classroom organisation to ensure effective use of computers.

Results obtained in this study support the contention that the example and support of supervising teachers is an important component in providing student teachers with practical experience in the classroom use of computers (Criswell, 1989; Diem, 1989; Novak & Knowles, 1991). Students were significantly more likely to use a computer in the classroom if their supervising teacher had used the computer during the observation phase. If it is

desirable to encourage student teachers to use the computer then the use of computers for teaching may need to be considered as an additional factor in the selection of classrooms for observation or practice.

If newly graduating teachers are to contribute to the achievement of the government sponsored goals outlined in the introduction to this paper then improvements in the preparation of student teachers for computer use will be necessary. On the basis of the evidence presented in this paper, areas which might be worthy of investigation for such improvements include:

- ~ courses which focus on skills in the use of computers with emphasis on software, teaching strategies and management techniques for the primary classroom,
- ~ exposure of student teachers to modelling of the use of computers as aids to teaching by university faculty and by classroom teachers,
- ~ opportunities for student teachers to engage in practical experience of the use of computers for instruction.

Unless these pedagogical issues associated with classroom computing are addressed it seems likely that many student teachers will continue to avoid the use of computers in teaching practice and may repeat this pattern in the early stages of their professional life. If this is so the goals, as outlined, will be more difficult to achieve and pupils in schools will continue to be deprived of whatever benefits might accrue from the more extensive educational use of computers.

References

- Australian Education Council (1989) The Australian Education Council's Hobart declaration on schooling, *Curriculum Perspectives*, 9(3), pp. 12-13.
- Bitter, G.G. & Yohe, R.L. (1989) Preparing teachers for the information age, *Educational Technology*, 29(3), pp. 22-25.
- Bowers, C. A. (1988) *The cultural dimensions of educational computing: understanding the non-neutrality of technology*, (New York, Teachers College Press).
- Chandler, D. (1990) The educational ideology of the computer, *British Journal of Educational Technology*, 21(3), pp. 165-174.
- Criswell, J.R. (1989) Rethinking microcomputer instruction as part of teacher education reform, *Educational Technology*, 29(11), pp. 40-43.
- Cuban, L. (1992) Computers meet classroom; classroom wins, *Education Week*, (November 11), pp. 36 and 27.
- Diem, R.A. (1989) Preservice teachers and computer utilization: a case study, *Educational Technology*, 29(12), pp. 34-36.
- Downes, T. (1993) Student-teachers' experiences in using computers during teaching practice, *Journal of Computer Assisted Learning*, 9(1), pp. 17-33.
- Dunn, S. & Ridgway, J. (1991a) Computer use during primary school teaching practice: a survey, *Journal of Computer Assisted Learning*, 7(1), pp. 7-17.
- Dunn, S. & Ridgway, J. (1991b) Naked into the world: IT experiences on a final primary school teaching practice - a second survey, *Journal of Computer Assisted Learning*, 7, pp. 229-240.

- Feiman-Nemser, S. & Buchmann, M. (1985) Pitfalls of experience in teacher preparation, *Teachers College Record*, 87(1), pp. 53-65.
- Fowler, B. (1992) *The Use of Educational Technology in Schools*, (Toowoomba, Australia, University of Southern Queensland).
- Gooler, D. (1989) Preparing teachers to use technologies: can universities meet the challenge?, *Educational Technology*, 29(3), pp. 18-21.
- Haywood, G. & Norman, P. (1988) Problems of educational innovation: the primary teacher's response to using the microcomputer, *Journal of Computer Assisted Learning*, 4(1), pp. 34-43.
- Lanier, J.E. & Little, J.W. (1986) Research on teacher education, in: M. C. Wittrock (Ed.), *Handbook of Research on Teaching* pp. 527-569 (New York, Macmillan).
- Novak, D.I. & Knowles, J.G. (1991) Beginning elementary teachers' use of computers in classroom instruction, *Action in Teacher Education*, XIII(2), pp. 43-51.
- Papert, S. (1993) *The children's machine: rethinking school in the age of the computer*, (New York, Basic Books).
- Prideaux, D. (1989) From adoption to implementation: computers across the curriculum in Australian primary schools, *Unicorn*, 15(2), pp. 84-88.
- Queensland Department of Education (1991) *Development Plan 1992 - 1996*. (Brisbane, Queensland Government Printer).
- Russell, G. (1992). Hopes and disappointments: What computer educators can learn from the lessons of the 1980s, in: *Computing in Education Group of Victoria* (Ed.), *Australian Computing in Education Conference*, (pp. 154-161). (Melbourne, Computing in Education Group of Victoria).
- Summers, M. (1988) New primary teacher trainees and computers: where are they starting from?, *Journal of Education for Teaching*, 14(2), pp. 183-190.
- Summers, M. (1990) New student teachers and computers: an investigation of experiences and feelings, *Educational Review*, 42(3), pp. 261-271.
- Wilson, B. (1990) The preparedness of teacher trainees for computer utilisation: the Australian and British experiences, *Journal of Education for Teaching*, 16(2), pp. 161-171.

Table I. Student teachers' reasons for nervousness about using computers in the classroom (N=65)

(More than one response was possible)

Reason

No. of students %

Having to learn a programming language

39 60%

Having to learn computer terminology

30 46%

Computers are very complex

28 43%

Other reasons

11 17%

Having to acquire keyboard skills

10 15%

Computers are associated with mathematics

6 9%

Computers are a male dominated area

1 2%

Table II. Student teachers' ratings of the potential usefulness of computers at different educational levels (N=107)

Rating		
Infants		
Primary		
Secondary		
No potential		
1		
	6	5%
	1	1%
	2	2%
2		
	22	21%
	2	2%
	0	0%
3		
	33	31%
	6	5%
	1	1%
4		
	21	20%
	38	36%
	13	12%
A great deal of potential		
5		
	25	23%
	60	56%
	91	85%

Table III. Frequency with which supervising teachers used computers in class (N = 102)

Computer use

Computer available in classroom

Yes

No

Not at all

27

19

Once or twice

22

4

Every day

30

-

Table IV. Student teachers' frequency of computer use with class (N=104)

Response	No. of students	%
Not at all	38	37%
Once or twice	19	18%
Less than once per week	4	4%
Once or twice per week	16	15%
Almost every day	19	18%
Every day	8	8%

Table V. Student teachers' reasons for not using a computer (N=38)

(More than one response was possible)

Problem experienced

No. of students %

Lack of expertise in using a computer in class

11 29%

Lack of software suitable to the work being done

9 24%

Computer use was inappropriate for this class

8 21%

Lack of confidence in using a computer in class

6 16%

Lack of familiar software

5 13%

No computer was available

4 11%

The available computer was an unfamiliar type

3 8%

Other reasons

5 13%

Table VI. Types of software used by student teachers (N=66)

(More than one response was possible)

Software type

No. of students %

Word processor

44 67%

Adventure game

42 64%

Drill and practice

30 46%

Simulation

22 33%

Database

8 12%

Logo

7 11%

Spreadsheet

2 3%

Other software

5 8%

Table VII. Problems experienced by student teachers in the use of computers (N=66)

(More than one response was possible)

Problem experienced

No. of students %

Organising the class

27 41%

Lack of personal skill

24 36%

Computer not always available

14 20%

No problems

13 20%

Technical problems

8 12%