

OECD/CERI ICT PROGRAMME

A Case Study of ICT and School Improvement at School C

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1. Overview

School C is a public gymnasium (low-secondary school) comprising three grades (A, B and C) and it is situated in the capital of a border island of Greece. The parents are of medium low urban socio-economic background, typically in the civil service or teacher profession. School C is a big school since it numbers 294 full time students, 177 boys and 117 girls, split in three grades and 15 classrooms. Student group organisation is based on alphabetical order. The school budget sums about 8 million drachmas that come from the national budget. The gymnasium has an Athletic department that aims to facilitate training of young athletes in various sports. The athletic department follows the official National Curriculum but a different time schedule. The Head teacher and the two assistant Head teachers share the school function with 49 teachers both permanent (33) and temporary (16). The academic start school date is scheduled for the 10th of September and teaching school period finishes on the 22nd of May. The school weekly days are from Monday to Friday, and the fixed working periods- which last about 50 minutes each- are 30 per week. Soon after this date from the 25th of May till the 6th of June the students sit for their final examination. Actually, this is not the unique exam in which the students are assessed. They have already done the 1st and 2nd term formal exam in February which results rather the half of their annual assessment. The students formal assessment procedure follows the Ministry of Education guideline (National curriculum assessment) which prescribes that the students should be assessed: orally in classroom, 1st and 2nd term written exams, and final-total material-exam. There are different types of subject tests that the teachers design on the basis of assigned subject material. The main purpose of assessing students is firstly to perform either in oral or written exams their subject material acquisition in various stages of learning. Secondly, teachers can use formative and summative evaluation of the students performance as

feedback in developing tests which will improve their learning in the future.

The students' performance level was also searched in two subjects in one average classroom. In mathematics the average performance was 15,01 up to 20, with 09 min and 20 max. In Modern Greek language the average performance was 16,9 up to 20, with 10 min. and 20 max.

The school has introduced the use of ICT in three ways. First the school uses ICT for administrative purposes: that is for keeping students' records and processing statistical information about students. Second, ICT are used in the framework of Information Technology subject aiming to familiarise students with technology and computer applications. Finally, one tenth of teachers use ICT within their teaching aiming to enrich their teaching with modern multidynamic tools and facilitate the realisation of their teaching objectives. All students attend Information Technology session once a week, while students' access to the computer lab within the framework of other curriculum subjects differs much as this is related to specific teachers that use ICT in their teaching. So, there are students that enter the lab only with their IT teacher once a week. There are students that enter the lab with their IT teacher once a week and 3-4 times a year more with another teacher. There are students that have been into the lab with more teachers and thus for much more times. All of the teachers that used ICT in their classrooms overworked to prepare computer-based lessons, and successfully enriched them with multidynamic tools, offering more possibilities for students, new opportunities and motivating lessons. They prepared student worksheets and lesson plans using ICT asking the computer science teacher for assistance with downloading material from the web. However, most of them, due to the recent of the effort, as well as to the inadequate training on pedagogical issues, they did not manage to shift to progressive learning approaches. The school community as a whole, views these accomplishments very positively and wishes to diffuse these efforts.

2. The past

The school first introduced Information Technology subject in the late eighties, as proposed in the IT National Curriculum^[1]. The subject aimed to familiarise students with Information Technology and computer applications.

In the mid-nineties, the school decided to participate in the newly launched project *Odysseia*. As revealed from the interview with the Headmaster, it was the Headmaster with the IT teacher at that time, who initiated and supported this idea. As revealed from the interview with the one of the teachers that is positioned in the school for many years and followed the process of the introduction of computers into the school, there was no opposition on behalf of the teachers. Teachers were free to participate or not in the program that the school initiated. Around 10% of the teachers use IT. The Foreign language teachers were the first ones that got involved with the introduction of computers into their teaching. As teacher 6 argued, that was because they were familiar with a foreign language, and because they were younger than the other subject teachers. She said however, that it was also a matter of temperament of the teachers. It seems that foreign language teachers still are mostly those that use the computer within their teaching. It is interesting that teachers that were observed teaching in the computer lab were the IT teacher, one science teacher and four Foreign Language teachers. Initial teacher training played an important role in introducing the computer use. Short training 40 hours courses were organised within the framework of *Odysseas* project for the interested teachers at that time, in both computer use and its integration into the teaching process. Teachers felt that although it was not enough, it was a good kick off start.

We started in 1998.. they asked who was interested, they trained us some weekends for some months, what we say crash test, eight hours in front of the screen, but we learned many things...

As teachers argued, after these organised short-training courses that took place that first year, little has been done with respect to teachers' training. Only one short training course took place for the foreign language teachers on a weekend. Moreover, as teachers argued, the intensive organisation of the courses outside school time was not that effective.

We would like more training, in the morning, often, in order to widen our knowledge, these that we learned two years ago, and the way we learned them, they took place on Saturdays, Sundays, they were too compressed, it is difficult for us who have families to attend,...it would be better to be once a week every six months, or two times every school year for one week in the mornings,...to have the time to learn things we do not know. Now our knowledge is very limited. (T4)

Teachers argued that mainly the lack of technical support and inadequate training on pedagogical issues of the computer use were the reasons that computer use was not diffused more into the school. As already mentioned, teachers argued that more of their colleagues would have taken their students into the computer lab, if they had someone to support them before and during the time they used the computer lab. In-service training they had, it was adequate to familiarise them with basic computer use, but not adequate to make them feel competent and confident enough to integrate computers within their teaching.

3. The present

The school has introduced computer use in three ways: for administrative purposes; as a separate subject for learning; and third as a tool for learning other curriculum disciplines.

As the Director of the school argues, the most dominant use of ICT is within the framework of Information Technology subject:

They (computers) are used mainly by the IT teacher but also in a way from the other subject teachers. From the other disciplines, Foreign Language teachers are the ones who use them mostly

Looking at the way that computers were used for administrative purposes, as revealed from the interview with the Director of the school, one PC was located in the teachers' office for such use. It was used by the IT teacher and another teacher to keep students' records and some statistical information. It has to be noticed that ICT was not used for internal paperwork. No ICT printouts on the walls were observed to indicate such use.

Turning to the use of ICT within the school curriculum, the school following the official National Curriculum offered Information Technology as a separate subject in all three grades of gymnasium once a week. The aim of the subject was to familiarise students with the Information Technology and computer applications. Students in the first and second grade were not assessed, while students in the third grade were^[2]. Information Technology was not related with other curriculum subjects and it was taught by a specialist IT teacher.

Programming is a small part of the ICT curriculum. The curriculum provides a choice amongst Basic, Pascal, Logo and Cobol as programming languages. It has to be mentioned that the subject was not taught in the old lab established for the teaching of IT, since it was considered out of date, and thus, not adequate to cover the needs of the teaching of Information Technology.

In addition to the teaching of Information Technology subject as proposed by the Greek IT National Curriculum, the school attempted to integrate the use of computers in other curriculum disciplines, participating in the national project *Odyseia*.^[3] As revealed from the interview with the Director of the school, ten teachers of other subjects used computers within their teaching sessions. However, five of them used them more often.

As these teachers argued, they used computers four times a year with each of the class they teach. For example, the teacher 1 prepares 2-3 computer-based lessons a year and implements them as many times he teaches these units with different groups of students. There was no school policy for the frequency of the computer use in each grade or aims and activities with the computer. The computer use was a matter of the teachers. Interesting teachers were going to the computer lab with their classroom whenever they felt they needed to use computers in their teaching. This way, two different classrooms (groups of students) might have had very different access to the computer lab, depending on their teachers. As shown from the interviews with the students, two of them did not use computers into subjects other than of the IT. One of them used computers, and especially the Internet, with the English teacher only, but many times. The fourth student had been into the lab many times with the Science and German teachers, in German language, Chemistry and Biology classes. It has to be mentioned that students had no access in the computer lab, unless they were accompanied with one of their teachers.

3.1 Infrastructure

The school in order to accommodate ICT use developed the following technical infrastructure:

a) One PC and a printer in the teachers office used for students records and statistical information.

b) One old computer lab with old 8086 desktops

c) One computer lab locally networked with one server, ten workstations Pentium II 200, 64 Ram and one printer. The network provides Internet connection.

The Ministry of Education provided all equipment. The first lab was established in the early years (late eighties) for the teaching of Information Technology subject. The second computer lab was established in the mid nineties within the framework of the pilot project Odysseas.

3.2 Support

The project Odyssey provided technical support to all schools that participated in the project. It seems though that it was not adequate for the needs of the observed school that was located in an isolated island of Greece, far from the capital. Although the previous year a person responsible for the maintenance of the computer lab as well as for teachers support was positioned, such a person was not positioned the year that the research took place. Thus, the IT teacher had by his own initiative and without being paid for this, took the responsibility of

the maintenance of the computer lab, as well as of teachers' support.

Technical support for any damages on the equipment was provided according to the contract by the Provider Computer Company that is based in the capital of Greece. As illustrated by the IT teacher, this was time consuming.

Last year we had problems with the server... we sent it to Athens and it took a lot of time to be updated and return to the school. Thus we did not work in the network.

Moreover, the lack of a person positioned to provide technical support seemed to hinder the diffusion of computer use among teachers. As the Director of the school argued, more teachers wanted to go into the computer lab and use the computers in their teaching, but they did not do because they did not feel confident enough.

Last year we had and it was very positive. If we had, more teachers would go into the labs and use computers...when the computer crashes and the teacher can not use it, he becomes disappointed and he does not easily use it again, due to the lack of technical support. (HT)

You feel security that there is someone who knows more than you know what to do when this thing (the computer) stacks, and that helps. (T6)

As for educational support, as mentioned in section 2, when the program Odyssey started, teachers had some short intensive training courses both on computer use in general, and on computer use into their teaching. No other kind of educational support was organised.

3.3 Computer use and activities

Three sessions of IT teaching were observed: two in the third grade (14-15 years old) and one in the first grade (12-13 years old). The teacher was the same, since the school had only one IT teacher who taught IT in all grades. The session in the first grade was concerned with theoretical issues on Computer Science: the invention and evolution of the computer and the internal parts of the computer. The other two sessions in the third grade were concerned with sound, image and video processing. The teacher in order to teach the above topics used the Internet as a source of information as well as computer applications, such as software for image processing. Students were sitting on groups of two and worked together in the computer that was in front of them. However, the teacher had the central role in the process teaching the whole class, standing in the middle of it. The teacher was directing the whole process, presenting information, posing content specific questions, selecting the students that could answer the posed questions, and guiding students' actions. It was noteworthy that the students were performing specific actions on the computers following the teachers' specific commands. The teacher had the central role managing the communication line from teacher to the whole class or from the teacher to a specific student and from student to the teacher. During the whole session the teacher was explaining and giving further information on students where he thought it was needed.

Turning to the computer use into the teaching of other subjects, during the visit to the school, nine teaching sessions were observed, where computers were used as tools to teach curriculum subjects other than Information Technology as follows. Two sessions on Science with the Science teacher (T2), four sessions on English with two different teachers (T3,T4), and three sessions on German again with two different teachers (T5, T6) were observed.

Differences were observed between the above teaching sessions with respect to the ICT resources used but also to the organisation of the lesson. All foreign language teachers used the Internet as a resource of information. It seems that the nature of the subject encouraged the use of Internet, since students could find information on different topics, while practising at the same time at the taught language. By contrast, the Science teacher used CDROMs from the market in Greek language. Both CDROMs provided information of specific units of the subject as well as exercises and questions for the students.

As for the organisation of the lesson, three out of the five teachers observed followed whole class teaching. In these three cases, students were sitting in front of the computers on groups of two and worked with the computer that was in front of them. As in the Information Technology teaching sessions observed, the teacher had the central role in the teaching process, standing in the middle of the classroom. The teacher each time started the session by presenting the aim of the lesson, the task for the students as well as needed information on the taught topic. Next, the teacher proceeded by distributing a worksheet for the students to work on. The

teacher was again in control, guiding students' actions on the computer, as well as managing the communication line from the teacher to the whole class or from the teacher to a specific student and from student to the teacher. He/she was posing mainly content specific questions, selecting the students that could answer these posed questions. At the same time students were filling in the answers to the questions on the worksheet one by one. During the whole session the teacher was explaining and giving further information on students where he/she thought it was needed. Students were not navigating by their own initiative. All students were proceeding together doing the same thing.

One out of the five observed teachers used a combination of whole class teaching and autonomous student groupwork. Two sessions taught by this teacher were observed. Both times, students were sitting in front of the computers on groups of two and worked with the computer that was in front of them. The lesson was organised in three parts. In the first part (5 minutes out of the 45), the teacher started the session being in control of the process standing in the middle of the classroom. She presented the aim of the lesson, the task for the students distributing a worksheet for the students to work on, as well as needed information on the taught topic. In the second part, which was the longest (30 minutes out of 45), the teacher encouraged autonomous student groupwork. Students were working on the working sheet together interacting with each other within the group, since many of the questions needed students' interpretations and reflection on the information gathered. It has to be noticed that student groups were working on two different tasks given by the teacher. The teacher, this time, was moving between students' groups offering help mainly after students' initiative. It seemed that that the teacher provided mostly prompts to students to continue their thinking than provided information or solutions to their problems. The final part of the lesson (10 minutes out of 45), was devoted to the presentation of students work, following again whole class teaching. The teacher was again in control, managing the communication line from the teacher to the whole class or from student to the whole class. He/she was repeating one by one the questions posed on the working sheet, selecting the students that could answer these posed questions. All students were following this process and they were checking their answers.

It was revealed that teachers followed a specific organisation for all the sessions they taught. For example, teacher 3 (T3) followed whole class teaching keeping control of the learning process, in both English sessions she taught. Only one out of the five teachers used different types of organisation of her lesson. Specifically, in the first observed session she used a whole class teaching approach as described above. In the second session observed she used a combination of whole class teaching with autonomous student groupwork as described above.

Collected data was not adequate to explain why teachers followed the specific paradigm of lesson organisation, or even why one of the teachers followed different lesson organisations. It might be suggested that when teachers use computers into their classrooms, they use the same lesson organisation they use when they teach without computers. Data collected does not permit us to understand the way if so- teachers changed their old practices due to the use of computers.

3.4 School community's perceptions on the use of ICT and its relation to educational innovation

Looking first at the way teachers perceived the use of ICT in their school, it was shown from the interviews with them, that all of them viewed the use of ICT as a supplementary tool for their teaching. They argued that ICT facilitated the realisation of their teaching objectives, and encouraged the activities they used in their teaching. This is illustrated from their words.

I consider it is necessary. But I insist on the teaching of the unit first, I do not go directly on the computer. (T1)
I can not say that I definitely need the computer to continue my work... we make our lesson, we learn grammar, and supplementary we use computers. (T3)

Additionally, most of them perceived the computer based-activities as an effective way for repetition and assimilation of the already acquired knowledge. They also believed that computer-based lessons in the computer lab were an alternative to the traditional teaching in the classroom, in the sense that they motivated students' learning providing a dynamic teaching aid for representations. As illustrated by a teacher,
It is a teaching aid, it has the effect of motion, ... (T1)

Some of the teachers also viewed the computer, and especially WWW-based activities, as an information resource for students, but also a way to familiarise students with technology and computer applications.

...they find a lot of information, they see pictures, they get familiarised with technology. (T3)

Finally, one of the teachers mentioned that computer use encouraged new ways of learning, that is open learning approaches. However, she argued that it was not the computer use per se that encouraged these new learning situations. It was the teacher that aimed to such approaches facilitated though by the computer use. *It is different from the traditional lesson, However, this have been already changed. I do not sit on the teacher chair anymore, our lessons are not like this anymore... it is just a complement to all we already do. (T6)*

Turning to the way parents perceived the use of ICT in their children s school, it was revealed that they did not actually know how the school had introduced computer use. Two of them did not know at all how their children used computers in school, and two of them knew only about the teaching of IT. As for their perceptions about the use of computers in general, they viewed the computer use as necessary tool for the modern society, a tool that their children should know how to use. Moreover, they perceived computers as information sources. Finally, they believed that computers help their children s learning in the sense that by using them, they save time.

Turning to the way students perceived the use of ICT, it was revealed that they found it interesting, motivating, and different comparing to the traditional aids and mediums used. They also believed that computers were information sources. One of them talked about learning through CD-ROMs.

4. Main hypotheses

In what follows we discuss the main hypotheses of the study in the light of the empirical evidence that have been presented in the preceding sections.

1. **Technology is a strong catalyst for educational innovation and improvement especially when World Wide Web is involved.**

The information we collected from the teachers and the administrator interviews concerning the history of the introduction of ICT in their school, supports the second part of the hypothesis. As teachers argued, the computer use, although it provided a modern multidynamic tool they used it to support existing practices in their classrooms, traditional or progressive. As observed in the teaching sessions, the teachers modernised their teaching in terms of materials used, and tried to shift to more open learning approaches. Most of them, however, they could not avoid returning to the traditional teacher centered teaching model.

1. **The diffusion of the innovation/improvement (and therefore of ICT) followed the traditional diffusion pattern for innovations, as outlined by Rogers (1995).**

As we have discussed, the school introduced the use of ICT in the school participating in the national project Odysseas funded by the Ministry of Education. Participation of the school was accepted since the Headmaster of the school and the most of the teachers at that time were willing to participate and organise pilot computer based lessons. However, the involvement of the teachers was by no sense obligatory, and there was no specific school policy related to the aims of the computer based activities or specific subjects for ICT to be used. It was up to interested teachers to get involved and use ICT in their teaching. Still, it is the interested teachers who use ICT in their teaching. It seems that inadequate in-service training on the use of ICT in the teaching practice and lack of technical support in the lab discouraged the rest of the teachers to risk and get involved in the innovation. It had to be highlighted though that the effort of the school and of the introduction of ICT use in Greek schools in general is very recent. Thus, there was not the necessary time to allow the appropriate structures for training or support to be built.

1. **Successful implementation of ICT depends mostly upon staff competence in the integration of ICT into instruction and learning.**

As already mentioned, all the teachers that used ICT in their teaching modernised their teaching by using modern multidynamic tools that were used by the students and not the teacher anymore. However, most of them did not manage to shift their students learning to progressive approaches. It has to be highlighted that teachers

worked very hard and additionally to their teaching duties to familiarise themselves with the computer use and applications, to prepare the computer based lessons, and try them out before entering the classroom. They were very enthusiastic with what they were doing and committed to try out at least some computer based lessons. In this sense, and considering how recent was this effort, they succeeded to integrate a modern tool in their classrooms overcoming technical problems and frustration. It will need though more time for these teachers to reflect on these first try outs and move forward to the next step of using the computer to upgrade their own teaching objectives. Moreover, it will need support on the pedagogical issues of using ICT and development of communication networks between teachers to exchange ideas and share activities.

1. Gaps in academic performance between high and low poverty students will not increase when all students have equal access to ICT.

We cannot test the truth of the fourth hypothesis because academic performance was not related to the computer use.

1. Successful implementation of ICT will lead to the same or higher academic standards in spite of the low quality of many ICT materials.

We cannot test the truth of the fourth hypothesis because academic performance was not related to the computer use.

5. Projection to the future:

Our judgements about how likely it is that the school s accomplishments will remain are based on different factors.

a) How well is the innovation integrated into the workings of the site.

The implementation of ICT in the school is very recent. Computers are used for administrative purposes. However, only the IT teacher uses the computer located in the teachers room for such purposes. All students attend once a week an Information Technology class familiarising themselves with technology and computer applications. Additionally, a minority of teachers uses ICT to enrich their teaching providing a motivating interesting lesson using modern multidynamic tools to their students. Computer use though did not represent a medium to escape from traditional teaching practices. Teachers argued that in case ICT disappeared not many things would change. All these evidence, considering the recent of the effort shows that the school has done important steps into the integration of ICT in the school everyday life. However, many things are left to be done. Teachers will need more training on the pedagogical exploitation of ICT to use them to shift to progressive learning approaches, while more teachers need to be involved in this effort conditioning they will be provided with the necessary support.

b) What are the future plans of the school about the continuation of the ICT use.

There is no evidence that there will be no continuation of ICT use in the school. On the contrary the school plans to expand the use of ICT within the teaching of curriculum subjects. The school, however, will need much support educational and technical- to engage more teachers at least on these first steps.

1. Whether the financial and other support to the innovation has been assured.

For the continuation and further expansion of the ICT the financial support is also a presupposition. As discussed previously, the school participated in the project Odysseas funded by the Ministry of Education. This provided the necessary funds, equipment and technical and educational support for these first years. Now that the project ended, the Ministry of Education needs to fund the continuation of this effort, in order for the school s effort to survive and be established.

1. What do the administration, the staff, the students and parents think about the use of ICT.

As discussed in the Present section, all the members of the school community expressed positive opinions about the ICT use. Although they had different opinions about the benefits from the use of ICT they all thought that it should be expanded.

APPENDIX A

Consistent with the methodology described in the Workbook for Organisational Case Studies (OECD/CERI) a short-term explanatory case study has taken place in the school in order to compile a corpus of information that would allow a rich description of the ICT integration within the site. The data collection was completed in a three day visit of two researchers OF the ICT team of the Center For Educational Research. Classroom observations were conducted in the school as well as interviews with the staff. The purpose of classroom observations was (a) to validate how ICT is used in the lessons and (b) to gather evidence for how lessons were taught. The overall time of observation was 12 sessions of 45 minutes. The scheduling of the observations in school C shown at the Table 1 - was arranged in collaboration with the head master before the visit.

Teacher	Subject	Grade	Number of observations	ICT use
T1	Information Technology	C	1	Internet Image and video processing software
T1	Information Technology	A	1	Internet
T1	Information Technology	C	1	Internet Image and video processing software
T2	Chemistry	C	1	CD-ROM
T2	Biology	C	1	CD-ROM
T3	English	C	1	Internet
T3	English	B	1	Internet
T4	English	B	1	Internet
T4	English	C	1	Internet
T5	German	C	1	Internet
T5	German	C	1	Internet
T6	German	C	1	Internet

Table 1: Classroom observation plan

For the observational data collection one video-camera was used - occasionally moving to capture instances of the classroom atmosphere. Concurrently with the video-recordings, observation notes have been taken describing the overall classroom activity and focusing on potentially significant details and episodes in teacher practice, student groupwork and student communication. During our visits to the school 14 interviews were conducted: 1 with the head master, 4 with teachers (one not engaged in the ICT use), 4 with students, 4 with parents and 1 with the technical support specialist. The average time of each interview is shown at the Table 2.

INTERVIEWEE	TIME (min.)
Head master	60
Teachers	50
Parents	40
Students	30
Technical specialist	45

Table 2: Average interview time

Background data was also collected (i.e. students written presentations of their work) that served as complementary information to the video-recordings and observation notes, which formed the main corpus of our observational data. Verbatim transcriptions of all interviews were made.

APPENDIX B

Table 1. Familiarisation of teachers with computer applications

How comfortable are you with using a computer to do each of the following?	Very comfortable	Comfortable	Somewhat comfortable	Not at all comfortable	Missing cases
1. write a paper	4	3	7	0	0
1. search for information on the World Wide Web (WWW)	3	7	3	0	1
1. create and maintain web pages	1	0	4	9	0
1. use a data base	1	2	2	1	0
1. develop a data base	1	0	2	11	0
1. send and receive an e-mail	3	2	4	4	1
1. write a program	1	1	1	9	2
1. draw a picture or a diagram	1	2	2	9	0
1. present information (e.g. use Power Point or equivalent)	1	0	0	12	1

Table 2. Importance of computer-related skills for teaching

How important is each of the following computer-related skills for your teaching?	Very important	Important	So-so	Not important at all	No answer
1. write a paper with a word processor	4	6	3	1	0
1. search for information on the WWW	8	4	0	1	1
1. create web pages	1	7	3	3	0
1. use a data base	0	5	3	2	4
1. develop a data base	1	4	1	4	4
1. send and receive an e-mail	4	6	2	0	2
1. write a program	1	6	0	5	2
1. draw a picture or a diagram	1	4	5	3	1
1. present information (e.g. use Power Point or equivalent)	1	4	0	5	4

Table 3. Frequency of use of computer applications by the students

During the past school year, how often did your students on average do the following for the work you assigned?	Several times each week	Several times each month	A few times a year	Never	No answer
1. use the World Wide Web	0	3	5	5	1
1. create web pages	0	0	0	11	3
1. send and receive an e-mail	0	0	4	8	2
1. use a word processing program	0	1	4	6	3
1. use a computer to play games	0	2	4	6	2
1. use a spreadsheet	0	0	1	8	5
1. use a graphics program	0	0	2	8	4
1. join in an on-line forum or chat room	0	0	2	9	3
1. use a presentation program (e.g. Power Point)	0	0	2	8	4
1. use an instructional program (including simulations)	0	1	4	4	5
1. other computer uses (specify)					

Table 4. Teachers ability to use computers

	Good	Fair	Poor
30. How would you rate your ability to use a computer	1	3	10

Table 5a. Experiences and policies concerning ICT use

Answer questions 31-38 based on experiences or policies from the last school year	Yes	No	No answer
31. Was student computer use ever evaluated for grading?	1	12	0
33. Did you create or modify a Web site with any of the classes that you taught?	1	11	2
37. Did you participate as a student or instructor in a virtual course through the Internet/WWW?	3	10	1
38. Did you involve your students in collaborative learning over the Internet/WWW with students from other classes?	0	13	1

Table 5b. Experiences and policies concerning ICT use (continued)

Answer questions 31-38 based on experiences or policies from the last school year	No restrictions	Some restrictions	Designated sites only	No answer
32. If you assigned WWW searching, how much freedom did you allow students in locating sites to visit?	1	1	6	3

Table 5c. Experiences and policies concerning ICT use (continued)

Answer questions 31-38 based on experiences or policies from the last school year	All	Most	Some	Very little	No answer
34. What portion of the computer use in your classes was directly related to the course content?	0	2	5	6	1
35. What portion of the computer use that you assigned was done by students individually?	1	3	2	5	3

Table 5d. Experiences and policies concerning ICT use (continued)

Answer questions 31-38 based on experiences or policies from the last school year	Almost every day	Several times a week	Several times a month	A few times a year	Never	No computer
36. If you have a computer at home, how often did you use it for preparing for teaching ?	0	1	3	4	2	3

Table 6a. Computer use for communication

	Yes	No	No answer
39. Are you currently using technology to collaborate with other teachers?	1	11	2

**Table 6b. Computer use for communication
(continued)**

	More than 12	6-11	1-5	None	No answer
40. How many e-mail messages do you send each week on average?	1	0	2	10	1

Table 7. Advanced uses of computer

How many of the following have you ever done?	Yes	No
41. make changes to a computer s hardware	3	11
42. updated an application program (word processor, graphics program, etc.)	1	13
43. recovered a damaged file	2	12
44. created a web site	2	12
45. developed a data base	1	13

[\[1\]](#) See in the introductory section for more details

[\[2\]](#) See in the introductory section for more details

[\[3\]](#) See in the introductory section for more details