OECD/CERI ICT PROGRAMME

A Case Study of ICT and School Improvement at

Secondary School, Vienna-Steinbauergasse, Austria

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Table of Contents

Overview of the present

Steinbauergasse secondary school, called IHS Steinbauergasse , is located in the 12th district of the capital of Austria, Vienna. IHS stands for **I**nformatik-**H**aupt**S**chule and means secondary school for information technologies. The capital of Austria, Vienna, is situated in the eastern part of Austria and has about 1.600.000 inhabitants. In earlier times the 12th district of Vienna, called *Meidling*, where the school site is located, was a typical working-class district. Nowadays the population of *Meidling* has predominantly changed to foreigners, mainly emigrated from Eastern-European countries.

The secondary school for information technologies Steinbauergasse is a school for approximately 280 students, taught by 37 teachers in 11 classes. The number of teachers seems to be very high in comparison with other secondary schools in Austria. This peculiarity of IHS Steinbauergasse can be explained by the following: During the last years the new school concept of IHS Steinbauergasse has attracted a raising number of students. This new school concept is supported by three columns:

- ICT as a main emphasis in the curriculum for all four grades and also as a guiding principal of education in the classroom, and the basic idea is: Our students do not need any computer equipment at home to gain good marks in ICT or ICT-oriented subjects .
- integrative classes, i.e. co-education of regular students and students with special needs in the same classroom. The use of ICT helps the students with special needs to take part in the classes in their way or even enables them to be taught the same subjects as the regular students. In one case a special computer equipment with two cameras is used as a seeing makeshift for one student with a severe visual disorder, so that he can take part in the classes.
- Full time support by offering lunch, homework assistance and arrangement of leisure time activities from 12.00 to 5.30 p.m. These facilities of IHS Steinbauergasse are called offene Schule , it means after school care for the children where both parents are working or come from broken homes.

Most of the students of IHS Steinbauergasse come from working-class families with problems like unemployment or unstable marriages. As a result of that and with the implementation of the above mentioned school concept the staff of IHS Steinbauergasse had to develop a very high social competence in the daily dealing with teenagers, who have special needs and often few social skills. And despite of the fact that the outward appearance and the equipment of IHS Steinbauergasse is very plain, the teachers have done excellent work.

Overview of the past

Many secondary schools in Vienna like Steinbauergasse secondary school deal with the problem of decreasing number of students because of a trend to send children between 10 and 14 years to a high school. The situation of some secondary schools was aggravated when emphasis on special skills in the school s curriculum led to competition among the secondary schools. So, a small team together with the principal thought about a solution to problem of decreasing student numbers and saw one way by promoting information technologies at their school site. Due to the social background of the students at the 12th district of Vienna this team saw good chances for increasing numbers of students by implementing an extensive offer to their clients with ICT, full time support and socially integrated classes. You can compare the changes at IHS

Steinbauergasse to the changes at Kinkplatz.

Projection to the future

Principal and staff of Steinbauergasse secondary school are confident, that the changes in the school program and the offers made to the students will sustain the trend of increasing numbers. If investments are done both on ICT infrastructure and the building, Steinbauergasse can strenghten its position as an attractive alternative to both high schools and other secondary schools. Steinbauergasse could even get a good reputation that students from socially discriminated families get a solid preparation for future jobs.
To get more output at Steinbauergasse, additional computer labs and multi media ready workstations, connected to the Web, would be necessary in each classroom. The answers of the staff at Steinbauergasse when asked about future projects are nearly the same as at Kinkplatz, because there are official and inofficial meetings of the responsible teachers and a close co-operation in developing the secondary schools for information technologies in Vienna.

Conclusion about key hypothesis

Hypothesis 1

Technology is a strong catalyst for educational reform, especially when the World Wide Web is involved. The rival hypothesis is that where true reform is found, technology served only as an additional resource and not as a catalyst, that the forces that drove the reform also drove the application of technology to specific educational problems.

The analysis of the collected data indicates that hypothesis 1 can be verified   with some restrictions (just as in other IT schools). In the case of Steinbauergasse social change was not planned, but the implementation of ICT was the beginning point of a social change. If the teachers had decided to install another point of emphasis like sports or music, this would probably also have been the catalyst for the reform. Therefore in our case ICT is one catalyst and the model of an open school is a further catalyst for school reform in Steinbauergasse secondary school. One primary prerequisite was a competent and dedicated team of teachers who ran the whole project. The majority of teachers expressed that a small team of teachers led and organized the whole process of innovation and has given support and will support further improvements. Without their dedication, change would not have been possible.

The use of ICT was found as one solution for the specific needs for change at Steinbauergasse. By having such a solution for educational reform, ICT functioned as a catalyst for immediate translation into action and the implementation of this concept can be seen in various steps.

Hypothesis 2

The diffusion of the reform (and therefore of ICT) followed the traditional diffusion pattern for reforms and innovations, as outlined by Rogers (1995). The rival hypothesis is that technology functions differently from traditional innovations and reforms and that therefore different diffusion patterns occur.

The diffusion of the organizational change followed the traditional diffusion pattern. ICT was the content of the changing process but it was at the start not the driving force of the change (just like Grein). In the first step some ICT-interested teachers from several secondary schools in Vienna and responsible policy-makers discussed the actual situation. Both groups together have come to an agreement. The aim of the next years is to develop a concept (called IHS) concerning the implementation of ICT in secondary schools in Vienna. A project group was installed. This project group has worked out a new curriculum for ICT-schools, organizes the hard- and software purchase, gives support and functions as an information office (the same way like other IT schools).

After developing an ICT concept the next task was to create enthusiasm for the new technologies among the fellow teachers. Some teachers were interested and attended several ICT-training courses, e.g. taking part in the teachers training for information technologies at the Pedagogical Institute (PI). Only teachers, who have successfully taken part in those courses, are allowed to teach ICT subjects. Any newcomer to the staff at Steinbauergasse is asked to take part in this

training in case he hasn t done so, so far.

A special diffusion pattern could be the so called education highway in Eastern-Austria (just like Grein). The education highway is a web-based education network where schools and other educational institutions can set up their own web pages and can look for information about schooling and education. The whole information concerning schooling and ICT is published on the education highway. In Vienna the education highway is also called Vienna education server .

Hypothesis 3

Successful implementation of ICT depends mostly upon the technological infrastructure and student ICT competence rather than upon staff competence in the integration of ICT into instruction. The rival hypothesis is that teachers mediate such applications when they are successful, and that their academic value relates positively to teacher competence.

In fact, the rival hypothesis can be observed with the situation regarding the use of ICT. The more teachers are familiar and comfortable with using the ICT, the more they will use it for their teaching preparation and for their actual teaching. Without the necessary technical knowledge of the teaching staff the mediation of applications cannot be successful (just as in other IT schools). A very important role plays the professional development. Several teachers said that they had been willing ICT-professional training to undergo and they had applied at the PI and other ICT-training centres, but repeatedly they didn t get a place. Sometimes the ICT-trainings cover too large an area, or specific questions of highly involved teachers are not answered during the seminars.

The main fear of many teachers was that the students could have more technical expertise than themselves. A further change must take place   a change in their owns view. In this case teamwork is the magic word. Students and teachers have to constitute a team and then the process of learning can take place based on partnership.

Hypothesis 4

Gaps in performance between high and low poverty students will be enlarged rather than diminished where all students have equal access to ICT. The rival hypothesis is that equal access to ICT will lead to high poverty students closing the gap with low poverty students.

In the case of equal access to ICT the performance of the students depends on their personal interest and engagement. On the one hand, the condition of equal access to ICT can be satisfied during the lessons. But on the other hand equal access is not guaranteed at home where homework or several practices maybe have to be done. Therefore the pedagogical concept of Steinbauergasse never asks for homework being done by using a computer equipment. If homework is done on a computer, this is the free choice of the students.

Hypothesis 5

Successful implementation of ICT will lead to the same or higher academic standards in spite of the low quality of many ICT materials. Academic standards are a function of teacher and school expectations and not of the standards of textbooks, ICT materials, and the like. The alternative hypothesis is that ICT use will lead to a lowering of academic standards as students spend more time on marginally beneficial searches and in browsing poor quality Web and courseware content.

In fact academic standards are a combination of teacher and school expectations (just as in other IT schools). The teacher decides which teaching material will be used during the lesson. The task of the teacher is to sort out the beneficial material. If the teacher makes a selection of the beneficial ICT-teaching materials then the ICT will not lead to a lowering of academic standards. But if he or she allows the students to browse in the Web without any restrictions and without any selection of special web sites then one expects too much from students. The students are not able to understand all kind of information, which they find in the Web. Further more the students are not doing any homework by using a computer equipment, as the use of ICT is normally under control of their teachers. But the use of ICT might have changed something: language competence. Emails and chats have caused changes in the use of language. Sentences have become shorter, more full of specific vocabulary of the youths. Language teachers have their problems to instruct the students to use language correctly.

Characteristics of the school

Name of school site	Informatikhauptschule Steinbauergasse
Address	A-1120 Wien, Steinbauergasse 27
Phone / Fax	+43-1/813 75 80
Web site	http://www.schulen.wien.at/schulen/912062/index.html
E-mail address	hs12stei027k@m56ssr.wien.at
Leadership	Headmaster: Mr. Franz Hartmann
Number of classes	11 classes, c few of them as social integrates classes.
Number of students	269
Number of teachers	37
Kind of school	Secondary school for students between 10-14 years
Characteristics of school autonomy:	
School experiment	IHS: secondary school for information technology (offers to take a part of the examination in ECDL = European Computer Driving License) Socially integrated classes for students with special needs and full time support when required within the bounds of offene Schule .
Unusual features	IT in all 4 years 2 lessons a week. Besides subjects with creative work as balance to the technical subjects. A lot of extra classes are offered.
Socially integrated classes	Some classes are taught to both (co-teaching of regular students and students with special needs)
Special features of the school site:	
2 computer labs	8 PC s per lab, 3 Server, WINNT + WIN95 2 network-printers, 2 additional printers for administration, 1 scanner
Internet connection	ISDN-LAN network (configuration see Appendix D) based on light wave conductor technology
Neighbor school	In the same building at the back side there is another secondary school, which is not an IHS.

Evaluation of change

Diffusion patterns

About 15 years ago the idea of implementing new technologies arose by chance. A small ambitious team of teachers were privately interested in dealing with computers. The first steps were writing small computer programs. At that time a small team, consisting of between two and five members, saw the enormous potential in the development of the new technologies even for the students of the secondary schools preparing for their future jobs. Before starting lessons at school, these interested teachers took part in a teacher training in order to qualify themselves. Together with the principal and the supervisory body of the department of education an additional concept for teaching the students even in computer science was made.

At the same time also other secondary schools of Vienna thought about computer science as a new subject. At least 14 school sites in Vienna took over the concept of an IHS. IHS Steinbauergasse was one of the last schools, which realized this concept. Both investments into hardware and hardware support and the curriculum for all 14 school sites were organized centrally. For hardware problems a call center, managed by a private company was installed, and for curriculum reasons a study group, consisting of teachers of each school site, was set up. The financial responisbility for investments and support in hardware were taken over by the respective department of education.

Staff development & involvement

To maintain the quality of trading with information technologies, most of the staff had to attend further trainings, organized by the PI (pedagogical institute), PÄDAK (pedagogical academy) or internally by each school site. New staff members for IHS Steinbauergasse should have teaching qualifications for information technologies. If not, they are asked to get the qualifications over within a short period of time. Apart from the offer of official institutions for further education in information technologies, the staff of IHS Steinbauergasse support themselves in many ways. The most important way to prepare the staff for the use of ICT was to get the acceptance of all members in implementing this main emphasis. This resulted in a high rate of interest in being prepared for teaching this special topic. To improve their skills dealing with the information technologies the staff asked questions and worked with ICT because of their own conviction. Help from colleagues or people outside of school raised their knowledge about ICT. Courses offered by the pedagogical academy or the pedagogical institute are important for staff members, who are not deeply involved with information technologies. Most of the time are useless for professional users of ICT because they deal with the topic in a very general way. The professional users would like more serious discussion of the specific topics they are interested in. This can be offered in internal courses, held by the regional advisor or another staff member of the school site, called SCHILF (schulinterne Lehrerfortbildung   internal further education of teachers). At the moment, these internal courses are held without remuneration.

Role of leadership

As mentioned in the chapter diffusion patterns , a small team of teachers occupied themselves with the development in the field of computer technologies. This team thought about integration of information technologies into school subjects. A small computer net was established and 15 voluntary students were educated outside the normal lessons. The experiences with this experiment were discussed with the principal at that time and the responsible person at the department of education. A concept for implementation of information technologies at Steinbauergasse was developed and presented to the remaining staff. In a conference ¾ of staff voted for the implementation of the ICT-concept. The present principal only had to support and continue the on going project. He is lucky to have the initiators of the implementation process for some more time at his school site, which will ensure a permanent renewing process.

ICT-Reform Connections

Installing ICT at Steinbauergasse secondary school was the opportunity for the staff to develop a main point of emphasis at this school site. Secondary schools in Austria get more and more into competition among themselves and with high schools to maintain the number of students in each age-group. For normal students the use of ICT during the lessons to prepare them for future professions is the strongest argument for this school site. On the other hand, students with special needs or students from socially discriminated families choose Steinbauergasse secondary school because of their socially integrated classes and/or full time after school care. Teaching ICT created new lessons and functioned as a motor of change at Steinbauergasse, the preoccupation with changing processes made the staff of Steinbauergasse more open to changes in general. The installation of new pedagogical concepts as open learning or Montessori was not only managed by teachers who were also involved into the implementation of ICT, but also often by teachers searching for alternative changes in their daily school life. The changing process not only contained subjects close to ICT, but nearly all subjects taught at Steinbauergasse. The students nowadays ask teachers to revice their pedagogical concepts. Therefore changes are not only required through outside circumstances. The use of ICT at school helps children to underline their wishes regarding changes in education and the behavior of teachers.

Outcomes

ICT Infrastructure

The following ICT infrastructure is situated in the secondary school of Steinbauergasse:

1. Hardware
   Two computer labs contain one Server and eight Workstations each. All PC s are multimedia ready and connected to the Internet. One computer is situated in the principals office, another one for administrative work for the head of leisure time activities. Additional computers can be found at the library and physics laboratory. Two networkprinters at each lab, printers for the principal and head of leisure time activities are also available. One scanner and one digital camera, sponsored by Canon, are available at each IHS in Vienna.

2. Internet and Provider
   Internet access is managed by an ISDN-LAN network. The education highway empowered by the authorities is the main provider for schools in the East of Austria. Wienstrom is the special provider for the Vienna schools (just as Kinkplatz).

3. Support
   Two teachers, called Kustoden , the IT specialists of the school, guarantee support for the teachers of Steinbauergasse in the same way as at Kinkplatz. But they are not authorized to change or repair any hardware by themselves. Even they don t know the password from the server to change something of the net-configuration. The hardware support of the whole ICT schools in Vienna is managed by the Call Center . Technicians of the call center have to support the whole hardware (updating and repairing) as much as the net-configuration. Software support is managed in an other way. The both IT specialists of Steinbauergasse, are responsible for supporting teachers and students in software questions. They install the required software, normally standard programs of Microsoft Coorporation, which is a special sponsor of all IHS in Vienna. Small programs written by teachers or software products from other companies are serviced by the IT-specialists. For further details of hardware and software support on Vienna s IHS see Appendix E.

4. E-mail
   One official school e-mail account has been established in the management department. At the moment there exists no official student or teacher e-mail accounts because of technical reasons. Official email accounts of Steinbauergasse can only be accessed to the school site. Several teachers are privately connected to the Internet. So they can only could read their e-mails at home, if they are supported by a special provider, the Telekom Austria. Some teachers and some students have therefore a private e-mail account. Especially for students the private e-mail-account is an advantage when they leave the school site. They can keep their adress. Teachers even can choose their provider, if they don t use an official e-mail account at the school site. These are the reasons, why practically spoken, there exists no official e-mail account system at Steinbauergasse.

5. System backup
   The systems backup of the workstations is located at a special partition on each workstation. If there is a total crash, the IT-specialists can repair the configuration themselves by running a little batch-program from the backup-partition. The software has to be installed a second time. Daily work of teachers and students can only be stored on a ZIP-Diskette (100 MB), a data carrier for ZIP-Drives.

6. Use of ICT
   Teachers and students use ICT for typewriting, projects, spreadsheet analysis, word processing, preparing and carrying out presentations, programming (logo), creating and maintaining web pages, drawing pictures or diagrams and searching information. Learning software is used in special subjects e.g. English, History (all the same as at Kinkplatz, because the curriculum has been made by a team of teachers from all over the 14 IHS of Vienna).

7. Special features at Steinbauergasse
   The total number of PC s at Steinbauergasse is about 35 workstations. This differs from the number of officially counted workstations of 22 pieces. Some extra computers are mainly used for educating students with special needs. These extra computers are donations from caritative organisations and are not counted as part of the official equipment. Support and maintenance have to be organized by the teachers themselves. No money is given for this part of the computer equipment by the authorities.

Effectiveness

If you come as a visitor to secondary school of Steinbauergasse you get the impression, that the use of ICT is the normal case at this school site. The process of implementation is completed. For the whole staff there is no doubt at all, that it was the right thing to do so. The reform and the implementation of ICT help to maintain the school site against the threat of a decreasing student numbers and economizing measures of the authorities. All of the teachers at Steinbauergasse try to think in a positive way about the use of ICT and they also make use of the technology to impart knowledge about it to their students or use it in their daily work (e.g. preparing their lessons or doing the whole administration on the PC). During the implementation of the ICT at Steinbauergasse the staff attained a new quality of co-operation. The idea originated from a small team and diffused during a few school years into the whole teaching team and brought new goals and challenges to them. But not only the content of the lessons changed. That s more the position of teachers in the lessons changed. The students were no longer the ignored part of the lessons, teachers had to accept that they were experts in special fields as well. The knowledge of the students of ICT made the well-versed into assistents of the teachers. The role of the teachers also changed into learning apart of a lesson. But even other groups came closer together with the subject ICT: teacher and parents. Often parents ask the teachers for advice, when they want to buy some computer equipment for their children or have some troubles installing programs.

What are the most positive and negative aspects of ICT at Steinbauergasse?

Positive aspects:
+ The use of ICT at Steinbauergasse set a new goal for the teaching team: student-oriented lessons by raising equal opportunities and easier approach to jobs by imparting good basic skills.
+ Improvement of teachers training, because only examined teacher are legitimated to teach ICT-subjects.
+ Advantage for lessons: they get more realistic, alternative information sources for students are available (e.g. the teacher is no longer the only information source).
+ Knowledge about facts is not important any longer, but the way to get the right information: students have to be trained to get the right search results.
+ One s access to basic knowledge is much easier than decades ago.
+ Working with ICT demands structured and more precise working methods. The students work improves in this aspect.
+ Working with ICT is nowadays a motivating factor, first of all for those students, who don t have any computer equipment at home.

Negative aspects:

- The profit from learning ICT skills could be much higher with a better equipment. Students at Steinbauergasse normally only can work in pairs with ICT at the computer labors. In the classroom normally the donated computers are for the handicapped students, not for including all students of a class. Half time at a computer signifies learning only half of what is needed to deal with ICT. For better effectiveness more computers in labs or in the classrooms are necessary.

- If you once made the decision to implement ICT at a school site, there is normally no way back to a life without it. Each of the interviewed teachers can t imagine this step back. But the more you implement ICT, the more you become dependent on it. In companies a lot of money is spent to take the necessary precautions of a 24 hours functioning of the equipment. A lot of money would be lost, if the ICT equipment does not work only for hours. At a school site the staff is also dependent on a unbroken availability of the equipment. But when failures occur, they only can react by calling the call center to report them. The staff will get reaction from the call center within two days, but normally repairing took up to 14 days. The problem may lie in the centralistic organisation of repairing ICT equipment on the secondary schools with information technology. If the IT-specialists of each school site got more competence for repairing the equipment and a better training on technical problems, the time for repairs would be shorter in any case. But at the moment there is not enough money to pay the extra time IT-specialists spend of a school site for service or to train them in a professional way.

- If you are dealing with ICT, you have to spend a lot of time by learning the various possibilities of use. Sometimes students lose their social contacts by being occupied with the computer too much. But on the other hand they have fewer job chances if they are not trained in basic skills of ICT. It is often a very difficult to steer a middle course.

- It is difficult for the staff to keep the curriculum up to date because of stipulated procedures when changing anything. Simplified procedures to implement the new developments in this area would help to renew the curriculum according to the changed conditions.

Academic rigor

ICT is an important part of the school programm of IHS Steinbauergasse, which offers a lot of opportunities to come in contact with ICT. For further details look at the academic schedule at Appendix C. But the students have no free access to ICT. They only work with ICT during lessons or full time support in the afternoon monitored by a teacher. The access to the world wide web is not limited by technical precautions. The access of unwelcome web pages showing use of force or pornographic pictures is forbidden. The reason is discussed with the students and no problems occurred the last time.
On average, the students spend 3-5 hours a week with ICT, normally as mentioned in pairs because of the number of computers in the computer labs. Having access for several hours a week to ICT depends on the capacity of the available computers and academic schedule of the individual classes.
One central idea of IHS Steinbauergasse is that all skills of ICT can be learned and trained at school. No computer at home is necessary to gain good marks. The situation for the staff is different. There are not enough computers at school to prepare lessons. Most of the teacher do their preparations at home. Therefore they need computers at home to work and learn with. At IHS Steinbauergasse about 70 % of the staff has a computer equipment at home. But in Austria they get no extra income to buy or maintain their private equipment.

Parts of MS Office, HTML-programming, CAD are conducted during lessons and learning software is sometimes used. The arrangement of the lessons even allow team teaching or co-education. The general knowledge of the students about ICT is high, because the results of ECDL-tests show nearly the same results as tests made by older students from high schools. Besides the prerequisite at school, where no use at home is obligatory, the grade of knowledge of the students depends first of all on the use of ICT at home by parents, brothers and sisters and themselves. In contrast to the teachers the share of students at IHS Steinbauergasse with a computer equipment at home is at a rough estimate about 25 30 %.

Equity

The staff at IHS Steinbauergasse can t find any difference between gender, high or low ability or high or low poverty students by using ICT. The greatest difference which can be discovered to the access of students to ICT is the availability of a computer equipment at home. Students with a computer at home are better skilled because of a greater amount of practice. The teachers said, that the property of a PC depends on the profession, interest and attitude of the parents. But several other studies in Austria show that low income families have significantly fewer PC s at home than families with higher incomes.

Projections

Sustainability

Maintaining Steinbauergasse secondary school is not only related to ICT use at this school site. Based on the good work of the principal and the staff, two great fields have to be developed: ICT and the infrastructure of the building. As mentioned and seen on the picture at the first page, the building is over 100 years old and has to undergo a complete renovation. Not only the outward appearance of the building, also a better distribution of the rooms and also the extension of the cellar and improving the attic would help improving social skills. On the other side the ICT equipment is not enough for a school site with ICT as a main emphasis. Besides a third computer lab, at least two workstations with access to the World Wide Web each class and more workstations for the teacher to work with at school are necessary. Even a second digital camera would be desirable. The staff is motivated to sustain the process of development. The acceptance of ICT is very high and the majority of the staff is involved with it. Due to personal interest and further education the staff feels prepared for educating their students. At that time changes of the current situation are formulated more as wishes than as claims. If there is only little help from outside, the process will make no progress in the near future.

Scalability

As a result of the above statements, the efforts to complete a full implementation of ICT at IHS Steinbauergasse should be made in investments on further workstations in the same number as already existing. This means a third and fourth computer lab for parallel education of two classes in information technologies, where each student has his own workstation to work with. To use ICT even in other subjects besides information science two workstations each per classroom with access to the Internet are necessary. The required volume for this necessary investment is about the same as the investments carried out until now. These investments will result in better ICT access for the students and thus a wider use in any subject. The personal ressources at Steinbauergasse for a wider use of ICT are available.

But ICT is only one facet of the whole school concept of Steinbauergasse. The renovation of the whole building might be more urgent at the moment to raise well-being at school both for teachers and students than on investment into new computer equipment. The identification with the school site will be of more value than any equipment could do.

Appendix A

Methodology

Description of the volume and type of data collected

Activity	Annotation	Amount
Verbal Interviews (approximately 45-60 minutes each)		
Nomination Form for a School Site	Principal	1
Administrator Interview	Principal	1
Parents/Guardian Interview	representative of parents club 2 mothers at school 2 mothers interviewes on the telephone	5
Technology Specialist Interview	both IT specialists are full-time teachers	2
Student Interview	1 group with 6 students (third year) 1 group with 5 students (fourth year)	2
Teacher Interview		5
Questionnaire		
ICT Use Survey of Teachers	Teacher	11
Observing in Classrooms		
Computer science (computer labor)	fourth year	1
Biology	fourth year	1
German	third year (use of ICT to support a seriously seeing handicapped student)	1

Collecting additional materials	
Web-site-presentation	http://www.schulen.wien.at/schulen/912062/index.html
Lesson plan at all classes	Appendix C
Reports on the schoolattempt	Offene Schule (full time support for students)
School profile	His-steinbauergasse.ppt (presentation of the school site by a students work)
Visions	School concept IHS
New visions and projects	Connecting all classes to the web Redevelopment of the whole building including technical infrastructure; extension of cellar and attic to make more space for additional education concepts

Appendix B

ICT Use Survey for Teachers

11 teachers filled out this questionnaire (n = 11).
The results are represented in percentage (100 %).

- How comfortable are you with using a computer to do each of the following? (Choices are: very comfortable, comfortable, somewhat comfortable, not at all comfortable)

		very com-fortable	com-fortable	somewhat com-fortable	not at all com-fortable
1.	write a paper	63.6	36.4	-	-
2.	search for information on the World Wide Web	36.4	36.4	18.2	9.1
3.	create and maintain web pages	-	9.1	9.1	81.8
4.	use a data base	10.0	30.0	30.0	30.0
5.	send or receive e-mail	45.5	54.5	-	-
6.	programming (e.g. writing a program in Visual BASIC or Java)	-	9.1	27.3	63.6
7.	draw a picture or diagram	9.1	45.5	36.4	9.1
8.	present information (e.g. use PowerPoint or equivalent	-	10.0	20.0	70.0

" During the past school year, how often did your students on average do the following for the work you assigned?
(Choices are: several times each week, several times each month, a few times, never)

		several times each week	several times each month	a few times	never
9.		11.1	22.2	33.3	33.3
10.	create web pages	-	-	11.1	88.9

11.	send or receive e-mail		-	22.2	-	77.8
12.	use a word processing program	33.3	22.2	22.2	22.2
13.	use a computer to play games		-	11.1	44.4	44.4
14.	use a spreadsheet		-	33.3	22.2	44.4
15.	use a graphics program		-	22.2	33.3	44.4
16.	join in an on-line forum or chat room		-	11.1	55.6	33.3
17.	use a presentation program (e.g., PowerPoint)		-	-	22.2	77.8
18.	use an instructional program (including simulations)		-	44.4	33.3	22.2
19.	other computer uses (specify)		-	22.2	44.4	33.3

20. How would you rate your ability to use a computer? (Choices are: good, fair, poor)

-	good
75.0	fair
25.0	poor

21. Was student computer use ever evaluated for grading? (yes-no)

40.0	yes
60.0	no

22. If you assigned World Wide Web searching, how much freedom did you allow students in locating sites to visit? (no restrictions, some restrictions, designated sites only)

-	no restrictions
85.7	some restrictions
14.3	designated sites only

23. Did you create or modify a Web site with any of the classes that you taught? (yes-no)

-	yes
100	no

24. What portion of the computer use in your classes was directly related to the course content (as opposed to rewards or incentives, for example)? (all, most, some, very little)

-	all
11.1	most
55.6	some
33.3	very little

25. What portion of the computer use that you assigned is done by students individually? (all, most, some, very little)

-	all
25.0	most
50.0	some
25.0	very little

26. How often did you use a computer at home for preparing for teaching? (several times a week, several times a month, a few times, never)

40.0	several times a week
40.0	several times a month
10.0	a few times
-	never
10.0	no computer at home

27. Did you participate as a student or instructor in a virtual course through the Internet/World Wide Web? (yes-no)

10.0	yes
90.0	no

28. Did you involve your students in collaborative learning over the Internet/World Wide Web with students from other classes? (yes-no)

-	yes
100	no

29. Are you currently using technology to collaborate with other teachers (professional chat rooms, forums, or the like)? (yes-no)

30.0	yes
70.0	no

30. How many e-mail messages total do you send and receive each day on average? (more than 12, 6-11, 1-5, none).

10.0	more than 12
20.0	6-11
70.0	1-5
-	none

31. Have you ever done any of the following? (Choices are: yes, no)

		yes	no
a.	made changes to a computer s hardware	30.0	70.0
b.	updated an application program (word processor, graphics program, etc.)	40.0	60.0
c.	recovered a damaged file	40.0	60.0
d.	created a web site	-	100
e.	developed a data base	30.0	70.0

Appendix C

IHS Steinbauergasse, Vienna

Academic schedule

subjects	Number of weekly hours per class			
	1st	2nd	3rd	4th
Religions education	2	2	2	2
German	4	4	4	4
English	4	4	4	4
History and Geography	2	4	4	4
Mathematics, Geometry	4	4	4	5
Biology	2	2	2	2
Physics	1	2	2	2
Musical Education	2	2	1	2
Creative Work	4	4	3	2
Housekeeping	0	0	2	0
Physical education	4	3	3	3
Information technologies	2	2	2	2
	31	33	33	32
Extra classes:				
Additional Information Science				
Football (soccer)	(2 teams for boys and girls each)			
French				
Biological practice				
Chemical practice				
ECDL (3rd/4th class)				
Commercial practice				
Conversation practice				

Appendix D

Net-configuration of IHS Steinbauergasse
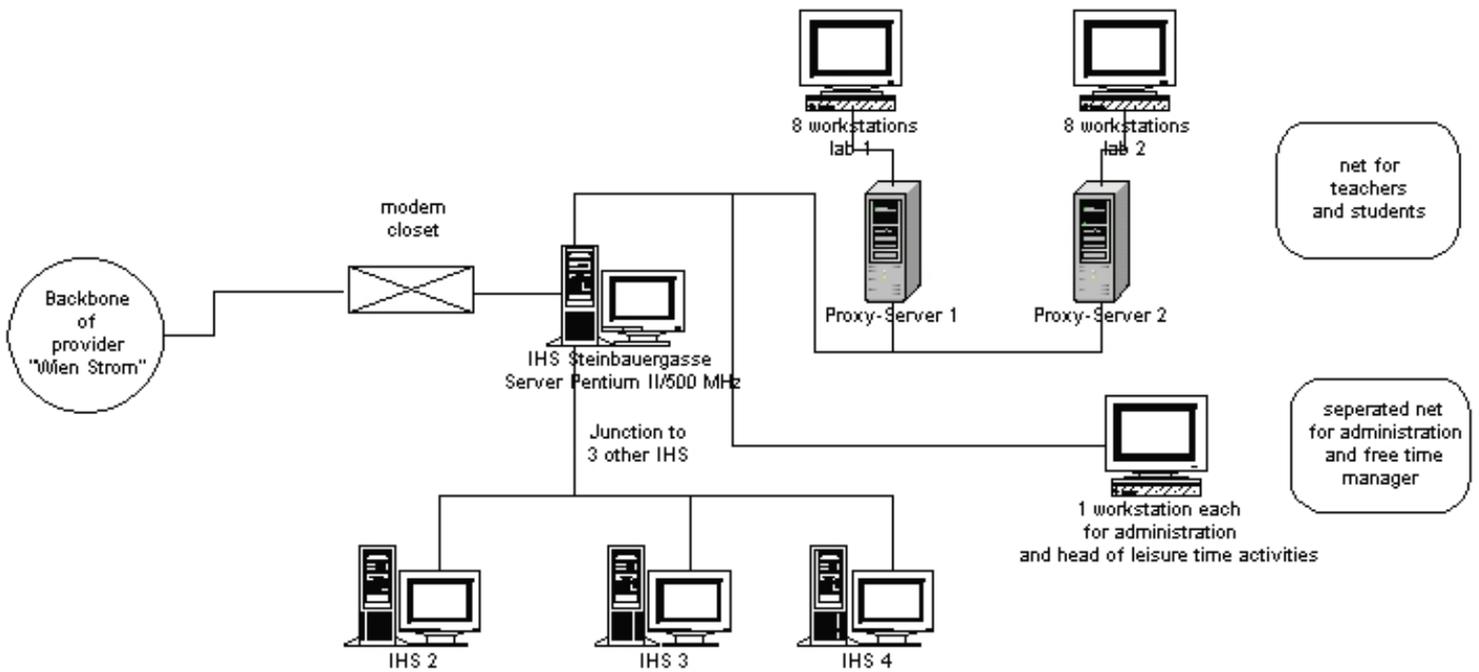
Appendix E

Organisation of ICT-Support for IHS in Vienna

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                    ┌─────────────────────────────────────┐
                    │       Department of education        │
                    └─────────────────────────────────────┘
                              │
          ┌───────────────────┴───────────────────────┐
          │                                            │
┌──────────────────────────┐                           │
│       Pedagogical         │                           │
│    advisory committee     │                           │
│ (members of city school   │                           │
│       inspectorate)       │                           │
└──────────────────────────┘                           │
          │                                             │
   ┌──────────────┐                          ┌──────────────────────────┐
   │     IKO      │                          │       Call Center        │
   └──────────────┘                          │      of a company        │
          │                                  │  (for example Siemens)   │
   ┌──────────────┐                          └──────────────────────────┘
   │   Regional   │                                     │
   │   adviser    │                                     │
   └──────────────┘                                     │
          │                                             │
   ┌──────────────────┐                      ┌──────────────────────┐
   │ Software - Support│                     │       Hardware       │
   │        for        │                     │       Support        │
   │ Staff and Director/│                    │         and          │
   │   Administration  │                     │  Net configuration   │
   └──────────────────┘                      └──────────────────────┘
```