Appendix A

Letter of Consent to participate in this study

2008

Appendix B

Examples of Observation by Video Tape in Classroom

Main Purpose

1. To incorporate computer into the chemistry classrooms

2. To develop more chemistry activities, i.e., computer-assisted inquiry

Rationale

Important skills to be learned

- use of technology
- collaboration

Alternate environment

- greater learning environment
- interesting learning environment
- variety of activities

Curriculum goals

- problem solving skills
- critical thinking
- active learning
- information skills
- inquiry skills
- self-access
- developing values
- collaborative & organizational skills
- set task

Teacher Roles

- pose problem
- provide small group-large group
- create and use computer resource
- coordinator/leader of the student activities

Student Roles

- search for information
- design and create products
- data gathering and processing
- engage in enquiry
- engage in collaborative task with others
- analyzing and drawing conclusion from data
- electronic presentation of own learning

Technology Roles

- presentation software
- communication software
- drill-practice software
- data bases
- data analysis of software

Interaction between Teacher, Student, and Technology

- teacher dominated
- student dominated
- ICT dominated

Interaction Mode between Students

Not mediated: students interacting directly with each other

Assessment

- pre evaluation
- post evaluation

Transcript of Video Tape Observation

Data: March, May, & June, 2008

Class one: Chemistry 11

Teacher: The teacher explained their lessons by using computer and PowerPoint. She showed the different experiments on the screen. Then, some questions were asked about the rays such as Alpha, Gama, and X by the teacher, their energy, and their moving to negative or positive poles in Rutherford's experiment. They discussed about the Electrode and its negative or positive characteristics.

Teacher tried to explain abstract parts by using the computer and make it more concrete. So, they talked about the neutral characteristics of the atom, and the methods used by Thomson to find out about protons in atoms.

Students were not only the listeners, but also they suggested some new ideas. At last, the teacher reviewed the materials and explained more.

Class two:

Different topics and chapters were shown on the screen by using PowerPoint. Teacher and students reviewed the previous lessons and answered the questions in groups. They discussed about the characteristics of materials and ions. Then, they talked about the weak and strong electrodes.

The teacher tried to motivate students by asking different questions. She taught students by using their known materials to unknown materials. She asked some questions about soap and its foam.

Class three:

The teacher and students are in the library. The teacher used PowerPoint for teaching and introducing new materials. She used other instruments such as book and board for teaching. She did the experiment by using computer and PowerPoint; she did not need special tools. Students looked at the sheet and followed the process completely; they asked questions or talked about pH.

Then she asked a question and students tried to answer it; whoever found the answer came to the board and wrote the answer on it.

Class four:

Teacher tried to teach and explain new lessons to students by using the computer, and reviewed the previous materials. The aim of the class was group-working and solving the problems themselves. The teacher used students to teach and explain materials. Teacher was the facilitator; she helped and checked their answers.

She explained their diagram or abstract process on the sheet by using the computer. Students looked at the sheet and could watch the process completely.

Class five:

Students sat around two tables in the laboratory, and they were asked to answer some questions in their papers by their teachers. When they finished their papers they gave them to their classmates. Their classmates checked their answers and then gave them to their teacher. The teacher did some experiments before, so she asked some questions about them. She explained experiments by using the computer.

She used comparison for teaching new materials and showed those differences or similarities by using computers.

Class six:

Teacher showed some questions on the wall by using computer. The students were divided to small groups and then they tried to discuss and solve the problems. Group working is the main goal of the class.

At last, one student wrote the answers to the questions on the board.

Class seven:

Teacher reviewed the materials and divided students into groups of three or four, then started to ask some questions about amino acids. They practiced different formulae. The teacher did a new experiment by using PowerPoint, so the students could see all the process completely.

The teacher asked questions and students tried to answer in their group. At last, the teacher wrote some explanations on the board.

Class eight:

The teacher used PowerPoint to ask some questions about the previous lessons and connected them to her new materials. She explained experiments by using the computer; then she gave some questions to students for group work.

Teacher showed multiple questions on the sheet. She helped students to answer the questions; she was a facilitator who used a student to do an experiment and then showed those processes by the computer and by herself.

Then she collected the papers and wrote the results on the board.

Class nine:

Teacher showed the chemical signs by using the computer. She talked about Dalton and showed the papers of the book on the screen. In this way, the students could concentrate better. They discussed about the strengths and weakness of different theories.

The teacher showed the movement of rays on the sheet and motivated students to think and answer.

Class ten:

Teacher used the computer to explain, do experiments, and teach new materials. They discussed about the boiling, melting and freezing points of different liquids.

She controlled the other computers by sending her program to the computers. The students could learn only by pressing buttons and watched the different processes of materials. Also, students took notes during the class.

Appendix C

Examples of Student Interviews

Chemistry 11

2008

Student Interviews

Chemistry 11

We are very grateful for your cooperation in this study. Please pay attention to these notes: These questions are used as guidelines only. You have more than 30% of the time. Don't be afraid to give your true responses. Your response will give validity to the teacher's activity in the classroom.

Is the use of Internet/computer helpful in your learning?

Which computer programs do you use for doing your assignment?

What technology would you need to make in completing this assignment?

Facing the problem while doing the homework, who do you refer?

Where did you learn your current computer skills and knowledge of computer programs? What are the major obstacles in learning with computer?

Other comments (you are free to use the other side of this sheet).

Classroom Activity- Students' Responses

Chemistry 11

Teacher used a variety of activities. I would like know your opinion about the use of computer in learning.

1) Is the use of Internet/computer helpful in your learning?

Yes, one of the best way for learning.

Yes, in some situation the computer is the best way for learning.

Yes, it's so effective for our learning.

Yes, of course. It's very effective.

It's very beneficial for memorizing our lesson.

Yes, I think it can be very helpful.

Yes, it can be very helpful for learning.

Using the computer is helpful.

Yes, it's very useful for my learning.

Yes, because it increased level knowledge.

It's includes some new information.

Yes, certainly.

Sometimes that's useful not all time.

Yes, of course. It's a useful way for learning.

Yes, it's very useful for us.

Of course, it's a new learning and it's really useful for all students to learn better.

Nearly almost.

Yes, it is helpful for teaching and attracting the students, but we don't have

suitable place.

We can use it, if we have enough tools.

Yes, especially when we face to the lack of the teacher, we can use it.

Yes, of course, but not just with computer.

Yes, it is useful for me.

It is not useful for all situations.

Sometimes, it's helpful. So we can memorize it because it is repeated so many times.

Yes, but all students don't have computer.

Yes, that’s very nice and very helpful for me.

Yes, it can help us a lot.

Yes, it helps us to learn faster and better.

Yes, it's time saving. It helps us to learn fast.

Yes, it's remains in mined better because it is an image.

2) Which computer programs do you use for doing your assignment?

Word-Process

Word – Process

Writing

–

–

–

Word-Process

–

Word-Process

–

Writing

Writing

–

Word-Process

–

–

–

–

–

–

Word- Process

–

–

Word-process

–

–

Word-Process

3) What technology would you need to make in completing this assignment?

I need spreadsheet.

I need Word-Process

I need Information of Internet

I need data base.

I need a calculator.

I need educational software.

I don't use computer.

–

–

I need to train. I cannot use of computer.

I need some books.

–

–

I need some special train.

My knowledge was not enough.

I don't know.

I need Internet.

I need data base.

–

–

I need a calculator.

I need software.

I need computer.

I need information of Internet.

–

I need a flash.

I need multimedia building.

I used Photoshop.

I need data base.

I need a resource.

4) Facing the problem while doing the homework, who do you refer?

I turn to computer expert to solve my problem or we can search the especial sites too.

I would turn to my teacher or my friends.

I can get some information from the computer expert I meet to school.

I ask my teacher.

I ask my teacher.

To my teacher and people who have enough information about it.

To my teacher or my parents and people who have information abou it.

If I have a problem /question I can ask my teacher.

If I have problem I turn to my teacher / people that are good in that case.

I refer to Internet and teacher.

I ask my teacher.

May be my teacher or my friend or at least a person who is professional.

I refer to teacher.

–

I refer to Internet.

I refer to teacher.

–

–

I refer to teacher.

My teacher.

My friends and Internet.

My brother, my friends, and Internet.

–

My sister, sometimes ask ICT team in school.

At first try solve my problem themselves, if not refer to Internet.

I used books, and Internet.

I refer to hand book.

My father and brother help me.

My teacher and refer to Internet, books.

I refer to Educational software.

5) Where did you learn your current computer skills and knowledge of computer programs? What are the major obstacles in learning with computer?

From different ways, my family, friends, books. The textbooks don't base on ICT. We don't have good site in school. My teacher sometimes used computer lab.

I learned through Internet, CD, and done exercise. My problem is

time, and we don't have any person to help us in school.

Internet and computer's book and… time.

Myself. School doesn't help us.

At home. I don't have enough time.

At home. Lack of teacher and it's very expensive.

Myself. We don't have suitable train course in school.

I myself, It's expensive.

I myself, and computer books. It's not based on textbook.

In school. I don't have computer at house.

In institute, I don't have enough time. It's not based on textbook.

In class. It's not based on text book.

In house, and school. We need to computer lab, and should be free we could use it every time.

At school, we don't have time at school. It's big obstacle.

I used computer's books. I need to computer.

In school, I don't have time. It's not based on lesson.

My father. But I need to train.

I Myself, I don't have time for going to class. It's not based on my lesson.

Sometimes used it.

–

–

I myself. But we do not use computer in class. The class should be active.

Internet and friends. But we don't use it in class in all of the time.

Sometimes used it.

I myself. I need to computer's books, and schools don't support me.

I learnt my skills in school. But I need some special software. I don't have enough money for buying software.

My family and school help me to learn and use of software. But school needs to complete its site. I need to have software.

I myself. I need some educational software.

I get my skill in school. We don't have good ICT team.

Computer books, and go to computer class. I don't have computer.

In school, I need some software. I can't buy it.

In institute. We sometimes used computer in class. It's not good.

Other comments (you are free to use the other side of this sheet)

I'd like working with computer because I can use different programs and learn it perfectly.

I enjoy the computer but sometimes I need the help of my teacher because I cannot find something in computer.

It's not fun.

I cannot do my assignment with computer. I need the help of my teacher.

–

–

–

I think using the computer is a good idea. But before everything all

users need some training courses.

I need more knowledge and experience about computer.

–

–

The school needs good staff, and good teacher because many teacher don't know how use it.

The school needs a site, and resource, I go but cannot find good software.

I cannot go to site full time. I have limited time.

–

–

–

We only watch TV, or educational software. We don't use software.

–

–

–

We have to do exercise.

–

–

–

The class should be more challenging but it is not.

The class should be collaborative but it is not.

–

–

All need some special training courses.

Appendix D

Teacher Interviews

Chemistry 11

2008

Interviews

Thank you so much for attending in this research. We know that you are busy, as all teachers are, but we need your help highly. The following set of questions will help us to get better understanding about your experience in this subject.

Pre Observation

1. Is computer useful in your teaching?
2. Which aspects do you find most useful?
3. What is the role of computer in teaching?

Post Observation

1. In your opinion, do students behave differently when computer is used in the class? If your answer is yes, please explain your reason?
2. Are there any problems in preparing the lessons? If yes, what are they?
3. What kind of training/professional development related to ICT have you received? What further professional development would you need?

Appendix E

Principal Interviews

Chemistry 11

2008

Principal

Interviews

Thank you so much for agreeing to assist in this research. We know you are busy, as all principals are, and we value your input highly. The following set of questions will help us get a better understanding about your experience in school.

1. How is this view on education manifested in your school?

2. What plan do you have in your school?

3. What challenges have you made in relation to education in your school?

4. You received large sum of budget for your school. What will your priorities be?

5. What factors do encourage you to use ICT in your school?

Appendix F

ICT Team Interviews

Chemistry 11

2008

ICT Team

Interviews

Thank you so much for agreeing to assist in this research. We know you are busy, as all ICT teams are, and we value your input highly. The following set of questions will help us get a better understanding about your experience in school.

1. How many staff does work as ICT team in your school?
2. How many computers are there in your school? What are their hardware and software specifications?
3. What kinds of software are available in the school? Are they designed for educational purposes? If yes, what kinds of educational software are available?
4. What modes of usage has ICT been put to in the school for teaching and learning?
5. What further developments are being planned for the future?
6. What major difficulties and challenges are there for ICT team in your school?

Appendix G

Experts Interviews

Chemistry 11

2008

ICT Expert Questionnaire
Pedagogical Model

Delphi Round 1

Dear Sir / madam

Thanks for your attention, I am a Ph.D student at University of Malaya in Malaysia. My Ph.D project is about development of a pedagogical model for teaching chemistry through computer-assisted guided inquiry at Iranian High Schools. One of the objectives of my project is to study the experts' responses for development of the pedagogical model. I try to achieve to this objective by using experts' consensus. The only thing that you need to do is replying to these questions. Thank you for your support. I am looking forward to hearing from you soon.

Yours faithfully

Sex	
Age	
Duration	
Degree	

(continued)

Major	
Position	

1. In your opinion and based on your experience of teaching chemistry through computer, what are the essential features (contributing factors) of teaching chemistry through computer?

Please sign and date the form:

Name/ Family: (Signature and name in print)

Position:

Round 1

Demographic and open-ended questionnaire

Table G1

Percentage of Respondent's Accordance to the Gender (N: 20)

Item	Frequency	%
Male	3	15
Females	17	85
Total	20	100

Table G1 shows the highest level of respondent's gender. The largest percentage or of respondents were female 85.0%, while 15.0 of respondents were male.

Table G2

Percentage of Respondents According to Age Group (N: 20)

Item	Frequency	%
Less than 30	0	0
30-40	8	40.0
40-50	10	50.0
50- 60	2	10.0
Total	20	100.0

Table G2 presents the highest level of respondent's age group. The largest percentage 50% of respondents were aged 40-50 years, 40% were aged 30-40 years and the remaining 10.0% were aged 50-60 years.

Table G3

Percentage of Respondents Accordance to the Degree (N: 20)

Items	Frequency	%
Master	12	60
Ph.D	8	40
Total	20	100

Table G3 presents the percentage of respondents according to education level. Some 60% of respondents had Master degree, 40% had obtained Doctoral degree.

Table G4

Percentage of Respondents According to Position (N= 20)

Position	Frequency	%
University	8	40
Chemistry department	8	40
Schools	4	20
Total	20	100

Table G4 shows that 40.0% of respondents were from University, about 40.0% were from Chemistry Department, and about 20.0% were from Schools.

Table G5

Percentage of Respondents Accordance to Work Experience (N= 20)

Item	Frequency	%
5-10	3	15.0
10-15	7	35.0
15-20	10	50.0
Total	20	100.0

Table G5 shows that approximately 50.0% of respondents had working experience of 15-20 years, about 35.0% had 10-15, and about 15.0% had 5-10.

Table G6

Percentage of Respondents Accordance to Major (N= 20)

Item	Frequency	%
Chemistry	20	100
Other	0	0
Total	20	100

Table G6 presents the field of study they had majored. All 100% of respondents had majored in chemistry.

Examples of Experts' Responses

DELPHI ROUND 1

1. In your opinion and based on your experience of teaching chemistry through computer, what are the essential features (contributing factors) of teaching chemistry through computer?

- Knowledge and skills teachers
- Equipment in schools
- Support by principal
- Teacher training
- Need to attitude in students
- Global ICT Websites and materials, computer lab
- Network
- Constructivism, focus on original sources (good books, primary sources)
- Putting up samples of completed projects including standard forms, cases for support budget proposals, breakdown of funds etc.
- Need to infrastructure
- Curriculum website
- Internet
- Intranet
- School Net
- Virtual Library
- Budget, internet line, video projector, soft wares in chemistry
- On line chemistry education (repeating the lessons), virtual labs, online responding and so on.

- Change curriculum

- Computer lab

- ICT coordinator

- Courseware

- Support by school leadership

- Data base

- It advisor

- Educational software

- Computer lab

- Educational software but very limit

- ICT team

- It advisor

- ICT coordinator

- Access to global Website

- Online curriculum

- E-Books

- E-journal

- Connect to museum

- Connect to library

- Connect with other teacher in other world

- Access to resource

- Access to information

- Access to educational sites

- Teacher guide

- Supports diverse approaches to teaching

- Support by Ministry of Education

- Support by parents

- Support by business

- Support by National Government Organization

- School net

List of Technological and Pedagogical Features of Development Pedagogical Model for Chemistry Teaching through Computer Assisted-Guided Inquiry

DELPHI ROUND 2

Dear Sir / Madam

Thank you for your participation in Round One of the Delphi Technique process.

Instructions:

This section lists the statement related technological, and pedagogical feature required experts' views to develop the pedagogical model for teaching chemistry through computer-assisted guided inquiry.

a) In Round 2 of the Delphi Technique all technological and pedagogical features from Round 1 are listed based on your suggestion.

B) For each statement related to technological, and pedagogical please tick to indicate if the technological and pedagogical feature is required for development in the future.

Note: On the Likert scale, respondents identify their degree of agreement or disagreement with a statement by choosing one of five responses. The five options were presented as follows:

5. *Strongly agree*

4. *Agree*

3. *Disagree*

2. *Strongly disagree*

1. *No opinion/Don't know*

Please indicate whether you strongly agree or have no opinion/do not know with the following statements about technological and pedagogical features in teaching chemistry.

(*mark appropriate field with X*)

List of Technological and Pedagogical Feature of Development Pedagogical Model

Statement	5	4	3	2	1
Global ICT Websites and materials					
Curriculum website					
Computer lab					
Chat room					
Increased access to hardware					
Technical support					
Support from school management					
It advisor					
ICT coordinator					
Courseware					
Educational software					
Better search functions to find documents according to different categories					
Putting up samples of completed project including standard forms, cases for support, budget proposals, breakdown of funds					
Research reports and presentations, occasionally publications					
Storing and sharing information					
Accessing work-related resources					
Online support					
Access to computers at home					

(table continued)

Statement	5	4	3	2	1
Video projection					
LCD					
Scanner					
School net					
Network					
Digital camera					
List of web sites for topic areas					
Internet sites in learning activities					
Printer					
Increased access					
Internet access					
Video camera					
Laptop computer					
Data projector					
Large screen computer monitor					
Supports diverse approaches to teaching					
Incorporates appropriate information technology and other media resources					
Includes active and collaborative activities					
Behaviorism					
Learn new pedagogical skills					
Student engagement in learning					
Focus on original sources (good books, classics, primary sources)					
Students develop confidence as independent learners					
Learning occurs outside the classroom (service learning, collaborative project)					
Development different learning style					

(table continued)

Statement	5	4	3	2	1
Problem-based approaches					
Inquiry approach					
Task based approach					
Expository approach					
Resource-based Inductive approach					
Accreditation with the examinations system using ICT					
Instructional emphasis on relationship inquiry and invention					
Time for planning and collaboration with schools					
Using subject-specific learning software (e.g., tutorials and simulation)					
Supports student-centered learning					
Constructivism					
Responds to multiple learning style					

List of Environment and Pedagogical Feature of Development Pedagogical Model for Chemistry Teaching through Computer Assisted-Guided Inquiry

DELPHI ROUND 3

Dear Sir / Madam

Thank you for your participation in Round Two of the Delphi Technique process.

In Round 2 of the Delphi Technique, 32 technological, and pedagogical features received strongly agree or agree consensuses.

Instructions:

a) In Round 3 of the Delphi Technique all 32 technological and pedagogical features from Round 2 are re-listed for you to confirm your rating.

b) The mean rating is indicated. Please rate the technological, and pedagogical features using the same five–point scale (5 = *strongly agree*, 4 = *agree,* 3 = *disagree,* 2 = *strongly disagree,* 1 = *no opinion/don't know*) by placing a number in the rating space provided.

Please indicate whether you strongly agree or have no opinion/do not know with the following statements about technological and pedagogical features in teaching chemistry.

(*mark appropriate field with X*)

List of Technological and Pedagogical Feature of Development Pedagogical Model

Statement	Mean second rating	5	4	3	2	1
Global ICT Websites						
Computer lab						
IT advisors						
ICT coordinator						
Courseware						
Educational software						
Putting up sample						
Research report						
Storing and sharing information						
Accessing work-related						
Online support						
Access to computers at home						
Video projection						
LCD						
Scanner						
Network						
List of Web sites for topic areas						
Internet sites						
Intranet						
Internet access						
Laptop						
Data projector						
Supports student-centered learning						

(table continued)

Statement	Mean second rating	5	4	3	2	1
Incorporates appropriate information technology						
Constructivism						
Behaviorism						
Focus on original source						
Students develop confidence						
Learning occurs outside school						
Development different learning						
Inquiry approach						
Instructional emphasis on relationship inquiry and invention						

According to the curriculum department Ministry of Education, chemistry teaching through computer has changed and increased in the last decades. In your opinion, will this change continue over the next decade? Why or why not?

Appendix H

Students Questionnaire

Chemistry 11

2008

Students

Question

Thank you so much for agreeing to assist in this survey research. We know you are busy, but we value your input highly. The following set of questions will help us get a better understanding your opinion and experience about use of computer in chemistry lesson. We will not release your individual answers to anyone.

1. How much do you agree or disagree with this statement.
   It is important me that use of computer *(please mark one option*).

strongly agree ☐ agree ☐ disagree ☐ strongly disagree ☐ no opinion/know ☐

2. How long have you using computers?

less than one year ☐ one to two years ☐ two to three years ☐ three to four years ☐

3. How often, on average in your last year of school, did you use a computer in your studies?

every day ☐ per week ☐ once per week ☐ monthly rarely or never ☐

4. Please indicate your ability to use the following computer programs to carry out the tasks of the types given as examples *(mark one option per program).*

1. I do this type of task alone
2. I would need some help to do this type of task
3. I have never done this type of task

- word-processor e.g. to create a well formatted CV

☐ ☐ ☐

- spreadsheet e.g. to design a new sheet & enter simple numerical data

☐ ☐ ☐

- email program e.g. to send an attached document or image

☐ ☐ ☐

- database e.g. to create a new database of your own with simple text entries

☐ ☐ ☐

- graphics program e.g. to manipulate an image such as co lour to B&W

☐ ☐ ☐

- web authoring program e.g. to create a personal homepage

☐ ☐ ☐

- presentation manager e.g. to create a short talk with slides

☐ ☐ ☐

- web browser e.g. to look for weather or download music files

☐ ☐ ☐

5. How often do you use of internet for cooperative with other people?

every day ☐ per week ☐ once per week ☐ monthly rarely or never ☐

Frequencies & Percentages and Analysis of Students' Views by Studying Description Indicators

Table H1

Analysis of Students' Views by Studying Description Indicators

Item	S.A		A		D		S.D		N.O		Mean
	n	%	n	%	n	%	n	%	n	%	
Use of computer	10	50	9	5	1	5	-	-	-	-	1.550

Table H1 shows that approximately 50% of respondents perceived they strongly agree related to "computer use in chemistry learning". The mean score 1.550 indicates an average of strongly agree.

Table H2

Time Spent on Using Computer

Item	Less than one year		One – two years		Two – three years		Three – four Years		Mean
	n	%	n	%	n	%	n	%	
Time spent on use of computer	-	-	1	5	3	15	16	80	3.750

Table H2 shows that approximately 80% of respondents perceived the related to "time use of computer" three to four years. The mean score 3.750 indicate is quite well.

Table H3

Use of Computer in Studies

Item	Every day		2-6 times a week		Once per week		Monthly, rarely or never		
	n	%	n	%	n	%	n	%	Mean
Use of computer in their study	10	50	5	25	5	25	0	0	1.750

From Table H3 it can be seen that approximately 50% of respondents perceived they needed the "use of computer in their study" every day. The mean score 1.750 indicates this well.

Table H4

Use of Computer Applications by Students

Items	I do		I would need		I have never		
	n	%	n	%	n	%	Mean
Word-processor	18	90	2	10	-	-	1.100
Spreadsheet	9	45	11	55	-	-	1.550
Email program	15	75	2	10	3	15	1.400
Database	10	50	8	40	2	10	1.600
Graphics program	10	50	7	35	3	15	1.650
Web authoring program	9	45	5	25	6	30	1.850
Presentation manager	7	35	10	50	3	15	1.800
Web browser	8	40	9	45	3	15	1.750

As shown in Table H4, more than 75% percent of the respondents reported that they used email to send an attached document or image. A

small percentage (10%) of the respondents reported that they did not use databases. The scores for all items above are between 1.100-1.850 indicating that they need to upgrade skills in using of computer in chemistry learning.

Table H5

Perception of Need to Be Cooperative

Item	Every day		Per week		Once per week		Monthly rarely or never		
	n	%	n	%	n	%	n	%	Mean
Cooperative	7	35	5	25	6	30	2	10	2.150

Table H5 shows that approximately 35% of respondents perceived they needed to be "cooperative with other people" every day. The mean score of 2.150 indicates this low response.

Students

Question

Thank you for your participation in this study research. The following set of questions will help us get a better understanding your opinion about use of computer in chemistry lesson. We will not release your individual answers to anyone.

Note: On the Likert scale, respondents identify their degree of agreement or disagreement with a statement by choosing one of five responses. The five options were presented as follows:

5. *Strongly agree*

4. *Agree*

3. *Disagree*

2. *Strongly disagree*

1. *No opinion/Don't Know*

How much do you agree or disagree with this statement?

(*mark appropriate field with X*)

Statement	5	4	3	2	1
1. Use of computer is useful for team work.					
2. Use of computer is useful for increased responsibility/self- esteem independence.					
3. Team work is a suitable method for encouragement.					
4. Feedback is applied to correct any mistakes in chemistry learning process.					
5. I'd like team work in studying chemistry, it's an investigation work.					
6. Investigation enhances understanding of chemistry phenomenon.					
7. Collaboration upgrades my knowledge and skills in chemistry.					
8. Practical work with computer is a suitable method.					
9. I enjoy team work as I can work with other students.					
10. Teacher's help is adequate to improve chemistry learning.					
. 11. Use of computer in chemistry lesson is better than without a computer.					
. 12. Technology tools that I used in chemistry class were friendly.					
13. Computer can be quite useful in chemistry concepts.					
14. Computer establishes communicate with others.					
. 15. Overall, I have found chemistry lesson with computer is interesting.					