

National Annexes

Denmark

France

Greece

Netherlands

Spain

United Kingdom

Danish contribution

Framework for collecting data about pupils' representations (for wp 4 & del A05)

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1. Subjects investigated

Hellig Kors Skole

Skyttegade 1

2200 Copenhagen N

<http://www.helligkorsskole.dk>

Contact: Lise Bramsen (Lise.Bramsen@skolekom.dk)

Teacher: Dorte H. Johannesen (dj.hks@ci.kk.dk)

Pupils: Grade 3 = 9-10 years old



19 motivated pupils from the Hellig Kors Skole took part in the activities of Representation in May 1999. After drawing and writing six pupils were selected for interviews.

The Hellig Kors Skole is an urban Folkeskole (Primary and lower secondary school) with 70 per cent bilingual pupils. The total number of students is 450. The school has 50 teachers, 20 normal classes and seven classes with special education. There are 16-17 pupils in the normal classes and 5 pupils in the special education classes.

At the Hellig Kors Skole, educational vision or mission is to make attending school fun and educational. The pupils have to become professionally competent in order to do well in the Danish society, and the school is putting a lot of work into ICT integration. The teachers have attended courses in pedagogy and ICT. However, the teacher of the selected class has never been involved in a real ICT project together with the pupils.

The pupils of the selected class do not have access to computers in their own classroom but move to a special computer room when working with ICT. The pupils have used the computer for writing stories and poems, for arithmetic, and together with special educational software. When having a supply teacher the pupils are often allowed to use the computer for games and Internet. A "Computer Café" is arranged for the pupils between 9 and 12 years once a week.

2. Methodology

The parents of the pupils were informed about the Representation project through the newsletter of the class (in the next newsletter we will ask the parents for their permission to let us use the photos taken in the classroom). The pupils had been told about the project by their class teacher, and I – the researcher – was introduced as a multimedia producer interested in the activities of the pupils' brains when working with a computer.

Each pupil of the chosen class were asked to draw a computer and to write the names of the different parts of the computer supplied with a short text on the theme: "What is for me the usefulness of a computer?". When drawing the pupils have been sitting in their own classroom without any computers as models. The computers on the paper have been drawn according to the pupils' conceptions of a computer. Afterwards six pupils were selected for an interview. While the selected pupils were interviewed one by one in another classroom the class teacher introduced a collective work on the issue: "What might computers bring in the future?".

The class teacher was the main actor, introducing the exercises and selecting the pupils for interviews. The latter was a very hard job, as most of the pupils wanted to be interviewed. Afterwards the class teacher has taken part in analysing the process and the outcome of the collective work on computers in the future.

The selected class participated in the Representation project from 8 a.m. to 1 p.m., interrupted by two breaks. One and a half hour for the introduction and drawing and writing on the theme "What is for me the usefulness of a computer?" and two and a half hour for the collective work on computers in the future.

3. Interview

Six pupils were interviewed for 30 minutes each. An interview scheme were used for notes combined with mini disc. The names of the pupils have been changed, and the disc has been deleted.

3.1. Interview 1: Lisa

Age: 9 years old (10 in July)

Gender: F

Nationality: Danish

Brothers and sisters: none

Parents: divorced. Father = biologist. Mother = illustrator/designer (does not use a computer for her work)

Family situation: Lisa lives together with her mother and her mother's friend. Lisa stays at her father's place every other weekend

Hobbies: reading and playing with the rabbit Nini

Game consoles at home: none

Use of computer at home

Lisa and her mother have an old computer, which they do not use. Her father has an older computer, which Lisa uses every second weekend. Her mother's friend has a brand-new computer with Windows 98, loudspeakers, scanner, printer, and very soon with Internet as well. The most frequent users in the family are her father and her mother's friend, using computers for homework and games. Lisa uses her father's computer for writing stories and lists of birthday or Christmas wishes. She also uses her father's computer for playing games together with her father, such as shooting games and adventure games. Helped by her mother's friend and his new computer Lisa has just created a birthday invitation consisting of text and scanned pictures.

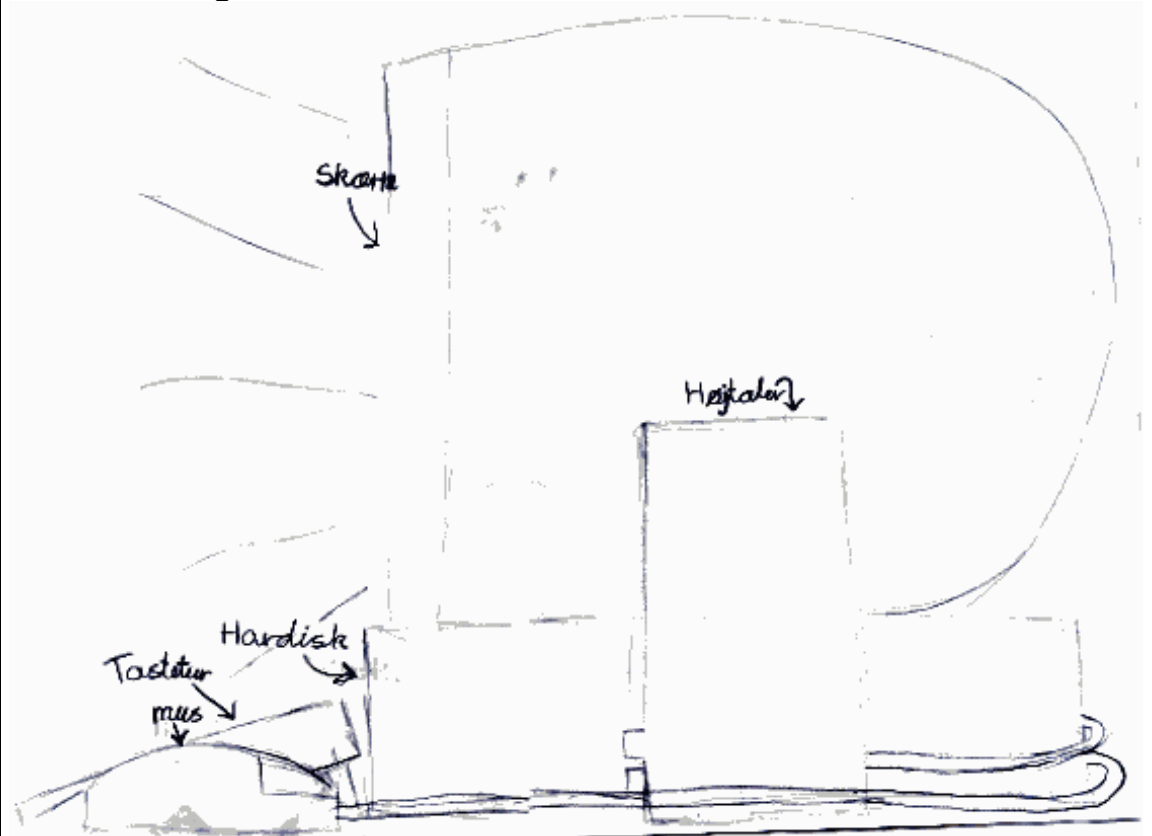
Use of computer at school

Lisa has used computer at school for writing, arithmetic and drawing. She prefers writing stories and poems but would like to use the computer for Internet and what she calls "detective puzzles":

Lisa: I would like to use the Internet in order to learn a lot of things. For instance about astrology, rabbits and avocados. I love seeing things grow!

Lisa thinks that the computer is good for those who are not doing well in writing and arithmetic (see her story later). Compared to her fellows Lisa estimates her computer competence to be above average. Lisa helps her fellows when working with the computer and vice versa.

Lisa's drawing



Depicted parts

- Screen
- Cabinet (with harddisc)
- Keyboard
- Loudspeaker with buttons and cable
- Mouse and cable

Texts

- "Screen"
- "Harddisc"
- "Loudspeaker"
- "Keyboard"
- "Mouse"

General description

A3 drawing in black and white. A computer presented in profile, consisting of a screen with beams, a cabinet (including a harddisc), a keyboard and a mouse. Some of the parts are provided with cables.

Comments on the drawing

Lisa is the only one of the six selected pupils, who has written "harddisc":

Lisa: In fact you cannot see the harddisc, but it is one of the most important parts of a computer – as far as I know.

Lisa has depicted the computer in profile in order to show the sloping keyboard, she says.

Lisa's text: "What is to me the usefulness of a computer"

Words: 55

Sentences: 2 (long)

Nouns: *computer, Danish, mathematics, mathematics games, games*

Adjectives: *good, better, fun*

Verbs: *think, teach, learn, learn better, playing games*

Main argument: "The computer is able to teach those who are not doing that well in Danish and mathematics, so that they can learn better."

Comments on the text

Note that Lisa is writing about other pupils and their opportunities improving their skills within Danish and mathematics, using a computer. Lisa writes that you can have fun playing games, too.

It seems as if Lisa takes an observing view of the computer, representing the computer in profile and pointing out the possibilities for other pupils using computer for Danish and mathematics.

3.2. Interview 2: Jeanette

Age: 9 years old (10 in August)

Gender: F

Nationality: Danish

Brothers and sisters: two little brothers

Parents: divorced. Father = carpet salesman. Mother = housewife

Family situation: Jeanette lives together with her mother, her mother's friend and her little brothers

Hobbies:

- football
- computer games (in the youth centre)
- aerobics
- television

Game consoles:

- Nintendo at her father's place
- Play Station at home (a Christmas present. However, the remote control has disappeared)

Use of computer at home

Her mother's friend has a computer, but the computer has not been installed yet. The computer is a brand-new computer. The most frequent users in the family are Jeanette, her Father and her little brother. They are all using computer for games.

Use of computer at school

Jeanette has used computer at school for writing stories and for Danish and mathematics. Jeanette prefers writing and would like to use the Internet:

Jeanette: I would like to use the computer for Internet if anybody would bother to help me!

Especially one site on the Internet is very tempting for Jeannette. A commercial site with games and competitions, created by a Danish bon-bon producing company. Jeanette knows the address of the site by heart:

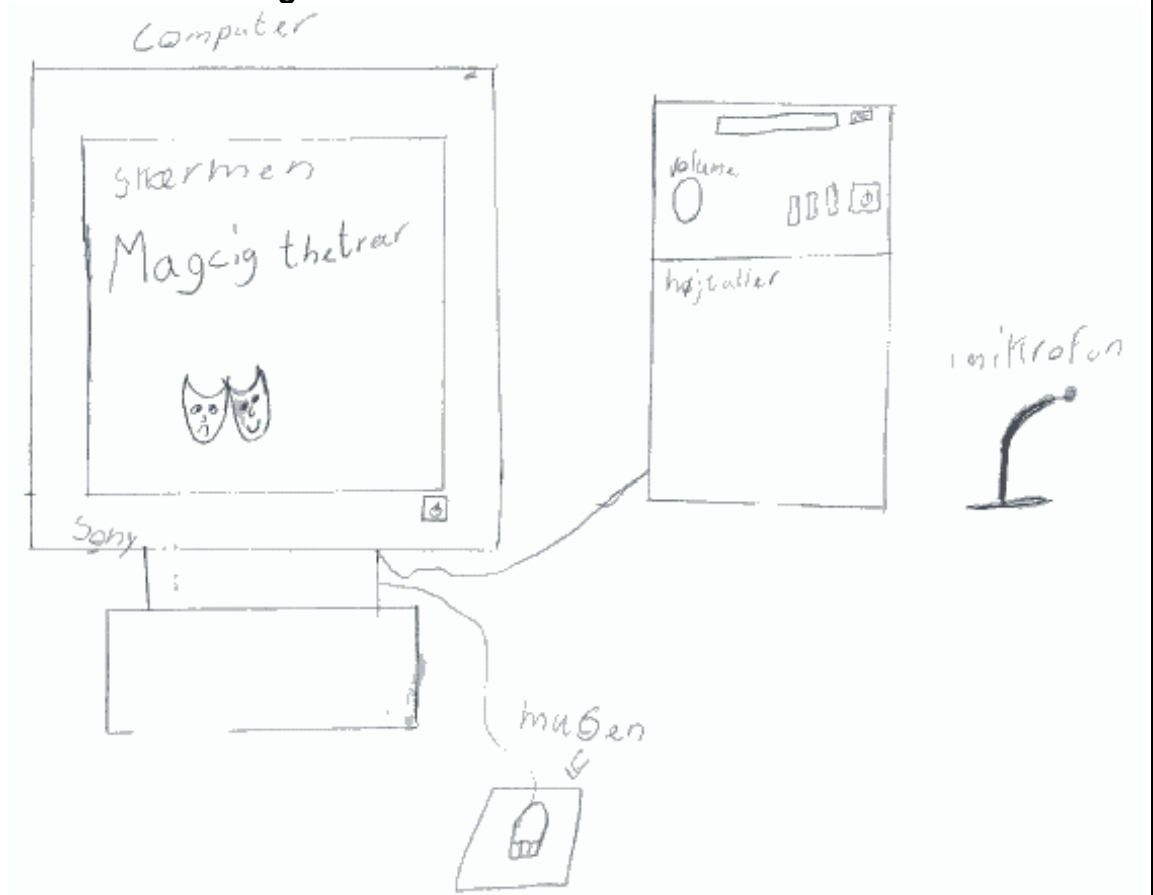
"www.bonbonland.dk". Jeanette thinks the computer is good for writing.

Compared to the other girls in the class Jeanette estimates her computer competence to be above average. Jeanette helps her fellows when working with the computer and vice versa.

Use of computer in other/special places

Jeanette is a frequent user of the computer in the youth centre. She entertains herself by writing stories and playing computer games (e.g. "The Lion King"). Normally she is alone when using the computer, but sometimes she is using the computer together with her fellows in the youth centre.

Jeanette's drawing



Depicted parts

- Screen ("Magic Theatre") and on/off button
- Keyboard
- Mousepad and mouse + cable
- Loudspeaker/cabinet with CD ROM drive and buttons + cable
- Microphone

Texts

- "Computer"
- "The screen" + "Magic Theatre"
- "Sony"
- "The mouse"
- "Volume"
- "Loudspeaker"
- "Microphone"

General description

A3 drawing in black and white. A frontal presentation of a computer consisting of a Sony screen with on/off button and "Magic Theatre" (a CD ROM for creating videos and shows), a cabinet/loudspeaker with CD ROM drive and buttons. Some of the parts are provided with cables.

Comments on the drawing

Jeanette is the only one of the six selected pupils, presenting a microphone. She is using the microphone for creating videos in "Magic Theatre" in the youth centre. Jeanette does not know where the harddisc is placed, and where all her texts written on the computer are saved.

Jeanette's text: "What is to me the usefulness of a computer"

Words: 43

Sentences: 2

Nouns: *computer, stories, Internet, all kind of things*

Adjectives: *fun*

Verbs: *make your day go by, play, work, write, use Internet, look at all kind of things*

Main argument: "It is fun using the computer because you can make your day go by, when you are playing, working, writing stories and using Internet in order to look at all kind of things."

Comments on the text

Jeanette is focusing on making the day go by. When staying in the youth centre she uses the computer a lot:

Jeanette: If you want to you can make your day go by. Time flies when you are playing on the computer.

3.3. Interview 3: Runi

Age: 9 years old (10 in June)

Gender: M

Nationality: has lived in Denmark for seven years, comes from Morocco

Brothers and sisters: one little sister of 7, one little sister of 5

Parents: live together. Unemployed

Family situation: Runi lives together with his mother, father and sisters

Hobbies:

- computer and computer games
- working (public playground: painting, sowing grass, building a slide etc.)
- playing with the little sister
- being at home when it rains (looking out of the window at people passing by)

Game consoles at home:

- Super Mario
- Nintendo

Use of computer at home

Runi and his family do not have a computer at home. His grandfather has a computer, but Runi is not allowed to use it alone. The most frequent users in the family are his uncle of 19 and his female cousin of 10, using the computer for writing and playing games. Runi has used his grandfather's computer for games assisted by his uncle.

Use of computer at school

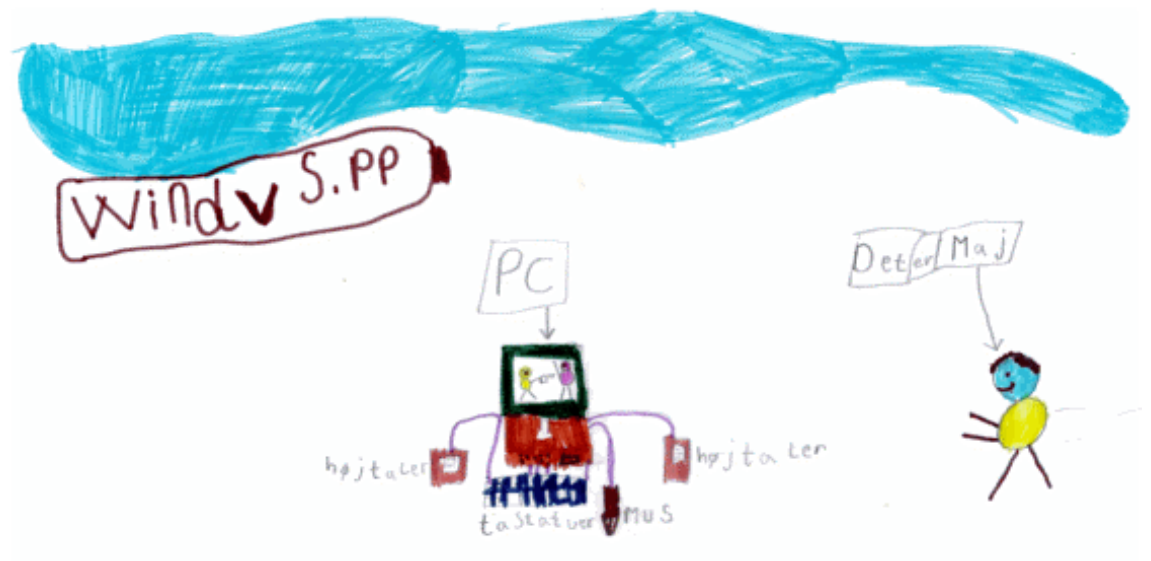
Runi has used computer at school for writing and arithmetic. He prefers playing and writing but would like to use the computer for Internet and e-mail facilities. Runi thinks that the computer is good for writing and arithmetic. Compared to his fellows Runi estimates his computer competence at "medium". Runi helps his fellows and vice versa.

Use of computer in other/special places

Runi is a frequent user in the Computer Café of the school. Runi uses the computer for games, especially "GTA" ("Grand Theft Auto", an action game with cars). The problem is the queue in front of the computer:

Runi: *Sometimes I do not have my go. When I tell Johnny that it is my go he says no!*

Runi's drawing



Depicted parts

- Screen with "GTA" (a man with a gun and a victim) and cable
- Cabinet
- Keyboard and cable
- Loudspeakers and cable
- Mouse and cable
- Actor (= Runi)

Texts

- "Windows 99"
- "PC"
- "Loudspeaker" x 2
- "Keyboard"
- "Mouse"
- "This is me"

General description

A3 drawing in colours. At the top of the drawing you see a blue cloud and under it the heading "Windows 99". The computer is depicted en face and labelled as a PC, consisting of a screen with a scene from the action game "GTA", a cabinet, a keyboard, two loudspeakers and a mouse. Some of the parts are provided with cables. To the right you see Runi – blue in the face.

Comments on the drawing

Runi does not know where the harddisc is placed. Runi tells about the procedure when loading "GTA" and which buttons to press in order to insert and move the CD ROM. Runi likes playing "GTA" and can easily play the game for hours. Sometimes he plays together with his fellows, sometimes alone:

Runi: It's fun plugging a man. Then lots of police will arrive."

Runi tells that on the drawing he is on his way to the computer in order to play "GTA".

Runi's text: "What is to me the usefulness of a computer"

Words: 32

Sentences: 3

Nouns: *computers*

Adjectives: *fun, boring*

Verbs: *play*

Main argument: "It is fun playing computer games but boring not having your go."

Comments on the text

Runi really wants to play "GTA" but is often prevented from playing. At home they do not have a computer, at his uncle's place he is not allowed to use the computer alone, and at school he does not succeed in having his go every time in the Computer Café. Perhaps this is the reason why he has placed himself beside the computer on the drawing – always on the way to the computer but not always succeeding in reaching the computer.

3.4. Interview 4: Anders

Age: 9 years old (10 in August)

Gender: M

Nationality: Danish

Brothers and sisters: one big brother of 15, one big sister of 10

Parents: father, lives in Italy. Mother = office employee. Mother's friend = actor.

Family situation: Anders lives together with his mother and his mother's friend. He never sees his father. His brother and sister live in another place

Hobbies: football and Play Station

Game consoles at home: Play Station

Use of computer at home

Anders has used a computer for several years and has an old computer in his own room. In the living room the family has a brand-new computer with free access to the Internet. Anders is the most frequent user in the family, using computer for games (e.g. "Red Alert", a strategy game). On the Internet he reads about games and Play Station, looking at pictures and photos, too. Anders does not use the e-mail facilities. He is allowed to use the computer every day, but the computer is often occupied by the other members of the family. His big brother uses the computer for chat, and his big sister uses it for Internet. His mother uses the computer for homework (spreadsheets) and his mother's friend for writing. Anders is often assisted by his brother when looking at the Internet. However, he is alone when playing on the computer at home.

Use of computer at school

Anders has used computer at school for writing poems and arithmetic (spreadsheets). He prefers using the computer for Internet activities, looking at football, Play Station and new games. Anders thinks that the computer is good for writing and arithmetic. Compared to his fellows Anders estimates his computer competence to be above average. Anders helps his fellows (for instance with codes for "GTA" and "The Lion King"), while his fellows help him to use the Internet.

Use of computer in other/special places

At least once a week Anders is in a computer café in the town, playing "Red Alert" and "Duke Nukem" together with his friends. The price is roughly 1 EURO an hour.

Anders' drawing



Depicted parts

- Screen with a scene from "GTA" + buttons
- Cabinet with disc and CD ROM drive
- Loudspeakers
- Printer
- Keyboard
- Mouse (IBM) + cable

Texts

- "Computer"
- "Screen"
- "Loudspeaker" x 2
- "Printer"
- "Mouse" and "IBM"
- "Keyboard"

General description

A3 drawing in black and white with colours on the screen, showing a scene from "GTA" ("Grand Theft Auto, an action game with cars"). The computer is depicted from the front together with a cabinet (including disc drive, CD ROM drive and loudspeaker), another loudspeaker, a keyboard and a mouse, labelled as "IBM". The mouse is provided with a cable.

Comments on the drawing

Anders does not know where the harddisc is placed. He is focusing on the activities on the screen, i.e. the action game "GTA":

Anders: You score points when shooting cars and people. Here I have shot a man. And there a car – and there.

Anders has "GTA" on Play Station as well. Anders shows where to insert a disc and a CD ROM. The computer has Internet access, too, and the printer is for printing texts and pictures from the Internet, he says.

Anders' text: "What is to me the usefulness of a computer"

Words: 29

Sentences: 4

Nouns: *computer, Internet*

Adjectives: *fun*

Verbs: *play, surf, like, can do a lot*

Main argument: "It is fun surfing on the Internet and playing on a computer, and you can do a lot using a computer."

Comments on the text

Anders adds that you can write on a computer as well. However, Anders' life is loaded with computer games. Anders writes about Play Station and football, supplying the text with matching pictures. Sometimes he uses his creations as a Christmas or birthday list for his mother.

3.5. Interview 5: Ian

Age: 10 years old (in March)

Gender: M

Nationality: Danish

Brothers and sisters: two big brothers, three big sisters, one half little sister

Parents: father = doctor. Mother = home help. Mother's friend = actor.

Family situation: Ian lives together with his mother and some of his brothers and sisters. Ian stays at his father's place in the weekend

Hobbies: computer games, cycling, football

Game consoles at home: Play Station (Christmas present)

Use of computer at home

Ian does not have a computer at home. The family wants to wait because of the fact that computers do not work after the year 2000, he explains. Ian has used his father's computer for two years. The computer is equipped with Internet, scanner and printer. The most frequent users of the family are his big brother (of 28) and his big sister (of 26). The big brother uses the computer for homework, Internet and games, and the big sister uses the computer for homework. Ian uses his father's computer for games together with his big sister (e.g. "Star Wars").

Use of computer at school

Ian has used computer at school for Internet, games, spreadsheets and for writing. He prefers using the computer for chat and browsing on the Internet. When being asked what he would like to use the computer for he answers: "Free internet!". Ian thinks that the computer is good for arithmetic and writing. Then you do not write that awfully, he says. Compared to his fellows Ian estimates his computer competence to be above average and almost "great". Ian helps his fellows (for instance with chat sites) and vice versa.

Use of computer in other/special places

Every second day Ian visits a computer café in the town together with his friends, playing "GTA", "Red Alert" and "Delta Force". The price is about 1 EURO an hour in the computer café.

Ian's drawing



Depicted parts

- Screen with "GTA" (a scene with two cars)
- 2 loudspeakers
- Mouse and cable
- Keyboard

Texts

- "Computer"
- "Keyboard"
- "Volume"
- "Mouse"
- "IBM"

General description

A3 drawing in black and white with coloured screen and coloured mouse. The computer is presented from the front and labelled as an IBM, consisting of a screen with a scene from the action game "GTA", a keyboard, two loudspeakers and a mouse with cable.

Comments on the drawing

Ian tells that the harddisc is the place to put in discs and where to have folders and files. The CD ROM player is placed behind the keyboard, Ian explains. Ian tells that the setting on the screen is from the action play "GTA":

Ian: *You are stealing cars, and then you hit people. The police will follow you.*

Ian's text: "What is to me the usefulness of a computer"

Words: 32

Sentences: 1 (long)

Nouns: *spreadsheets, computer, Internet*

Adjectives: *fun*

Verbs: *play, create, write, surf, chat, make time pass by*

Main argument: "It is fun playing computer games, creating spreadsheets, writing, or surfing on the Internet, chatting and making time pass by."

Comments on the text

Ian's thoughts are loaded with computer games. Asking him if he is bored as he writes about making time pass by he answers: "They do not have exciting games!".

3.6. Interview 6: Didi

Age: 9 years old (10 in June)

Gender: F

Nationality: has lived in Denmark for several years. Comes from Morocco.

Brothers and sisters: one little brother and one little sister

Parents: father = postman. Mother = kitchen assistant

Family situation: Didi lives together with her mother, her mother's friend and her little brothers

Hobbies:

- playing (jumping, skipping, cycling)
- reading
- drawing
- computer games

Game consoles:

- Play Station at her cousin's place

Use of computer at home

Didi and her family do not have a computer at home, but they are about to purchase a computer.

Use of computer at school

Didi has used computer at school for writing, arithmetic and games. She prefers playing and writing and would like to use the computer for games like "The Lion King" and "Aladdin". Until now she has not experienced the Internet. Didi thinks the computer is good for arithmetic and correcting mistakes. Compared to the other girls in the class Didi estimates her computer competence as "medium". Didi helps her fellows when working with the computer and vice versa.

Use of computer in other/special places

Didi does not frequent the Computer Café at school, as she has to attend lessons in Arabic. Occasionally she uses her female cousin's computer.

Didi's drawing



Depicted parts

- Screen with "1999" and buttons
- Keyboard with individual characters
- Mouse and cable

Texts

- "Screen" + "1999"
- "Keyboard"
- "Mouse"

General description

A3 drawing in black and white with coloured numbers: "1999". The computer is depicted from the front, consisting of a screen, a keyboard and a mouse with cable.

Comments on the drawing

Didi explains how to use the different buttons on the screen, i.e. sound, luminance and power. She also tells how to insert and skip a CD ROM. Didi does not know what a harddisc is.

Didi's text: "What is to me the usefulness of a computer"

Words: 41

Sentences: 3

Nouns: *computer, school*

Adjectives: *fun*

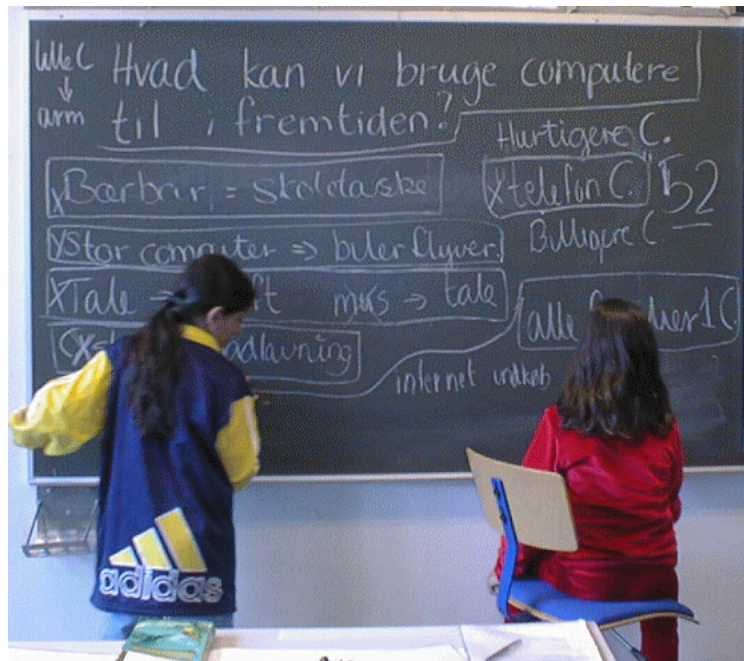
Verbs: *write, play, learn, like*

Main argument: "It is fun having a computer because you can write and play and learn something."

Comments on the text

Didi really likes writing and playing on the computer but does not have the same experience as her fellows in using a computer because of the fact that her spare time is mainly dedicated to Arabic lessons. She speaks Arabic with her father and Danish with her mother.

4. Collective work: "What might the computers bring in the future?"



The blackboard was used for the pupils' brainstorm. At the top: "How can we use computers in the future?"

Introduction of collective work

The class teacher introduced the collective work on the issue: "What might the computers bring in the future?". The question was written on the blackboard and explained to the pupils by the teacher.

Brainstorm

The blackboard was used for the pupils' brainstorm. The pupil's proposals were written on the blackboard and elaborated by other pupils. In that way one proposal turned into a subject with several links.

Discussion

In the beginning of the discussion some of the pupils were more or less absent minded. As the ideas popped up the pupils woke up. The ideas were mainly dealing with an easy and smart lifestyle, using the computer for daily doings. The idea of having a portable computer as a schoolbag lead to a discussion on the necessity of being at school. Some pupils were of the opinion that school might be abolished in the future, other pupils considered the school necessary for meeting new friends. The pupils' discussion on extra spare time – when having a computer for the daily doings – was dealing with extra time for playing computer games and seeing friends.

Collective work

Five groups were formed according to the pupils' interests and the class teacher's wish to mix the boys and girls. Every member of the groups took part in the activities, writing stories in the computer room and drawing illustrations in the classroom.

Presentation

Two pupils from each group presented a drawing and a story in front of the rest of the class.



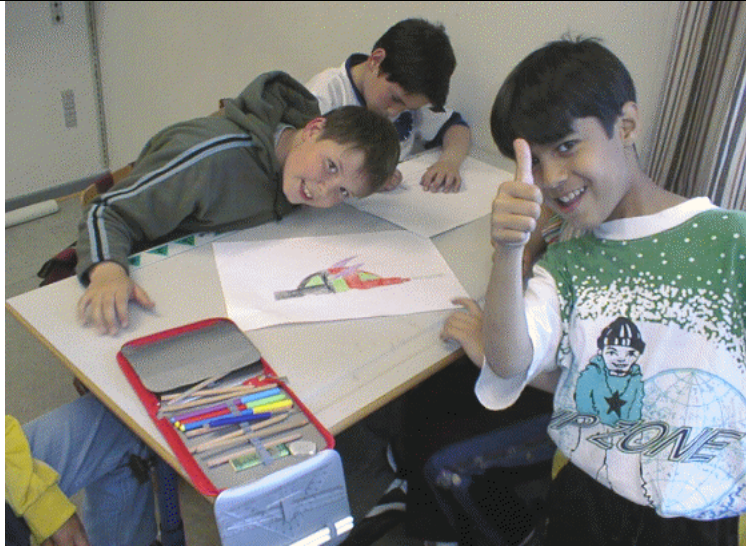
Presentation of the computer as a housekeeper.

Nouns: Portable computer, Internet, communication, television, "television telephone", flying car, PC.

Adjectives: Fast, easy, tough, funny, tasty, smart.

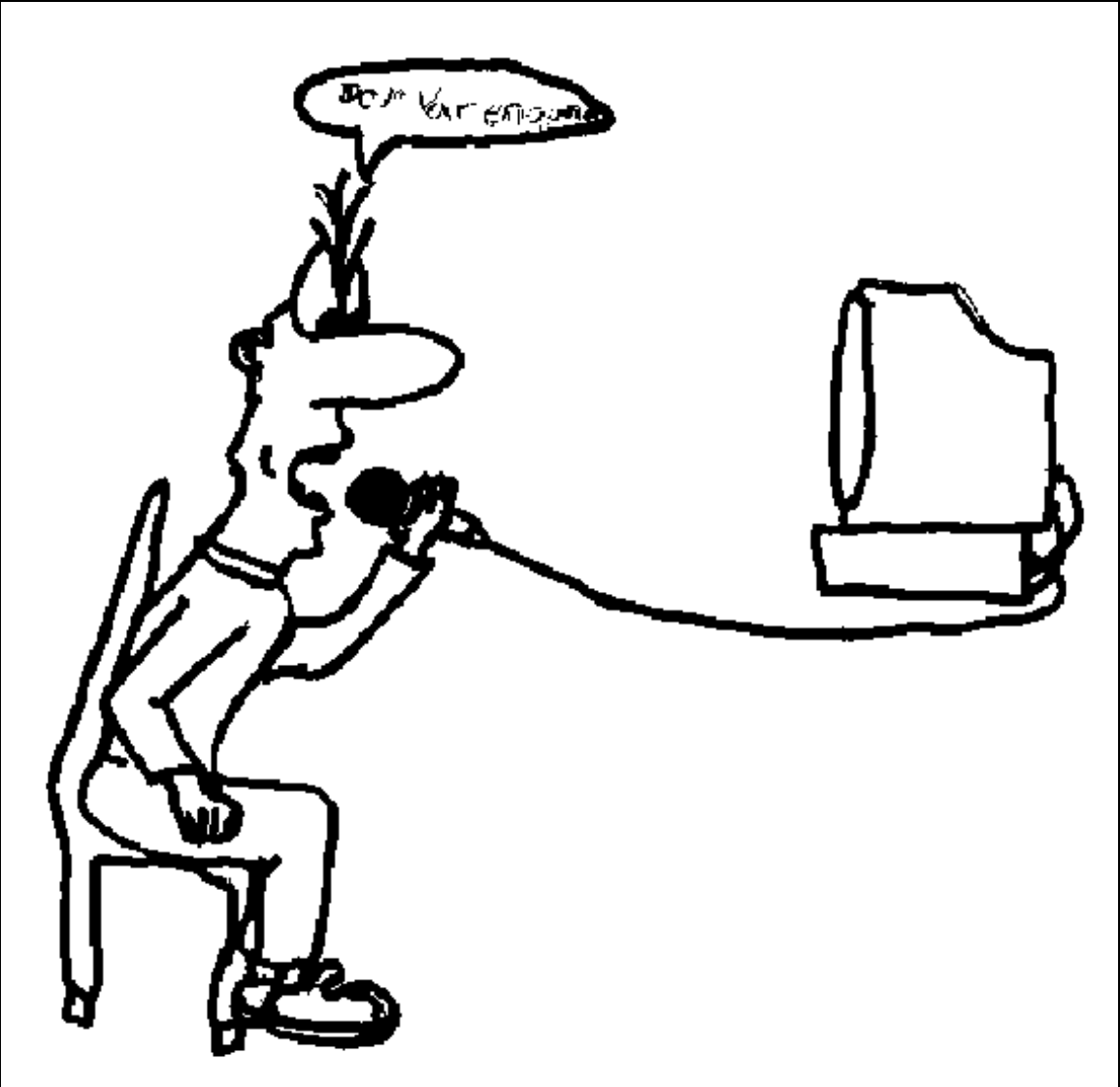
Verbs: Play, speak, write, think, work, fly, cook, wake up.

Main argument: The pupils' conceptions of computers in the future are focusing on the computer as an active and service minded tool, i.e. how to make life easy and fun having a computer to manage the daily doings: "Tell the computer what to do!", "A flying car", "A portable computer as a schoolbag", "Computer cooking in the future" and "The computer as a housekeeper" (see the following examples).



A flying car with purple wings. "That is cool!"

4.1. Group A: Tell the computer what to do!



Drawing

A3 drawing in black and white. A man sitting in front of a computer tells the computer what to do.

Text

"Once upon a time".

Story (edited)

In the year 2025 the computers will be big. So big that you cannot use the mouse anymore. Instead you speak to the computer. When you want to use a program you say so and instead of using the keyboard you simply say it. When you are writing you just tell which words to be written, and you just tell the computer to turn on.

4.2. Group B: A flying car



Drawing

A3 drawing in colours. A car with purple wings and smoke out of the nose.

Text

None.

Story (edited)

We hope that flying cars will be made. If you tell the car to fly it flies. If you are bored you say that you want to watch television in the car. If you could play computer games in the car it would be cool.

4.3. Group C: The portable computer as a schoolbag



Drawing

A3 drawing in black and white with a green desktop on a portable computer.

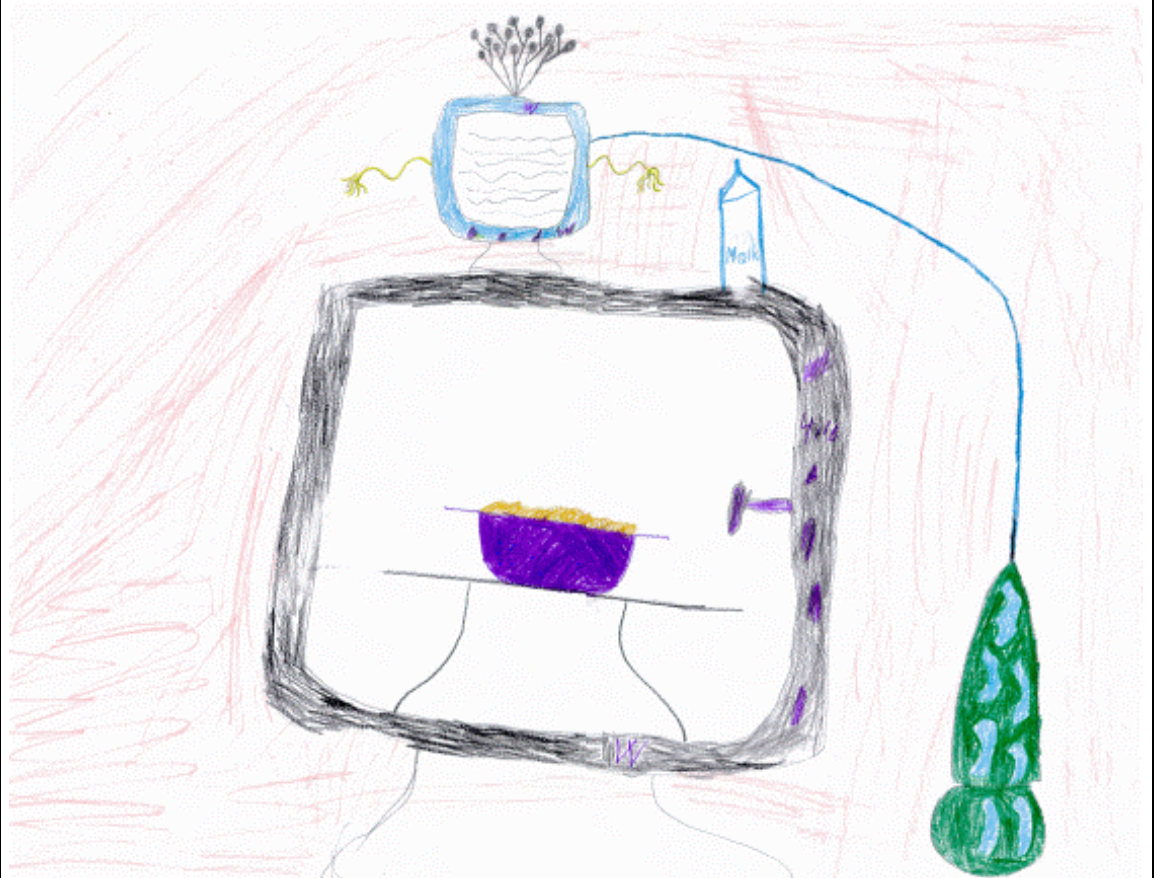
Text

None.

Story (edited)

It is my birthday and I have had a portable computer from my grandmother for present. I have installed games and other programs. My friends arrived and said that my computer was just great.

4.4. Group D: Computer cooking in the future



Drawing

A3 drawing in colours. A computer connected to a microphone and a computer kitchen.

Text

None.

Story (edited)

A morning in the future a child woke up very hungry and went out in the kitchen and had breakfast. Then he was struck by an idea. How smart it would be to have a computer to cook when it was told to do so. Then he made a drawing showing the idea of computer cooking. He showed the drawing to a scientist who succeeded in creating the computer. The next time he wanted breakfast he just told the computer to prepare it.

4.5. Group E: The computer as a housekeeper



Drawing

A3 drawing in colours. A child speaking to a computer in a tidy room with flowers and a nice bed.

Text

None.

Story (edited)

One morning the computer told me to go to school. I put on my clothes and had breakfast. The computer had prepared a pizza for breakfast. The computer was playing music and told me that it was eight o'clock. I hurried up and went to school. When I came home everything had been arranged. The computer had tied up the house. It is wonderful having a computer.