How Sixth-graders Assisted the First-graders in Learning Literacy and Producing Text with Computers

Riitta-Liisa Korkeamäki

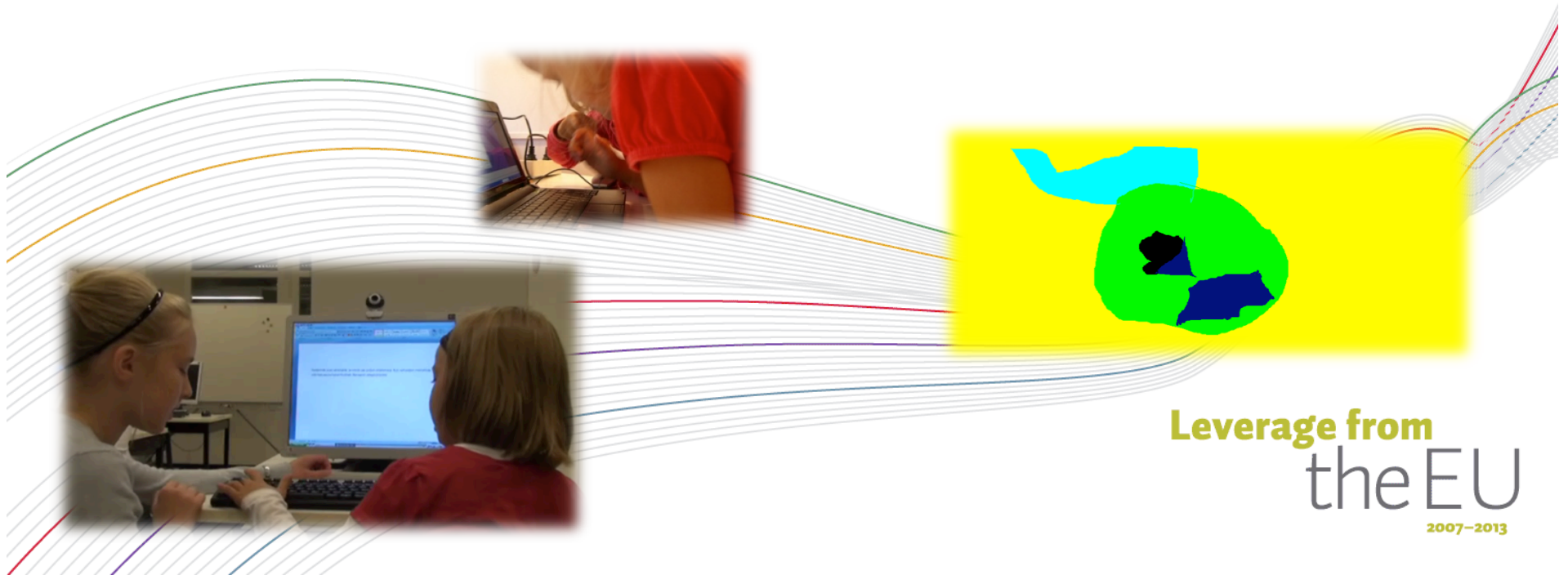University of Oulu, Department of Education

FINLAND

EETC 2011
EARLY EDUCATION AND TECHNOLOGY FOR CHILDREN

How sixth graders assisted the first graders in learning literacy and producing text with computers

Prof. Riitta-Liisa Korkeamäki
University of Oulu, Finland
Future School Research, 1st Wave

Finnish context for literacy learning and the use of technology in education

- Finland's success in reading literacy in OECD PISA surveys (2006 / 2010)
  - One of the top countries
  - Still need for more reflective learning in literacy
  - Reading skills good but deficiencies in writing skills

- There is little research done on young children and their learning
- Educational use of new technologies has stayed in the background in research (Korkeamäki et al. 2009)

- In first and second grades the Finnish curriculum emphasizes phonics, spelling and handwriting skills whereas communication and interaction play a less significant role (Huisman 2006)

- Despite strong emphasis on constructivism and child-centered pedagogical theories, in practice learning in schools is still very teacher-centered and tied in school books (Korkeamäki & Dreher 2011)

Leverage from theEU
2007–2013

# This research
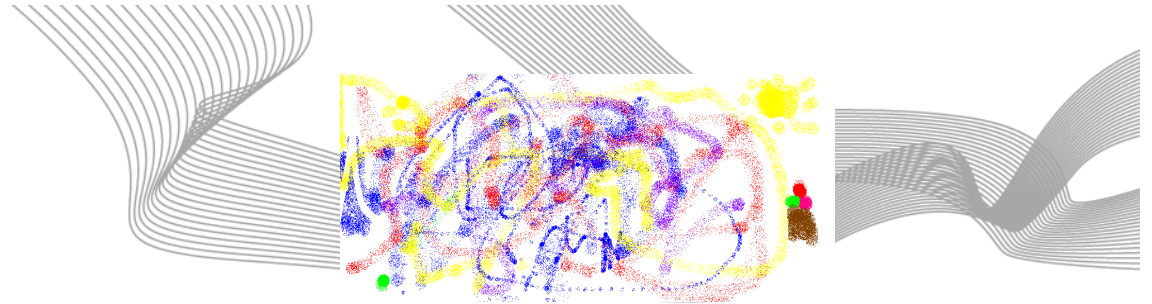
"Vitamin Jumbo" from the Vitamin project

- AIMS:
  - To study peer collaboration and the forms of interaction among peers from different age groups **(older children = more competent peers)**
  - To support children learn literacy in new learning environment
  - To develop new learning culture in schools in use of new technology and child-centered pedagogy as well as in terms of peer collaboration

- Data produced in a Finnish elementary school in spring & autumn 2009
  - 2 sixth grades and 2 first grades involved
  - One 1st grader and one (or two) 6th graders in each pair working with computers together on different topics (Forest Expedition and Projects on Animals, Vitamins, Recipes, Christmas and Easter)
  - Collaboration sessions with the children lasting appr. 2 hours once or twice a week

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Theoretical background

- Study is based on sociocultural theory of learning

- Vygotsky (1978) the Zone of Proximal Development

- Vygotsky (1978) preferred joint problem solving with guidance by adults or more skilled peers

- Bruner (1985) introduced the concept of scaffolding and defined the main tasks of the tutor

  - Modeling
  - Dividing the topic into accessible segments
  - Directing the child's attention to relevant features
  - Keeping the child from distractions

Intersubjectivity

A monkey from the Animal project
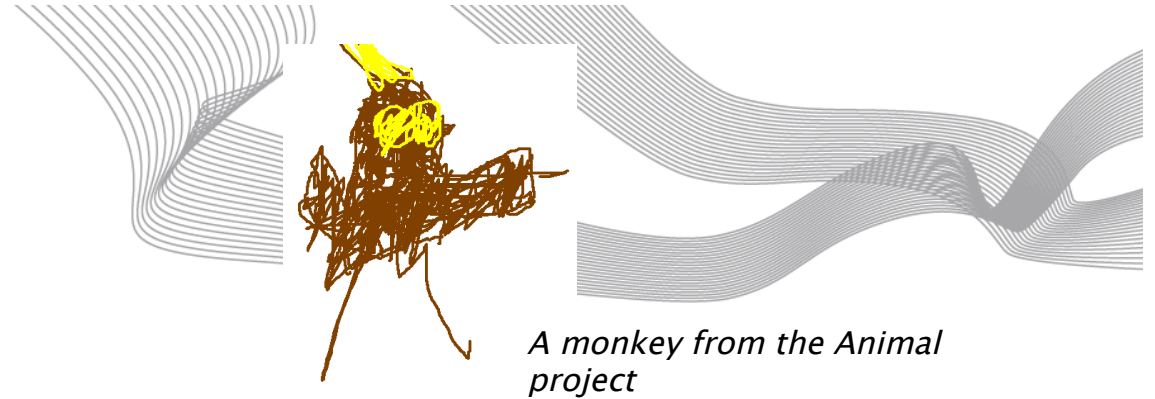
Negotiating meaning > Intersubjectivity

- An adult and a child enter a task with different prior knowledge and thus understand the task differently
- Mind belongs to dyads or larger groups that can think and attend the task together (Wertsch 1985,1991, 1998)

Scaffolding as guided participation (GP)

- Collaboration when adults facilitate learning by providing structure and support
- Intersubjectivity is necessary in order to gain common understanding of what each of the participants is trying to do (Rogoff 1990, 2003)

# Parents assisting children in use of computers at home

Knobel (2006)

- A parent collaborating with his five year-old son in text production
- The story '*Koala Trouble*' they created ended into a web page with over five million hits in 2005

Robinsson (2009)

- Parents assisting 6-year-old children to learn literacy and to use computers at home

- Parents chose to be in close proximity and provide *verbal guidance* when children asked help in the first place

- The language categories used by parents at computer:
  - Conversational language
  - Directive language
  - Inquiry language
  - Procedural language
  - Validating language

- When verbal assistance was not enough, the parents would *take action*
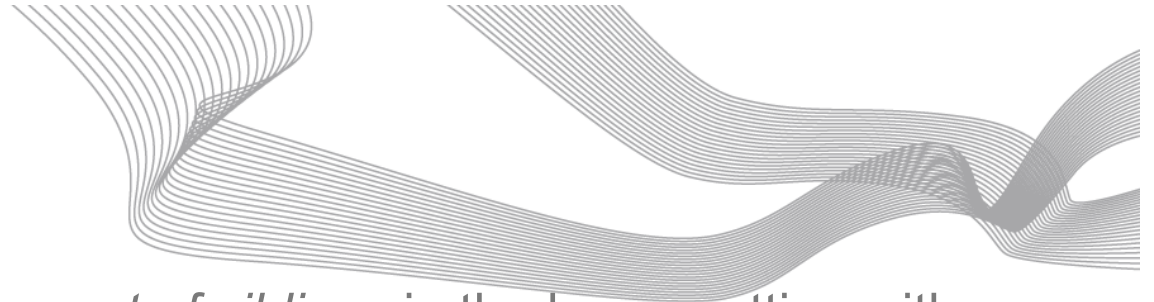
"The *interactions and impact of siblings* in the home setting with computers is a topic that needs further research… Research is needed that examines if the same strategies adults use when guiding children are *the approaches peers use to guide contemporaries at the computer*." (Robinsson 2009, pp 157–158) .
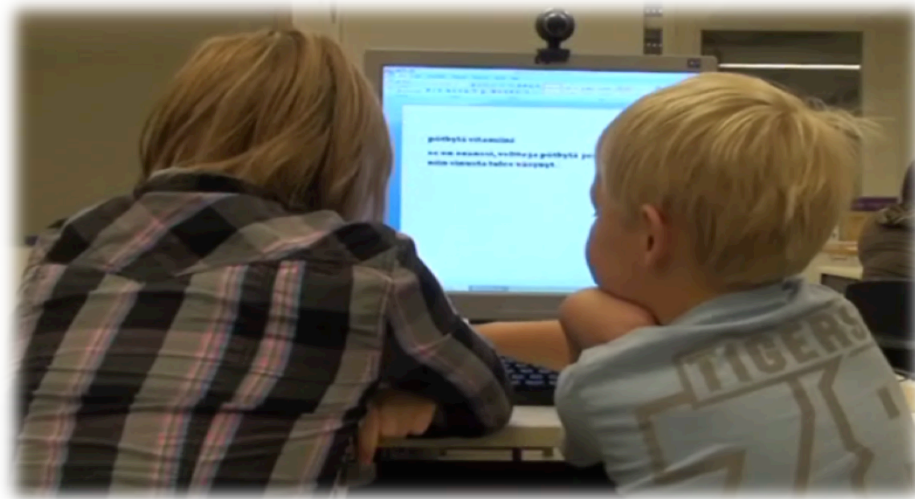
Method
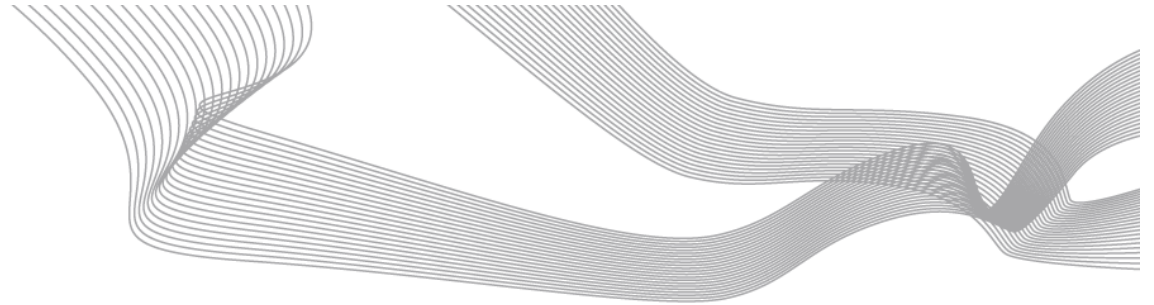
- Sessions were recorded on video cameras, and field notes were written by the researchers
- Data has been transcribed (partly specifically, partly more roughly) and analyzed using content analysis
- Focus is on speech and actions
- The analysis is preliminary and needs elaboration
- The themes emerged from the data
  - Assistance related to Substance
  - Assistance related to Proceeding

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PEER COLLABORATION		
DIGITAL TECHNOLOGY AS THE WORKING CONTEXT		
6th GRADERS' FORMS OF ASSISTANCE		**1st GRADERS' PARTICIPATION**
CONTENT-RELATED ASSISTANCE (use of technology, natural sciences, writing and reading)		*Quiet Executing* (tacit concentration and reacting)
Assisting with Speech (explaining how things are done; question - answer; defining concepts; giving hints)		*(Question) - Answer* (answering the older peer's question)
Showing or Demonstrating (pointing at the item without demonstrating; modeling the task; self doing the task)		*Requesting for Advice* (relating to content or proceeding)
Helping in Challenging Spots (repeating the instructions; offering expedient; correcting)		
Inquiry-Based Guidance (linking to prior knowledge; instructing data retrieval and evaluating information)		*Suggesting by Asking* (making proposals in proceeding)
ASSISTANCE RELATED TO PROCEEDING		
Suggesting (proposing what to do next; asking questions containing proposals)		*Connecting Information to Prior Experience or Knowledge* (perceiving connections in old and new information)
Showing Authority (approving; commanding; forbidding)		
Encouraging (giving positive feedback; motivating the younger peers by spurring)		*Refusing* (not reacting or not accepting what the older peer has asked or told to do)
Passivity (not making initiatives, not participating spontaneously)		
→ *Styles of guidance* emerge from these forms of assistance		

PEER COLLABORATION AMONG 6TH AND 1ST GRADERS IN A FINNISH COMPREHENSIVE SCHOOL

		A sixth-grade boy and a first-grade girl are working on a computer.
Bbig	5	**Do you want to make a kind of a presentation so that there will be many pages...**
	6	**Or kind of a like Word - you know**
Gsmall	7	Mmm
Bbig	8	**Do you want it on Word or PowerPoint?**
Gsmall	9	**I can take Word.**
		Bbig opens Word.
Bbig	10	**Well, it will open with a double click on that Microsoft Office Word-icon.**
	11	**Now double click that..**
Gsmall	12	This?
Bbig	13	The one above...
	14	Right.

Bbig	17	Do you want?
	18	**I'm sure, you have written before!**
Gsmall	19	Mmm
Bbig	20	Yes, well do you know how to make a capital letter?
		Gsmall shakes her head.
Bbig	21	**Well, that is a kind of a Caps Lock-key, you press it one time and then you press...** **whatever you want.**

		Gsmall starts writing with her right hand.
Bbig	24	**And when this caps lock is on, you press that *m* so it will make a capital *M*.**
	25	**Then you press again caps lock and you get small letters.**
	26	And now you can start writing.

An example of interaction: more competent peer asking questions, using & defining concepts, encouraging, and making suggestions.

		Two boys, a sixth-grader and a first-grader, working on computers, sitting close to each other. Studying lions for the Animal project, using Google.
Bbig	4	Put it up there, that one, yes,
	5	you see **it's a kind of a thing, you can search all kinds of things with it.**
	6	**Can you write LION?** [in Google]
Bsmall	7	xxx
Bbig	8	*LI, lio, o…* *The bigger boy pronounces the sounds and the smaller boy writes.*
Bbig	9	Let's see which one of these looks like **the most reliable information.**
	10	Here we have some pictures of lion.
	11	**Wikipedia is a kind of a dictionary, generally it's fairly all right.**
	12	I can read to you from it…
	13	Ok. *The bigger boy reads Wikipedia text to the smaller one.*
Bbig	14	All right, **which one would you like to write**?
	15	The one that is it endangered or… --- *Bsmall starts writing something. Bbig is very busy and helpful. Because of the background noise it is hard to hear their chatting.*
	17	It was said here that the lion is the biggest (*suurin*) endangered feline.
	18	Big (*suuri*), then *uu*, two *u:*s, *r* (*är*)… *The smaller boy writes, assisted by his peer.*
Bbig	19	All right, **we were not supposed to write quite the same way as it said**, so how …?
	20	**We should find out a little of something else to it.**

An example of how the more competent peer explains about data retrieval and the reliability of online information

Lion

Lion is a big endangered cat (feline). They live in Africa on the savannahs. Lions' favorite foods are gnus and zebras. Little antelopes and gazelles are faster than lions. Lions' fur is pale yellow. The cubs' furs have dots when they are small. When cubs grow up, the dots disappear. The female's and the male lion's tails are equally long. The female has no mane and the male does have one. The females catch their food in herds for the males.
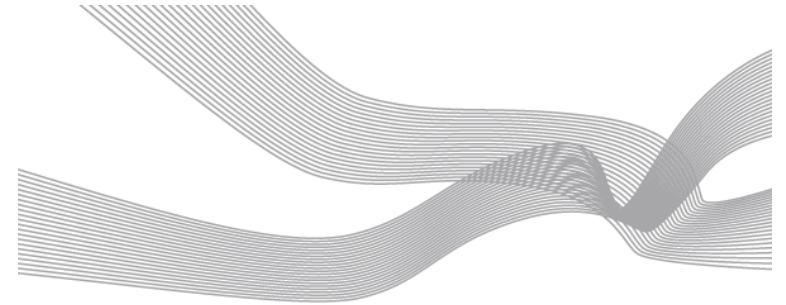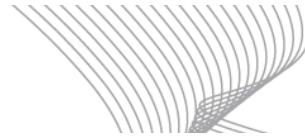
The end-product of the lion team produced in the Animal project

(The text has been translated from Finnish to English)

Initial findings

Vitamin 'Papu the Joy Pill' from the Vitamin project
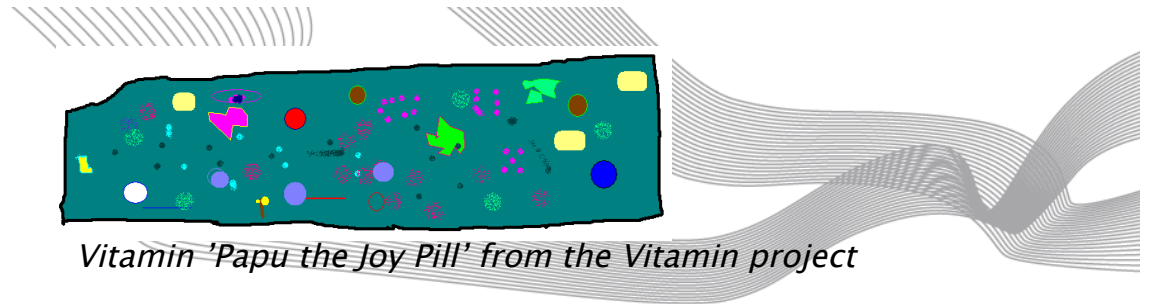
- The sixth graders took the teacher's role
  - Very goal-oriented
  - Hard-working and concentrated on the task
  - The children use the strategies suggested by Bruner to be used by teachers / adults
  - Words shape thoughts (Bruner): the teacher learns when teaching
    → The more competent peers seek assistance from each other in situations of when they feel themselves unsure about their skills and knowledge

- Motivation
  - Especially the younger children were very motivated by collaborative learning
  - The context of technology also motivates children and especially boys

- Longer interaction patterns are formed when the more competent peer realizes the need for intersubjectivity

- Forms of assistance are consistent within each interaction situation and become *styles of guidance* when looking at longer segments of interaction
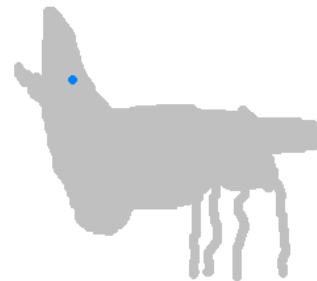
Discussion

A chocolate cake from the Recipe project

- Learning and teaching cultures in schools need change

- New Literacy affords opportunities to value young children's interests and competencies

- This research shows that these forms of collaboration invite the potential of more competent peers to be used

- In terms of research gathering the data is a big challenge
  - How to record children's authentic activities in their real context?

"The Red Vitamin" from the Vitamin project

"The Wolf" from the Animal project

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