Task: Preset one paper from the list of literature for the peer students

Authors of the paper: Bridget Somekh & Diane Mavers (2003)

Date of delivery: February 2012

Prepared by Siri Fyksen

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x. Punctually summary of the project

- Expansion of a project: Additional research needed to the ImpaCT2 project in order to capture the importance of young people’s ICT habits “outside school”, in order to get hands on their actual developed digital literacy.
- Aim: Search of evidence to suggest that ICT might support kinds of learning not reflected in national tests.
- Claim: Human capacity can be changed through new information technologies.
- Discussion: Use of image-based concept mapping in order to explore how students 10-16 conceptualize the role of computers in their world (and to access their potential for transformative learning with ICT).
- Models: Two methods of analyzing the concept maps were used as validations in the project: one based on phenomenography analysis and the other on semiotics.
- Theoretical basis: The Vygotskian theories and Wertsch and Cole (mediation of human activity through new information and communication technologies has the potential to transform human capabilities).

1. Important points of content

1.1. The ImpaCT2 project

This paper has its offspring in findings from the ImpactCT2 study ongoing between year 1999-2002 and funded by the Department for Education and Skills (DfES) for England and Wales.

The aims of the ImpactCT2 were to:

- Identify the impacts of networked technologies on the school- and out of school environment.
- Determine whether or not this impact affects the educational attainment of students aged 8-16 in English schools.
- Provide information to assist the formation of national, local and school polices on the deployment of ICT.
The methodology of getting data to the project was a mix between quantitative measurement of students’ gains in national tests and examinations and qualitative research of young people’s use of ICT at school and out of school, in addition to the nature of their learning with ICT. The evaluators of the project found, however, that important dimensions would be omitted in this research; knowledge of new kinds of learning like creativity and motivation made possible through ICT would practically be impossible to identify through given methods and data. In addition to the first given goals, the new direction of the research aimed to reveal the following through new data collection from the test scores, a concept mapping task and interviews:

- Where, how, how often and when students used networked at school and at home.
- Students’ knowledge and understanding of own use of computers “in their world”.

1.2. ICT in today’s world (at school - and out of school); a sociocultural view and the concept mapping method

Through different sources the article argues, or gives evidence to, how ICT supports knowledge that will not be shown in results from national tests (look it up at page 410-411). The importance of searching students “out-of-school-experiences” when it comes to ICT and learning potentials is also clearly expressed. In addition the text emphasizes a school system that seems to be captured in “outdated patterns”, and that the schools' teaching methods are based on theories and terms that do not exploit ICT and it’s the learning potential. Expressions from Papert (p.412) are exploited when claiming that ICT has influenced to a “Megachange” into all parts of society - except to the school system.

Use of concept maps in order to access students’ potential for transformative learning with ICT is identified as a successful method. The chapter “Concept mapping as a means of capturing students’ conceptions of ICT in their world” describes a design that supports evaluators;

- insight into young people’s conceptualization of computers in their world, whether it is derived from home use or shaped by the more general process of enculturation through a range of media” (p. 414).
The design is explained through theories of Vygotsky, Wertsh and Wartofsky. Sociocultural learning theories are also pointed out as useful “tools” in the process of understanding several earlier misinterpretations on ICT’s impact on learning processes.

1.3. The analysis and emerge of patterns

In addition to obtain an understanding of what kind of ICT’s the young people value, and what their ICT-use consist of, the researchers found it important to be aware of what the data would not reveal. It’s pointed out that a collection of data should be carried out within 30 minutes and would provide just a snapshot of the students’ visualization - several thoughts and elements will of course be missed out. The value of the Concept maps was therefore made twofold;

- first, based on the assumption that variations in the reliability of data from individuals loose significance within the analysis of a large data set, they provide an accurate phenomenographically indication of kinds of ICT awareness across the whole collection.
- second, through semiotic analysis they provided insights into individual students’ conceptions of computers in their world, and are much richer than the written texts produced by students in an accompanying written task they undertook in June 2000.

In the phenomenographic – and semiotic analysis a combination of quantitative- and qualitative interview methods where used to identify patterns of students’ awareness of computers in their world.

Classified by the rate of the total data (drawings), types of electronic equipment and time- and place of use, a few typical convergence phenomena are revealed.

The Semiotic approach support an in-depth analysis of the concept maps. The evaluators achieve high degree of understanding of students’ conception of ICT in their world (“image of reality”) thought patterns, and the supports of depth interview strengthen the research process.

1.4. Implications from the data through concept mapping (main points)

The ImpaCT2 concept mapping data strongly suggest that there is a disharmony between results on national tests and the ICT knowledge students actually have - gained from activities associated to “new ICT’s” at home. (The activities are related to communication, entertainment and access.
of information.) Put another way; it is detected that students have acquired solid digital literacy and an adequate overall picture of ICT’s in their world, even if the national test results don’t reflect such skills. Students with irregularly access to ICT’s seem to have revealed a well-developed perception- and understanding of the technologies and its applications as well, which actually might indicate a rapid future learning process of practical skills.

With the gained acknowledge, the researchers predict that ICT skills development at schools have to go through changes: When students apparently have well-developed ICT capabilities, they might for instance find the step by step teaching of skills in line with curriculum little inspirational. The encouragement is a framework for curricula that allow for more exploratory activity from students, and where each individual can apply skills at their level. It is emphasized that ICT skills students have built up could contribute with activity and creativity into all school related work.

2. The paper's contribution to the field of e-assessment

The research and its presentation paper “Mapping Learning Potential: students’ conceptions of ICT in their world” contribute to the field of e-assessment in various ways. First of all it points out the necessity of being aware of “out of school activities” in the fundamental assessment methodology in teaching and learning, and it provides suggestions on how to apply such knowledge.

The findings from the project point out that student response to already developed mapping tests of digital literacy assist to create an incomplete image of students' actual ICT awareness, knowledge and skills. Additionally the researchers demonstrate that it’s inadequate to measure students’ digital literacy based on assessment through multiple choice questions alone. Knowing that young people’s everyday lives are characterized by extensive contact with and use of ICTs, a necessary ingredient of the assessment basis must be located out of school. The concept mapping methodology is designed to capture student’s visualization of ICT in their world as a whole, and the authors argue that image based mapping methodology can be used to capture this “out of school dimension”, where new kinds of learning like creativity and motivation are made possible through ICT. The image mapping process is a kind of a formative self-assessment, where the students make drawings of familiar ICT’s in order of priority. This mapping activity is an
additional task to “regular” multiple choice mapping issues, and is emphasized as a mandatory task in order to capture an extended and more realistic picture of the students’ actual digital literacy. This innovation to the field of e-assessment must of course be aware that the image based mapping has its weaknesses; there is a limit to what might be uncovered within a 30 minute long mapping exercise! In order to capture a most truthful image of the reality, one must search tendencies from a huge sample of respondents.

When it comes to the papers indirectly contribution to the field of e-assessment, I will point out general and solid proposals on how to utilize the “new technology” in teaching and learning – and which thereby will affect the utilization of summative and formative e-assessment for educational purposes, e.g. as an efficiency-enhanced resource that might provide variation in assessment methods and which helps to bring order, structure, fairness and enthusiasm into the learning processes. The article might somehow be regarded as kind of a “user’s manual” for fundamental ICT in the school system as a necessary starting point for the field of e-assessment.

Social changes have indeed taken place in the wake of the introduction of ICT into society, ICT have affected the students’ technological expertise and habits that extend beyond the school's level of development when it comes to the facilitation of ICT. The paper highlights that digital literacy concerns relatively new knowledge and skills, in which young people of today probably are better positioned than most teachers. Additionally most schools are poorly equipped when it comes to technical infrastructure and thereby have limited “ICT-offers” to the students. It’s appointed through the text that the school system probably will benefit from having a makeover when it comes to attitude and style in its fundamental relation to ICT’s, in the sense that benefits through “meeting the students at their level” of communication, way of searching information and use- and development of creative ICT skills will increase the enjoyment of learning. These referred theories bring focus to the need of moving outside the school gates in order to determine the actual truth of students’ level of digital literacy, and that mapping tests on digital literacy have to take into account dimensions that aren’t recorded in the curriculum.

Due to the student’s new habits, the authors encourage emphasizing the use of ICT integrated into students’ learning process in subjects, and giving less focus on teaching ICT as a skill. They
also highlight “a lap top for each” as a required tool to enable this trend. From my point of view this statement underlines the need of an artifact that, in 2011, is as necessary as a pencil. In primary school in Norway, however, there is yet not suitable for one PC to each student. Therefore it’s useful, as I see it, to offer at least one lesson a week with training of digital literacy, in order to safeguard basic digital skills to all students. Digital literacy isn’t all about training skills, it also integrates creativity. This aspect must of course be emphasized in the “Digital Literacy Lesson”, in order to bring the ICT activity from out of school into the classroom. This will eliminate the risk of digital divides as well as contribute as a motivational factor in the students overall learning processes.

The aim of mapping tests in general is to create a fundament for further educational investments. We are aware that in this project the pupils’ self-awareness in relation to ICT is based on a collection of data derived through image-based concept mapping. The use of concept mapping can therefore be considered as a contribution to e-assessment, where development of education is driving force.

3. How to apply the paper's ideas in context (concept mapping methodology into schools in Norway)

In the Norwegian School system there are three types of nationally-designed student assessments (OECD, 2011, pp. 43-47):

1. Mapping tests in e.g. reading and arithmetic (year 1-3 and first year of upper secondary school -Vg1)
2. National Basic Skills tests in reading, mathematics and English (year 5, 8 and 9 of compulsory school)
3. Examinations (end of compulsory education-year 10-and in upper secondary education-Vg1, Vg2 and Vg3)

Additionally local mapping tests are conducted, e.g. the City Authorities of Oslo and Bergen arrange for compulsory mapping tests in digital literacy and science at the end of year 4 and Vg1.
The purpose of the national tests is to assess to what extent schools succeed in developing students’ skills in reading and mathematics, and in parts of the subject English. The results will be used by schools and school owners as a basis for quality improvement in education (Udir, 2012). The aim of teachers’ assessment in general in today’s classrooms is tracking of the students’ development process, and the assessment practice focuses its attention against summative assessment of already completed work. Even though national tests are highly emphasized in Norway, there is an ongoing discussion about the tests’ potential for development of schools where quality, fairness and effective learning are characteristics (OECD, 2011; Stephen Dobson, 2012; Union of Education Norway, 2012). The majority of teachers and principals, especially in Oslo, are unpleased with the increasingly amount of compulsory tests. They claim the tests function as fundament for quality measurement of the schools rather than being a tool for management, and that “these time thieves” impact negatively to the general teaching and learning process and contribute to stress among teachers and students (Sæther, 2012). Aina Skjefstad claims this reality is caused by an essential mistrust to the teaching profession (Karin Lillian Fladberg, 2011), and as an answer to this «Union for Education Norway» considers encouraging teachers at schools in Oslo to reports submitted denial of scheduled student tests (Fladberg, 2011).

The OECD-report of 2011 draws a picture of an assessment practice in Norwegian schools that needs to be improved; national systems that support the idea in which teachers provide students with clear, holistic expectations of development steps and overall expertise in the various subjects are highlighted as development areas are requested (Stephen Dobson, 2012, pp. 30-31). Handal, who is member of the Central Board of Directors of The Union of Education Norway, states that the existing national tests neither will give the government a holistic picture of necessary priorities, nor will be suitable as a basis for monitoring the work of the individual student. To this purpose, he claims, mapping tests (that support both summative and formative assessment through self-reflection and activity) seem to be more appropriate in order to reveal a realistic picture of student’s actual knowledge of ICT, and which take into account factors like the students’ background, teachers’ qualifications, working conditions, group size and the actual amount of invested in the education (Union of Education Norway, 2012, p. 65). As already expresses, students in Norwegian schools conduct such compulsory mapping tests (in
e.g. reading and arithmetic’s/mathematics) from year 1-3 and in Vg1. The Directorate for Education and Training plays a crucial role in the development of these tests, where the developers commend multiple choice tests as more appropriate in the determination phase of students’ digital knowledge and skills, than former self report systems measurements (Ove Hatlevik, 2009).

It is, however, a fact that young people from 10-16 years of age are constantly introduced to new technologies outside school, especially through social media, and it’s appropriate to expect a significant development of digital literacy within these age groups. The main objective for mapping tests in digital literacy is to adapt teaching and learning activities to the students’ actual ICT knowledge, awareness and skills, but in this respect it seems as if the existing “Oslo-test” of digital literacy is too narrow and not capable of capturing the “out of school dimension”. A recommendation will be to introduce the main topic from the paper “Mapping Learning Potential: students’ conceptions of ICT in their world”, as an additional and integrated sequence of the mapping test, in order to get an immediate and more realistic insight into young people’s conceptualization of ICTs in their world.

Being aware that students will have a steep learning curve in ICT from the age of 10-16, it will be essential to conduct a compulsory mapping test in digital literacy to at least one of these age groups, in order to identify the new awareness. An advice will be to reintroduce a designed mapping assessment of digital literacy, with an image-based assessment on the student’s conceptions of ICTs impact on their world as integral part, in the seven year of schooling. (In fact this age group was subject to a mapping test in digital literacy, when it first was introduced in Oslo.)

The test needs to extend beyond multiple choice questions alone, due to its restricted ability in capturing a nuanced image of the students’ vision of how ICT affect their lives. Additionally one can imagine that the image-based portion of mapping of the students' digital skills, need to be adapted to existing conditions in Norway. The task can either be performed in the same manner as in the referred project, or it might be further developed to fit into existing test format.

A further recommendation will be that the new test format, which will include a “regular mapping task” and an “image based concept mapping task”, is applicable to the entire country. This, because the aim must be to prevent digital divides within the country!
4. References

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