Changes in Representations of Knowledge

A Pilot Study

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Learning is changing.

Education has to change with it,

and the ways learning and knowledge are expressed can also be expected to change…

unless this is already taking place?
Living in the imagined future of the early 1900’s we know the reality to be quite different from the idea depicted in this post card.
Schoolchildren reading 1911 in Public Domain, from wikimedia commons

Classroom in Jansons School of Business, Coimbatore, India in Public Domain, from wikimedia commons
Introduction

We live in a digital world enabling communication in ways that were hardly possible to imagine thirty years ago.

This radically changes the conditions for learning,

and the difficulty in following a student’s learning process has been complicated with the introduction of digital learning environments.
The Study

Digital representations of knowledge (multimodal texts) in a digital learning environment

Two groups of ESL students

A Swedish upper secondary school, in a 1:1 environment*

*One computer (laptop) for each student and teacher.
Timeframe

August 2013 - June 2015 in

Note: The final study is not yet finished
Theoretical Framework

The study uses a framework of multimodality and social semiotics.*

This provides a theoretical platform for analyzing students’ production of multimodal texts; written, spoken, visual, sonic, performative and gestural.

To identify changes in form and quality in representations of knowledge

produced in a digital learning environment and with digital tools.
Digital representations of knowledge (multimodal texts)

Focus is on representations of knowledge, i.e., the work students produce within the scope of the subject.

Texts, films, PowerPoint/Keynote presentations, oral presentations et cetera.
Question 1

How do students represent knowledge and skills in English and how do they realize these representations?
Question 2

What changes in form and quality in representations of knowledge can be traced over time when looking back at digital representations of knowledge for two groups of ESL English at a Swedish upper secondary school produced during August 2013-June 2015?
The method used in the study is multimodal transcriptions and multimodal analysis of digital knowledge representations.

Only digital knowledge representations have been used for analysis.

Social semiotics, design and multi-literacy theories provide tools for analysis in a modern educational system where students meet different knowledge cultures and knowledge practices.

In design theory learning as communication and meaning making are central, and representations of knowledge, are seen as signs of learning (Selander & Kress, 2010).

Therefore it becomes important to analyze which resources are used and how these are interpreted and transformed into a new representations of knowledge.
Making Meaning

In making meaning, students produce signs in different semiotic modes, using different representational resources.


Signs of Learning

Students need to represent their knowledge in material production such as text, speech, images, film, etc.
The process of learning can be seen as sequences of transformations of knowledge.

The starting point for a transformation cycle is a combination of which resources are available and which criteria frame the learning situation. These criteria/norms, rules and routines can be invisible for the learner.

The student in the process of learning transforms the information s/he has available into his/her own knowledge representation, which can be multimodal, i.e., be made up of many different modes or channels of communication.

These may be speech, gestures, text, film, images or other representations of knowledge.
These processes of learning or transformations of knowledge take place both in informal learning situations as well as formal situations.

Formalized learning in education systems is subject to control via curricula, laws and societal norms which are absent in informal learning situations. Still the basic learning sequence is the same.

In a formal learning situation there is also a second transformation cycle where the student shows his/her knowledge with a representation which will be evaluated by a teacher.
The Swedish National Agency for Education (Skolverket) state the requirements for how ESL should be taught in Swedish schools.

It is a not uncommon misconception to assume that the subject English is only focused on proficiency but when students study English at Swedish upper secondary school the requirements of the subject are increasingly complex.
There is a focus on plurilingualism and knowledge about the English speaking world.

It is about learning to use English efficiently and in different functional and meaningful contexts, but also includes content which covers history, politics, modern and older literature, different text types, as well as language history.

Moreover, the level of complexity increases significantly from the first to the second year.
In the Swedish national curriculum from 2011 the regulation of teaching foreign languages is tied to the European Language Portfolio and the steps defined there.

In this framework the courses English 5 (ENGENG05) and English 6 (ENGENG06) (Skolverket, 2015) correspond respectively to the levels B1.2 and B2.1 in the European Language Portfolio (Council of Europe, 2015), and the requirements and content closely follow the European framework, where level B "is more advanced than B1. Levels B1 and B2 are labeled "Independent User"."
"Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst traveling in an area where the language is spoken. Can produce simple connected text on topics, which are familiar, or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans" (Council of Europe 2015, Structured overview of all CEFR scales p.3)
"Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.” (Council of Europe 2015, Structured overview of all CEFR scales p.3)
from the study of how knowledge can be represented in the subject English,

One Representation of Knowledge in a Digital Learning Environment in English 6
The assignment has been designed by the teacher to comply with national curricula in content and areas of proficiency.
Civil Rights in the English Speaking World

Pick one topic related to civil rights in the English Speaking World.
- Black civil rights,
- women's lib,
- gay civil right,
- civil rights of war veterans,
- civil rights of indigenous populations and ethnic groups,
- civil rights of religious groups
... today or in the past.

Research your topic. Include...
- background and information (Sources needed).
- compare with your own country (Sources needed). This does not have to be extensive.
- your own thoughts on the issue.

Presentation. You can choose to make a live presentation in class or to make a recorded digital presentation which you show in class.

Sources: Before you make your presentation you should hand in a list of sources. For digital sources you should include the uri.

Time frame: You have 3 weeks to prepare and complete this project. Presentations at the end of the 3rd week.
Civil Rights - a film

Students could choose to make a live presentation or to record it.

In this example the student has solved the task by making a film.
Multimodality

The student in this example designs and represents her skill and knowledge through the modes and media available, in relation to the assignment which in turn has been designed by the teacher.

In doing this she uses multiple modes.

- the textual
- the visual
- the oral
- the aural
- the gestural
- the spatial
- the performative
Extract from the multimodal analysis

Student looks down very briefly at the table (reading from paper/text)

Mention Stanfords (cultural competence)
A text label is used to emphasise the spoken message.
Here the student receives a phone call and we hear a "new" voice,

The student’s voice is distorted as if recording a phone conversation

The "Dala horse" (bottom image) is an icon for Sweden
Using the map and letting the image move to Sweden on the map as the speaker talks about Sweden.

Film within in the film. The camera is moving over the image.
In the representation of knowledge, (film) the student has been able to use a multiplicity of modes and has successfully incorporated these into her report.

Moreover, in doing this she shows meta-cognitive skills which would be hard, or maybe even impossible, to identify in a more traditional spoken presentation in front of class. Likewise if the report had been in the form of regular text.
The study showed that there were changes in how students represent knowledge,

and with marked qualitative improvement for several students.
Comparison of final grades for Group 2

spring 2014 (English 5) vs spring 2015 (English 6)

2014 vs 2015

- 29% stayed the same
- 24% improved
- 47% gone down
Identifying changes in how students represent knowledge in a digital learning environment will help identify areas for further study with the aim of understanding not only what drives these changes but also how an increase in the quality of students’ work can be explained.

Identifying these factors and analyzing them will help provide better understanding of how to create effective digital learning environments in schools.
Studying representations of knowledge in multimodal learning environments offers possible tools for identifying changing patterns in learning and representations of knowledge.
List of References Cited


Thank you

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Image: Old Stone Wall, Henrika Florén, 2015