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Mobile phones in school. Selected m-learning projects from Great Britain and the German speaking countries

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Philipps Universität Marburg

Mobile phones in school. Selected m-learning projects from Great Britain and the German speaking countries

Judith Seipold

Abstract

Mobile learning is not a big issue in Germany, Austria and Switzerland yet, but started to get recognised by educational research and school. In Great Britain, on the other hand, research on m-learning and projects with mobile devices in schools is a topic of interest since some years now. Having a look at the use of mobile devices in schools and their integration in the curriculum, again, there are striking differences between Great Britain and Germany, Austria and Switzerland. In this text, a short country-comparison is followed by a theoretical model to make the connection between "everyday media literacy" (Alltagsmedienkompetenz) of pupils and its integration in school. With the help of an example for m-learning from Switzerland, the relevance of the integration of everyday media literacy in the curriculum, as well as the pedagogical underpinning of self produced m-learning material is pointed out.

1. M-learning projects in Great Britain and the German speaking countries Germany, Austria and Switzerland: availability of literature and tendencies of research and practice

1.1. A glance at the status quo of m-learning research and practice in Great Britain and the German speaking countries

Talking to people in Germany about m-learning forces in most cases immediately the question: What is this, m-learning? This simple question gives a quite good impression about how present mobile learning is in the field of educational sciences and teachers training in Germany. Not so in Great Britain: There, schools, companies and universities invest millions of Euros for theoretical and practical research on mobile learning. Research labs like "futurelab" or "becta", and platforms like "kaleidoscope" specialise on this topic, and the market of publications on m-learning is constantly growing. Some schools are equipped with mobile devices like PDAs, hardware, software, technicians, researchers and developers of hardware and software to find out how the use of mobile devices can support learning and teaching; the mobile phone as device for m-learning is not this present. A reason for the focus on multifunctional mobile devices might be that PDAs, pocket PCs and other handhelds provide a wider range of technological potentials, applications and functionalities for mobile learning than simple mobile phones do (see also the categorisation of mobile applications and their

pedagogical underpinning in chapter 3 below). So it can be said that in Great Britain, current technological developments in society, which are related to mass communication, are harnessed in educational contexts. Technological and social structures of mobile communication – either provided by the mobile devices as apparatus or advantaged by them – are the starting point for approaches towards mobile learning and teaching. On a practical level this would be, for example, the possibility to network and communicate or to be able to store learning material, to swap contents like texts, films, pictures, and much more. Media didactical aspects in Great Britain focus on learner centred, personalised and situated mobile learning, just to mention some which is paid most attention to. The futurelab reports on "Learning with handheld technologies" (Faux, McFarlane, Roche & Facer 2006) and the "Literature Review in Mobile Technologies and Learning" (Naismith, Lonsdale, Vavoula & Sharples 2004) provide a useful overview on these didactical aspects as a first approach. Further information, and a wide range of examples for national and international m-learning projects, for teachers or researchers, is available on websites like the one of futurelab (www.futurelab.co.uk) or of the European scientific network kaleidoscope (http://mlearning.noe-kaleidoscope.org). They offer link lists and short descriptions of each listed project, as well as – in case of futurelab – detailed reports, including project specifications such as project aims, school subjects, didactic concepts and technical realisation.

In Germany, Austria and Switzerland, the situation is very different. As mentioned, one hardly heard about m-learning in these countries. Moreover, and stated for Germany, an idea of prevention in relation to the use of mobile phones is dominant. Schools even prohibit the use of mobile phones by law. Of course, this was not done groundless, and derives from the discussion about harmful contents on mobile phones of teenagers. The violation of personality rights of teachers by being filmed during lessons contributed to this ban, as well as the fact that some teenagers stored videos with violent activities and pornography on their mobile phones and swapped them with friends. In this course, also bullying (which means beating others and filming this act of violence without solving the situation) became a keyword of this discourse. And not at least the financial debt of kids was a big issue in Germany because many spent much more money for ring tones or talking on their mobiles than they or their parents were able to afford. Hence, it is not surprising that just a few teachers are dealing with mobile devices in the classroom. Besides the legal exclusion of mobile phones from schools, another reason for the absence of m-learning in Germany, Austria and Switzerland might be the non existing financial support of m-learning projects. Consequently, in case mobile devices are used as learning tools in schools, they are usually the pupils' private mobile phones. This aspect also implements that a wide variety of applications and configurations can be found, and practical use is reduced to the least common denominator such as using the SMS function, the notepad, the calendar or the camera. Further on, for the German speaking countries there are no systematic databases or link lists available in respect to m-learning projects in schools. A broad Internet search via search engines is necessary. A slowly growing pool for projects which use mobile phones as cause/motivation for learning as well as projects which integrate the mobile phone as device in classes are internet platforms for teachers like www.lehrer-online.de.

1.2. Mobile phones as a topic in different school subjects

A consequence of the discourse on harmful contents is on the one hand the protection of minors e.g. by informing the young mobile phone users. This was often realised by projects outside from school (i.e. www.handysektor.de or www.netzcheckers.de). Also the discursive and productive process of integration of mobile phones in curricular activities was pushed in this course. As one example, and referring to the debt discussion, some teachers started to discuss contracts and rates for mobile phones in mathematics (i.e. the teaching unit "Handy-Tarife", provided on the web pages of the Gesamtschule Walddörfer 2001). A teacher explained linear functions and linear equations by using rates for mobile phones as a topic. This idea killed not only two birds with one stone: Pupils learned how to calculate linear functions and linear equations. At the same time, they had to reflect on their own consumer behaviour in relation to using mobile phones: Which rates include the contract with my mobile phone provider? How many text messages do I send during a certain time span? How long do I talk with my friend on my mobile? Is a prepaid card cheaper than a contract? Where are the advantages depending on my individual habits? Here, schools succeeded in a task that is still defined as a burden: they closed the gap between pupils' every day life and the tasks of the curriculum – in this case by teaching pupils how to calculate rates for mobile phones. This example is exemplary for the German speaking countries: Teachers use mobile phones usually as topics, often in interdisciplinary classes. The Informationszentrum Mobilfunk e. V. (IZMF) i.e. provides a series of small books called "Schulprojekt Mobilfunk" (www.schulprojekt-mobilfunk.de) which deals with mobile phones in society, environment, social relationships and much more in the subjects German, Physics, Biology, just to mention some.

1.3. Common position: the focus is on the learner and the changing role of teachers and learners

This small country-comparison clearly shows that the common position in the m-learning discourse in Great Britain and the German speaking countries is the argumentation from the pupil's perspective. The question is: How can mobile technology enhance learning. Here, a paradigmatic change is obvious that focuses on the learner as individual, with very personal learning styles and interests. To be more precise: For pupils, it means to be more responsible for their own learning achievements. They are supposed to "learn how to learn". To fulfil this task students get guidance and support by teachers, of course, but they also have the possibility to learn as fast as they can, or slow, focussing on their interests, and getting more close to learning subjects because they have the opportunity to connect curriculum knowledge to their everyday life if they want to (Naismith, Lonsdale, Vavoula & Sharples 2004). The focus on the subjective perspective of learning is highly relevant. This implements that the teacher's role is changing regarding to his or her relation to students and to learning contents. Teachers become not so much the ones who transport knowledge that students have to adopt and to learn. Moreover, teachers are seen as providers of information and as moderators who give advice, guidance and support to students how to organise learning (Kukulska-Hulme & Traxler 2005). Their role will change from "transmitters of knowledge to guiders of learning

resources" (Naismith, Lonsdale, Vavoula & Sharples 2004). So part of teachers' tasks is to provide patterns that enable students to understand communication of knowledge and information. One of the goals of enabling students to reflect their individual learning styles and to gain more responsibility of their learning is to show them how life long learning can be realized. Therefore, too, teachers have to be provided fitting patterns that enable students to connect their more individualised and personalised tasks to the affordances of school and curriculum.

1.4. Why mobile learning with handheld technologies?

Why particularly concentrating on the use of mobile phones? Aren't they very similar to other mobile devices like the seemingly more comfortable notebooks or PDAs? Maybe yes, but from the perspective of technological availability (which means access and digital inclusion), and in terms of missing financial and infrastructural support, teachers are dependent on resources that are available without investments. The fact that the market share of mobiles phones is at 92% for the 12–19 year olds (JIM 2006), respectively. 44% in the group of the 6–13 year olds (KIM 2006) plays to the use of mobile phones in schools. For planning teaching units with mobile phones, this would mean that in elementary schools nearly 50% of the students have to be equipped with mobile phones, the older the student get, the less necessary it is for teachers to provide devices.

Apart from the question of availability, there are didactic arguments for the use of mobile devices. Mobile devices are able to support learners and teachers in the task of people to becoming life-long learners. For the members of the kaleidoscope mobile group, mobile learning means learning "with portable technologies, with a focus on the technology (which could be in a fixed location, such as a classroom); across contexts, in which the focus is on the learner, using portable or fixed technology; cross locations and transitions, focusing on learning in a mobile world and on the mobile society" (Sharples 2007). Futurelab shifts from the technological and local perspective to the learner's perspective, his needs and tasks. Therefore, mobile learning is defined as and found to be "highly situated, personal, collaborative and long term; in other words, truly learner-centred learning." (Naismith, Lonsdale, Vavoula & Sharples 2004). The juxtaposition of "new learning" and "new technologies" (Sharples, Taylor & Vavoula 2005) below points out on the parallels between "new learning" and the "new technology" mobile devices. It makes clear which ones the advantages of mobile technologies are for learning.

New Learning	New Technology
Personalised	Personal
Learner centred	User centred
Situated	Mobile
Collaborative	Networked
Ubiquitous	Ubiquitous
Lifelong	Durable

Fig. 1: Convergence between learning and technology; Sharples, Taylor & Vavoula 2005, p. 4.

2. Everyday media literacy ("Alltagsmedienkompetenz") as model for the connection between everyday life and curriculum

Having the new tasks and opportunities for future learning in mind, it is not this astonishing that learning will happen also outside school in other spaces – more than it does already. Even more, learning is seen to be timely not reduced to the years one spends in school. "Mobile learning is not just about small devices and the latest technologies. It is about being able to learn wherever you have a need or curiosity, and to integrate that knowledge with other learning experiences" (Sharples 2007). So "Learning will move more and more outside of the classroom and into the learner's environments […] making rich connections within these environments to both resources and to other people" (Naismith, Lonsdale, Vavoula & Sharples 2004).

So learning in a school sense will expand in spaces beyond the classroom and cover the free time, too. Vice versa, wouldn't it be necessary to open school for everyday life and thus for more informal learning processes?

To open school for students' everyday lives is an idea that John Dewey claimed in his book "The School and Society" (Dewey 1907) already at the beginning of the 20th century. Ben Bachmair underpins this demand with the concept of "Alltagsmedienkompetenz" (everyday media literacy) (Bachmair 2004). This term is not supposed to be another definition of media literacy (Medienkompetenz), which came over Germany since the early 80s. It should rather make clear that children and teenagers gain knowledge and competencies by acquiring media (devices, contents and structures) that is relevant for school, respectively, which can be cultivated in a positive sense for school. This knowledge and these competencies are explicitly connected to extra-mural life, to leisure time contexts, motivated intrinsically and depending on the situation. To make this connection between everyday life and school in open education was one of the aims of the project www.Schulmedientauschbörse.de that the Medienpäda-

gogik Uni Kassel carried out in 2004. One important methodological approach of this project was to use media related communicative modes of students like trading/ swapping, or the pattern of being expert or fan, and to scaffold these interests and this status for school and curriculum purposes. Crucial points in this project were the students' media preferences (Medienpräferenzen) which linked their action leading topics (handlungsleitende Themen; Bachmair 1984) and competencies of everyday life. One of these age and gender depending action-leading topics might be being a fan or expert of something. The media experiences and the media use in everyday life were cultivated with media didactical possibilities of school. This was realised by students cognitively processing and reflecting these media related things in morning sessions or by giving them assignments such as "Write a text about your favourite TV show". Students picked up this task and started to write a text about their preferred soap opera in the German class on the PC. Another student who was a football expert and followed the last champions league football match attentively gave a written summary of the last game, including a detailed graphic that showed the goals and the positions from which the goals were shot. By reporting, students naturally used different genres. Nevertheless, they all objectified information that could serve for others as detailed summaries and explanations. In this way, a bridge was built between everyday life and school. Situations and experiences became reasons and initial points for learning and link for academic guidelines and anticipations. Media became a basis of learning situations in which pupils learned autonomously, constructivist and constructionist. Being fan or expert motivated students to report, to write and to explain. In this process, and in a school sense of learning, it was not so much about the content – the story of a soap opera is not really relevant for the curriculum. More important were the structures of achieving knowledge and using knowledge, as well as the fact that school requirements coincided with modes of representation of everyday life. The teachers provided patterns that are common in elementary school: reporting, writing short stories, or painting. To build the bridge to m-learning, the examples in the following chapter are given. They show that kids like to be taken serious as experts or fans. In most of the examples, a connection to everyday life is evident. But it is also clear that students try to fit their knowledge into the demands of school, which means in this case the modes of representation that are typical for school.

3. "Projekt Handy": an m-learning example from Switzerland

The British discourse deals with a variety of educational theories and didactical concepts like constructivist, constructionist, situated, open learning, learner centred and personalised learning. Futurelab (Faux, McFarlane, Roche & Facer 2006) provides, as an example for these aims, amongst others the "Dudley Handhelds Initiative". In this project schools equipped students in 6 elementary schools and in 2 secondary schools with PDAs. The aims of this project were to support students in terms of access to technology, to involve families in the learning process, to raise students' (and parents') literacy and numeracy. The applications that were

provided were meant to support collaborative learning as well as to motivate students to read, write and calculate. In deed, some of the involved teachers reported positive on the results.

Such aims might not be intended in projects in Germany, Austria and Switzerland. Nevertheless, teachers who integrate pupils' own devices make a connection between school to a device that is a consumption object and an everyday life tool. Doing so, school opens its view to pupils' everyday life and gives them the opportunity to learn constructionist and constructivist in a way that is chosen free, that is self organised and that is depending on situations. In the following example from Switzerland (Deubelbeiss 2007), the mobile phone is used as learning tool. Learning tool in this context is not thought linear in the sense of question-answer or as simple feedback instrument. It is much more part of open education with a discursive and constructivist approach. So even if the question is given by the teacher and therefore led, students have in special areas the free choice of realisation.

3.1. Description of selected examples

Mathematics: The path-time diagram

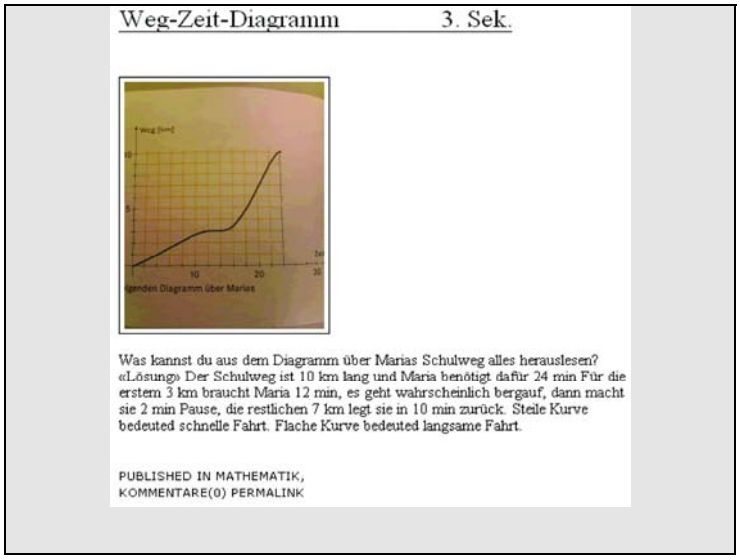

Fig. 2: Path-time-diagram; http://metaportfolio-phsg.kaywa.ch/mathematik/weg-zeit-diagramm-fabian-3-sek.html

Description: The first part of the assignment is a photo of a diagram. Below the following question is given:

"What can you read from the diagram about Maria's way to school?

«Answer» The way to school is 10 km and Maria needs 24 minutes for it. For the first 3 km Maria needs 12 minutes, it might go uphill, then she rests for 2 minutes, she covers the remaining 7 km in 10 minutes. Steep curve means fast ride. Flat curve means low ride."

German: Limerick

Fig. 3: Limericks; http://metaportfolio-phsg.kaywa.ch/deutsch/elfchen-thamara-1-sek.html

Description: At the beginning of the explanation there are two photos. The first shows the title "prince" and below a quite unclear web address. The second photo shows the word "LIMERICKS". Part 2 is the limerick, which is followed by the last part, the limerick rules.

"I am the prince, one hardly believes, I'm nice to look at. Many hints onyellow ball. My name is prince, one hardly believes. [Translated word by word.]

Limerick rules: – A limerick is a poem which consists of five lines. The lines 1, 2 and 5 have the same length and rhyme. The lines 3 and 4 are shorter and rhyme too. Short hand: a-a-b-b-a – The content is less important than the form; it can be absurd and does not have to be very serious. The main thing is that the form is right."

German: Syntax

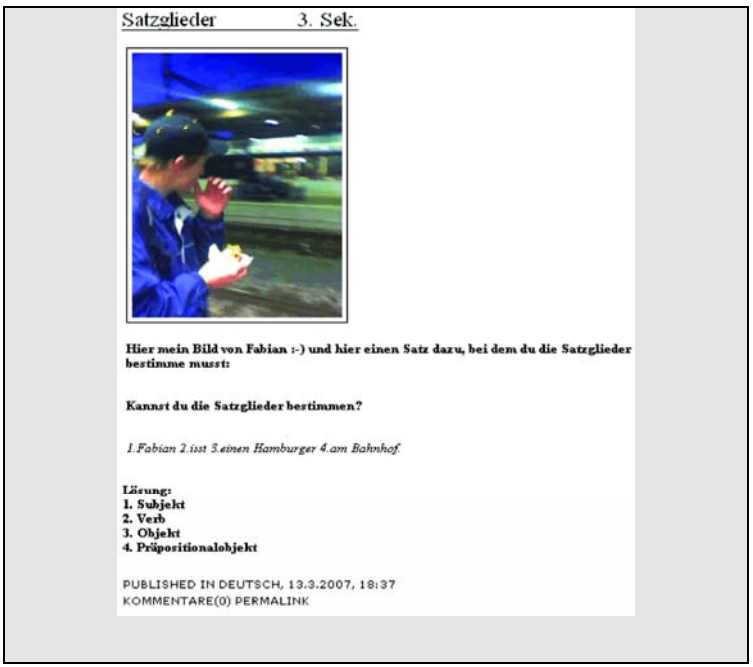

Fig. 4: Syntax; http://metaportfolio-phsg.kaywa.ch/deutsch/satzglieder-marco-3-sek.html

Description: The first part of the assignment is a photo of a boy eating. Below the commentary says: "Here my picture of Fabian" (a smiling emoticon follows) "and here a sentence to it, in which you have to give the phrases:" The student now posts the question: "Can you give the phrases?" and writes the following sentence, structured by the numbers 1 to 4: "1. Fabian 2. eats 3. a Hamburger 4. at the station." [Translated word by word.] At the bottom, as last part, the solution is given:

"Solution:

1. Subject

2. Verb

3. Object

4. Prepositional object"

French: Passé composé

Fig. 5: Passé compose; http://metaportfolio-phsg.kaywa.ch/franzoesisch/passe-compose-yannick-2-real.html

Description: A boy made a short film with his mobile phone in which he explains the passé composé. The first part of the film is a picture, maybe from his French book, including the

title of the film “How to build the passé compose”. As second part, the hand painted title “passé composé” is displayed. Part 3 consists of three picture frames: Frame one: “The passé composé is composed of avoir or étre”. Frame two: “And then the participe 2”. Frame three: “Example”. Subsequent to the theoretical explanation, an example is given: The student welcomes the audience. Then he writes the sentence “Je suis resté(e) à la maison.” By writing this sentence, the boy explains in a voice over what he is doing in respect to the grammatical construction.

3.2. Students learn with mobile phones by producing assignments and teaching units

What are the students doing? They produce learning material with their mobile phones for the school subjects Mathematics, German and French. This learning material, which others have to work with, has of course to be understandable and comprehensive. This presumes that the producing students are experts in the respective subject area. They achieved knowledge, reflected it and reproduced it, but not in the form of an answer but as a question. The students choose, by doing so, a teaching mode that they assume as being adequate. Additionally, with the pictures they provide further information that contextualise the exercise and provide a reference framework. The students have chosen different kinds of exercises: two have produced an assignment; two have produced small learning units. The assignment **Path-time diagram** looks like it was taken out of a schoolbook. It is constructed according to typical school manners with a diagram and a question. The **Syntax** example, too, seems to be very similar to well known assignments that student get i.e. as homework. It starts with a picture of a student at the station. This picture is explained and linked to the following assignment that other students have to do. At the end, the solution is given. The **Passé composé** on the other hand is not a task that has to be solved, but it is an explanation in terms of the grammatical construction and by showing an example afterwards. A teacher in front of the class, for instance writing it on the board, could also have given this; just like the explanation of the **Limerick**. It consists of two pictures, the title “PRINCE” and the genre “Limerick”, followed by a Limerick as example and the rules for constructing a Limerick. In each of the four examples, it becomes obvious which idea students have from giving assignments and communicating them in the sense of teaching and learning. Concerning the pictures that are integrated in the Syntax and the Limerick example, assumptions can be made that underline the idea of students to open school in the direction to everyday life. These pictures, the one of “Fabian” and the one of the “prince” logo, are additional, not essential. It would not have been necessary to show these pictures because the assignments would make sense without them, too. Nevertheless, the pictures open the dimension to student’s everyday life:

One is a more usual dimension: Things that are around us like the school friend eating on the train platform, maybe on the way home from school, or the title prince in the Limerick example which is an advertisement. These pictures might have been taken by chance, and the assignment/ the explanation could base on these pictures. So, everyday life is the initial point for the construction of school assignments. The relevance of supposedly irrelevant things like

advertisements (which means consumption) and personal relations to a school friend is brought to the attention of school.

Another dimension is the connection to the expert status of the students. The logo prince belongs to a company for tennis equipment. As the school in which the project was realised is a sport school, it might be obvious that the student refers to her subject tennis, in which she is an expert. Here, again, the strong interest of a student to a specific topic is leading to a creative act, which is writing a limerick, and explaining it afterwards on a theoretical level.

Further on, students bring an informal dimension into the school tasks calculating, explaining, identifying and writing: The word "bierernst" (deadly serious) silhouettes the whole Limerick assignment against a typical school wording. The smiley-emoticon in the Syntax example does also underpin the students' idea that school has not necessarily to be serious to be successful, and that connections to everyday life can make things easy going.

3.3. Pedagogical underpinning of the examples

To categorise these examples according to their pedagogical underpinning, Patten et.al. provide a scheme that categorises the function of applications for mobile devices and their pedagogical underpinning. This scheme is also used by Bachmair who additionally makes the relation between Patten's categories and the functions of the 3 poles learner, teacher and learning content in the "didactic triangle" (Bachmair 2007). Patten et.al. distinguish between seven categories of applications for mobile devices:

"administration" (i.e. to note homework in the mobile phone's task planner or to mark dates for exams in the calendar),

"referential" (i.e. learning with podcasts or dictionaries. As an example, see podcasts of the Erich Kästner school in Buldern: http://eks-buldern.de/eksblog/index.php?&MMN_position =81:81),

"interactive" (i.e. a step-by-step quiz that is sent by SMS and answered by SMS, or any other question-answer-application. As an example, see the "Trübli Quiz": http://www.werdenberg.ch/Gr%C3%BCeziundherzlichWillkommen/Umwelt/ThemenWanderwege/Tr%C3%BCbliweg/tabid/1477/Default.aspx),

"microworld" (a simulation of the real world, i.e. a flash animation that shows the functions of the human muscles. As an example, see http://www.rlo-cetl.ac.uk/rlos/completed_rlos.htm),

"data collection" (i.e. the "Participate project", in which students monitor pollution on the way to school. As an example, see http://www.mrl.nott.ac.uk/research/projects/phones/),

"location aware" (i.e. a weblog of a British school produced during their trip to the Netherlands. As an example, see http://www.sandaigprimary.co.uk/pivot/netherlands07.php),

"collaborative" (i.e. the MOMO project "MOMO: Spannung und Stromstärke" in which a mobile application for a moodle platform was used in Physics to record experiments with mobile phones and to uploaded pictures, films, texts with the mobile phone directly on a moodle

platform for further assignments. As an example, see http://moodle.mobileclassroom.at/moodle18/course/view.php?id=5).

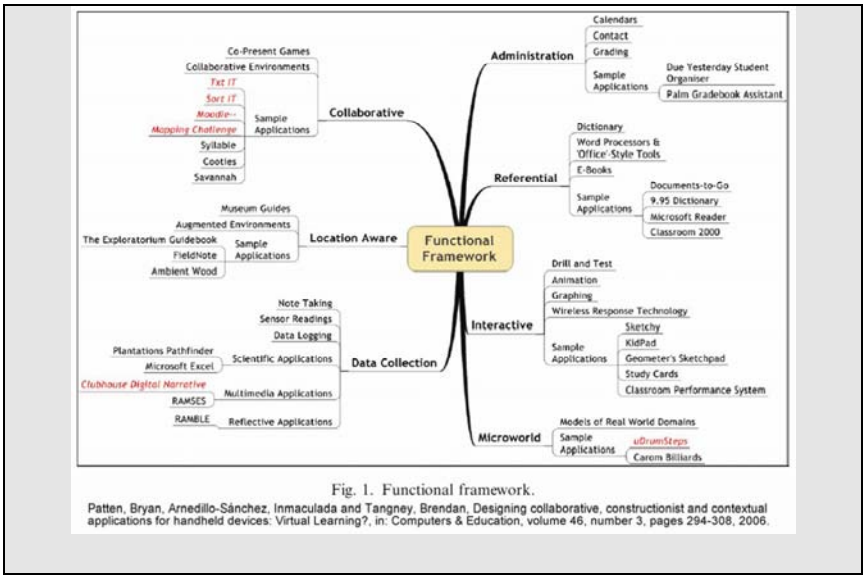

Fig. 1. Functional framework.

Patten, Bryan, Arnedillo-Sánchez, Inmaculada and Tangney, Brendan, Designing collaborative, constructionist and contextual applications for handheld devices: Virtual Learning?, in: Computers & Education, volume 46, number 3, pages 294-308, 2006.

Fig. 6: Functional framework; Patten, Arnedillo-Sánchez, Tagney 2006, p. 296.

The categorisation of the above given examples from the Swiss school according to Patten's scheme doesn't consider the student's learning achievements – even if the students collected data, acted location aware, reflected knowledge and reproduced it in different modes in terms of producing these m-learning materials. Moreover, the product as such is relevant in this scheme. Accordingly, Path-time diagram and Syntax are assignments and might be considered to belong to the category "Interactive", more specifically to "Drill and Test" applications. Limerick and Passé composé on the other side are small teaching units which show how a literary genre or a grammatical construct is done and which rules apply to them. Nevertheless, they seem to be interactive applications, located in the sub-category "Sample applications", because they can be used as "Study Cards".

According to this categorisation, the pedagogical underpinning of students' m-learning products is situated in the "interactive" segment of Patten's scheme of the "pedagogical underpinning" of mobile applications. The category "referential" could be considered too, if the students' small teaching units would be used in the sense of a "dictionary" or an "e-book".

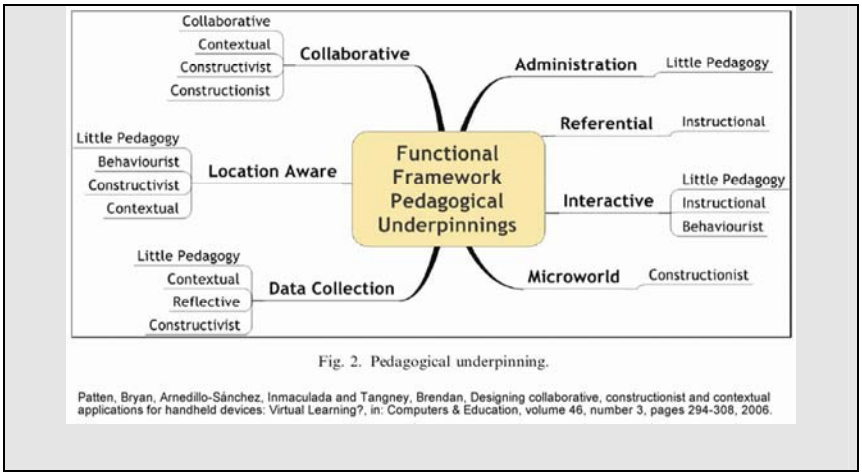

Fig. 7: Pedagogical underpinning; Patten, Arnedillo-Sánchez, Tagney 2006, p. 300.

One point that has to be considered is of course the differing opportunities which different devices offer in respect to mobile learning. However, the example from Switzerland shows that learning and teaching with mobile phones is not reduced to pedagogical underpinnings which are described with "little pedagogy". The British project "Dudley Handhelds Initiative" on the other hand deals with PDAs and additionally covers the other categories that are described as constructionist, constructivist, contextual, collaborative. So the more technological advantages the device has, the more learning seems to be enhanced, and the more learning can be shifted from a "linear" understanding to a more "discursive" understanding of learning.

4. Conclusion

Nevertheless, and finally, it can be said that students with their mobile phones and as fans and experts succeed in making the connection between typical modes of representation of knowledge in terms of school and their everyday life. By doing so, they show which idea they have about teaching methods and which might be their preferred teaching and learning methods, respecting the "affordance" of the specific technology. So if teachers allow integrating mobile devices such as children's mobile phones in the classroom and in open teaching and learning, they allow at the same time learner-generated contents and contexts (Cook 2007). Those might base on individual and maybe informal learning processes, and might include modes of representation which are not originally coming from school contexts, thus not from formal learning and formal settings for learning. As schemes for validating such knowledge that is gained in informal contexts and processes, children can make use of their experiences, needs,

demands, competencies etc. Such patterns, seen as frame for acquisition and estimation are the link between children's everyday life and school. School can allow this – and has to allow this. But school also has to offer then validation in terms of formal learning to which children can tie in with their own experiences, needs, demands and patterns of explaining and understanding the world.

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