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Mobile learning

towards a research agenda

Editor: Norbert Pachler



WLE Centre

Occasional Papers in Work-based Learning 1

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Chapter 5

M-learning and media use in everyday life: towards a theoretical framework

Ben Bachmair, Universität Kassel

What is the educational impact when students of Primary School age and above readily have mobile phones and MP3-players at their personal disposal? Do their patterns of use of these media follow those of the computer and the internet? Or is there a difference? Is there anything new?

The last decade or so has seen significant innovation in everyday life brought about by the computer and the internet. These media have impacted on the school, and they have motivated some educational practitioners and theorists to explore and theorise the role of the computer and the internet for teaching and learning in formal as well as informal settings.

It was in response to first attempts at integrating these media in curricular activities that a wider educational discussion on mobile phones and MP3 players began. It started with concerns about violent images on mobile phones and found expression in their ban in schools in order to avoid any potential distraction from teaching and learning. This knee-jerk reaction can be seen as an unsurprising reaction of the school to exploiting the educational potential of the entertainment dimension of mass communication.

Bachmair, B M-learning and media use in everyday life

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1. Elaborating an educational frame for mobile devices on the basis of the dynamic of media in everyday life

Mobile devices have reached the school and the institutionalised cultural sphere of learning. They follow the rules of the development of mass communication, which is not per se interested in or orientated towards school, curricula or education. School initially built 'lines of defence' against the everyday life functions of the new media, exemplified in the mobile phone; however, in the meantime deliberate efforts are being made to 'domesticate' mobile media devices and their applications for educational purposes. A comparison with the way pictures, film and video were integrated into school curricula is instructive here. Only computers and the internet do not fit the usual pattern of acquisition by schools. One might argue that this is due to the fact that the school was asked by policy makers to encourage their introduction into the everyday life of young people in order to ensure familiarity with and competence in computer and internet 'literacy'. Computers and the internet were seen as tools for modernising industrial societies and for enhancing productivity and economic growth. It seemed that they might also function as an opportunity for bringing about school development by linking the school to the world of work, economy and technology. If one looks back at the history of the integration of the technological media into school curricula, from photography or film to TV and video, and recently the MP3-player, podcasts or the mobile phone, there have always been some early adopters investigating the possibilities for teaching and learning on the basis of the use of these media by students in their leisure time. In a later phase, the media use in students' leisure time became the object for critical and/or creative media education.

Additionally, curricular functions were defined for these media.

With mobile devices we find ourselves once again in the cultural situation of a wave of new media 'splashing at the school gates'. Once again, the school – as institution – tries to react educationally to the outcomes of developments in the mass media and mass communication.

At the moment, apart from simplistic and naive approaches, one can also find initial interesting results from their practical and theoretical application in the field of education. For example, Kristóf Nyíri (2002) quite early on drafted a broad cultural framework paper entitled 'Towards a philosophy of m-learning'. In this he identified issues such as "ubiquitous communication", "school and society", "social construction of childhood", "text and picture". Patten et al., (2006) in turn put forward a helpful curricular approach to the recent debate on innovative models for learning. They proposed a design for m-learning on the basis of "collaborative, contextual and constructionist learning theories" (p. 295) and defined the following roles for handheld devices in "existing learning scenarios" (pp. 296 ff.):

- **administrative:** e.g. calendar or organiser on the students' mobile phone;
- **referential:** to store, access and annotate documents; information management and content delivery;
- **interactive:** e.g. a user responds to a task or receives feedback; "drill and test" with multiple choice style quizzes; to create own simple animation;
- **microworld:** allows learners "to construct ... own knowledge through experimentation in constrained models of real world domains" (p. 298), e.g. exploring simple geometric concepts within the context of a billiards game;

- **data collection:** to record data and information and create learning experiences that would not otherwise be feasible or uproblematic; e.g. note taking, “on-the-spot” analysis, recording of images or sound for observations and reflection;
- **location awareness:** to “contextualise learning activities by enabling the learners to interact appropriately with their environment” (p. 299); e.g. museum guides;
- **collaborative:** to share knowledge and create a learning environment “inspired by collaborative learning principles” (p. 299); e.g. using learning platforms.

For practical examples, see Seipold, 2007.

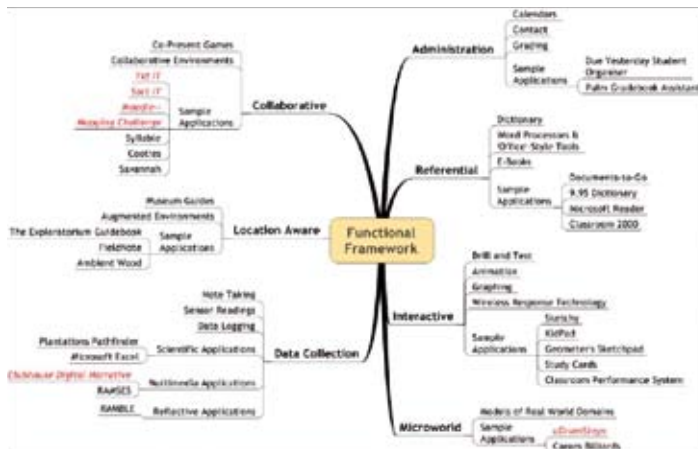


Figure 5.1: Curricular functions of mobile devices: Patten et al's Functional Framework (2006, p. 296)

This curricular approach is an attempt to rethink current principles of meaningful and situated teaching and learning (“collaborative, constructionist, contextual”, Patten et. al. 2006, p. 294) in relation to mobile devices from *simple* (“administration”, e.g. calendar) to *complex* (“location aware”, collaborative, situational, motivated).

Even without a detailed discussion of this framework, it can be noted that it comprises functions of the three poles of any formal learning: “teacher”, “student”, and “content”. In the traditional German curricular and didactic debate these three poles are considered as a triangle to which all curricular decisions have to refer. It would be interesting and helpful to use this didactic triangle to develop the framework above into a multi-dimensional model for the curricular application of mobile devices, alas lack of space does not permit this here.

Mike Sharples (2005) focuses his curricular frame on a discourse model of learning, which he derives from Diana Laurillard (2002; see also Chapter 6). It describes “the process of coming to know through conversation”. Mobile devices receive their learning potential by virtue of the fact that students have (a) to understand and decide on their learning discourse in school and (b) to “interpret the forms of representation” of the object which have to be learned in the process of acquisition.

Everyday life and mass communication as frame of reference

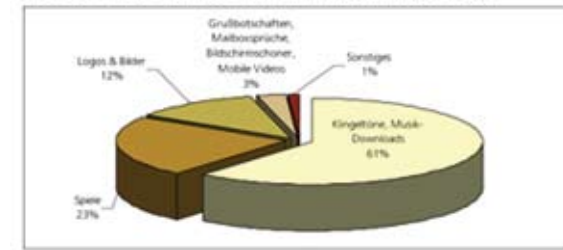
There remains an essential deficit in approaches to developing a curricular frame for mobile devices. Theoretical approaches for the integration of mobile devices into the school curriculum tend not to consider the conditions of media use in everyday life. But everyday life is the determinant space for the use of mobile devices in relation to

which the school is purely reactive and over which it has no influence. More recent mobile media such as mobile phones with cameras, video capability, texting and big storage capacity for music, LCD displays etc all follow the dynamic of mass communication. From this perspective, a first question can be asked: which functions of mobile devices have the capacity to link the uses of mobile media across the frames of school and of everyday life? One can assume that challenging curricular options derive from three functions in everyday life:

- entertainment (e.g. ring tones, games, podcasts),
- interaction (e.g. calling, texting, blogs) and
- recording functions (e.g. photos).

Patten et al.'s (2006) "functional framework" for mobile devices defines a set of curricular uses; further functions become visible, embedded into the genres of entertainment. In the fast growing mobile market new genres emerge continuously. The data from mass communication research itself offers first impressions such as ring tones as a new, pervasive *m-genre*. So far ring tones have not appeared as an essential part of the school curriculum; they are, however, a mass phenomenon offering potential for composing short sound sequences and evaluation. What do the data from mass communication research on the content for mobile phones reveal? The data on applications sold in the category "mobile entertainment" indicate that in 2004 61% of users in the sample downloaded music and ring tones, 23% games and 12% logos and pictures. More recent data would probably show a significant increase in mailbox messages as well as background pictures, screensavers and videos (in 2004 = 3%) (Source: Goldhammer and Lessig, 2006: 7).

Abb. 5: Anteile am Umsatz mit Mobile Entertainment Angeboten in Deutschland 2004



Quelle: GfK Panel Services (2004)

Der Gesamtumsatz mit Mobile Entertainment in Deutschland lag im ersten Halbjahr 2004 nach Angaben des GfK Panel Service bei 214 Mio. Euro. Eine Analyse von Mdray geht für das Gesamtjahr 2004 von 430 Mio. Euro Umsatz aus und prognostiziert für 2008 einen Gesamtumsatz von rund 1,5 Mrd. Euro im Segment Mobile-Entertainment.

Figure 5.2: Mobile phone genres in percentages of turnover in the first half of 2004 in Germany (Source: GfK Panel Services in Goldhammer and Lessig, 2006, p.7)

The discursive background of the above three main media functions in everyday life – entertainment, interaction and recording – opens the way for adding or re-interpreting discursive models of teaching and learning, such as Laurillard's conversational framework (2002 and Chapter 6 in this publication). Students describe and act on the basis of representational schemes, e.g. they "demonstrate understanding of models and problem solutions" and "act to build models and solve problems". They work by interacting with "why" and "how" "questions and responses".

But one has to accept that the school has lost the power to define in its way and for its purposes, the representational schemas to which students respond and in which they produce. It can be assumed that successful students are able to act and produce in different signifying worlds, the world of school and the world of everyday life with its entertainment, interaction and recording. The school has lost its power to set these

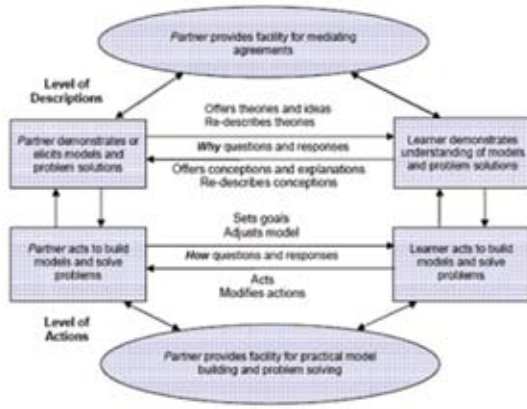


Figure 5.3: Discursive models of teaching and learning: Diana Laurillard's Conversational Framework (2002) (Source: Sharples 2005, p. 4)

frames in relation to the group of so-called "at-risk learners", that is, between a fifth and a quarter of the entire student population. While they can be successful in the everyday life world of entertainment, interaction and recording, they fail within the representational schemes of school.

In order to understand the new cultural dynamic it is helpful to know more about the three main functions of mobile devices in everyday life: entertainment, interaction, recording. These functions are developing within the features of mass communication, which – among other things – are characterised by time budgets for media consumption and patterns of media use. In the following, some selected research results are reported in an attempt to add to Nyíri's cultural frame the perspective of everyday life building on the cultural tradition of Alfred Schütz' explication of everyday life in industrial societies from the 1930s.

Longer term trends in developments of media technology

It might be instructive to have a closer look at the cultural trends within which mobile devices emerge. In the main there are three trends:

- a) increase in availability and usability, which at this point in time means: individual portability, minimal size and integration into network structures such as the internet;
- b) decrease in physical size of devices, which goes hand in hand with a change in traditional functions within a system structure, e.g. the convergence of the typewriter with the TV and the telephone. The typewriter was complemented by a screen, telephone talk within a cable network; it, in turn, was expanded by computers and now by radio (e.g. ring tones) and TV programmes;
- c) integration of technological and cultural innovations and their logic in everyday life. If a medium is part of everyday life, it is shaped by and shapes the structures of everyday life, e.g. the time structure of a day or of the week. In Germany, for example, 89% of 12 to 18 year old boys own a mobile phone; for girls the figure is 94%; 80% of boys and 77% of girls of this age group own an MP3-player (Source: Feierabend and Rathgeb, 2006). These data indicate almost full saturation, close to that of TV and radio.

On the basis of these three assumptions, as well as the degree of saturation noted above, one can conclude that the mobile phone, handhelds, MP3-players or similar devices and their related genres will develop within the already existing patterns of media use. As a prerequisite for successful teaching and learning, the integration of mobile devices into the school

curriculum has to follow the conditions of media use in everyday life. The question arises as to the basis of the assertion that the school curriculum has to respond to the condition of media and their use in everyday life. The modern school came into being with the (medium of the) book. The developmental logic of the technological media derives from entertainment, leisure time and consumption as part of everyday life which seem to have few structural correlations with institutionalised learning. Pragmatic education approaches tried to reconcile school and the outside world, for example, through educational visits, learning on field trips or using museums as learning sites. But today the media, especially TV, deliver a wealth of learning opportunities such as “Who wants to be a millionaire?” where the format for assessment is the format of multiple choice questions. Such programmes find a broad and enthusiastic audience, even though the results of the Programme for International Student Assessment (PISA) reveal that a part of a fifth up to a fourth of the 15-year-olds in Germany are not able to read, to write (or to calculate) in a modern sense of literacy.

In this respect, two different and complex tasks need to be accomplished in order to be able to identify features of media use in everyday life with relevance for m-learning:

- 1) What knowledge about media development, media use and everyday life is available and can be extracted from these data to predict the potential for the use of mobile devices in schools?
(The main purpose of this chapter is to report some selected results from German research. However, as there exist only a limited number of practical projects in this field at the time of writing, I can only offer an outline overview of the possible impact on curricular functions).

- 2) In our culture, with its enormous pressure for individualisation, different media are subject to different patterns of activities for TV, internet and digital games. Research results display complex features of activities which might be thought to have likely correlations with learning patterns. Such discussion of patterns of activity in respect of media which is supported by empirical research could lead to alignments with learning styles. This issue should be put on the agenda of the curricular discourse about m-learning.

2. Mass communication research and media in everyday life: report and discussion of empirical data from Germany

This chapter assumes that German data are relevant in identifying conditions of media use in other industrialised countries. At the very least, they can be used to support the search for similar or different results in other countries.

In Germany, there are two longitudinal studies in mass communication; one from 1964, on the media use of audiences over 14 years-of-age (see Reitze and Ridder, 2006; Fritz and Kingler, 2006; van Eimeren and Ridder, 2005). The second, which been carried out since 1998 (see Feierabend and Rathgeb, 2006), is on media for children and young people.

Longitudinal projects help reveal patterns such as the reach of the media to specific age-groups, affiliation with audience groups, the image of media and their function as information resource. Reach is defined here

as the index of the relevance of a medium within the media-set. It represents how many out of 100 persons are reached by the media of television, radio or newspaper.

The following short report on media trends begins with the issue of time structures and goes on to discuss specifically the media set and the preferences of the 12–19 age group. Additionally, the preferences of trendsetters are considered.

2.1 Basic time structure of everyday life (Fritz and Klingler 2006, p. 223)

Let us start with a brief scenario of mobile devices: the German public radio and TV channel WDR offers a wide range of podcasts with popular short films such as “How to measure the width of a river”. The mathematics or geography teacher might suggest to their class that as homework they should watch this short film. It could serve as a motivation for them to engage with some basic features of problem solving. Another use – with low input requirements in terms of time could be a time planner and homework organiser (see Patten et al. 2006, p.297). Or, the A-level teacher of literature gives his students access to the recent work of Orhan Pamuk, the Nobel Prize winner in literature in 2006 from Turkey. He has found an audio book of a book by the author. Apart from homework, the 2.30-minutes-long film “How to measure the width of a river” could also be used at the beginning of a lesson. What other time slots are available during the day? The audio book is 155 minutes long. Could the teacher motivate his students to listen to Orhan Pamuk on their way to and from school? Students normally don’t have such long journeys to school. Younger pupils tend to travel to school on foot and they have to concentrate on the traffic and should not be distracted by

listening to podcasts. When is there time for exposure to this MP3-file?

Data from Germany reveal the following time structure of a week:

- recuperation: Monday – Sunday = 30%; Mon – Fri = 28% (sleeping, eating, health care etc.)
- productivity: Monday – Sunday = 31%; Mon – Fri = 35% (e.g. working, driving to the office)
- leisure time: Monday – Sunday = 39%; Mon – Fri = 37%

There is, therefore, a quite clear time structure, which roughly divides time available each week into three thirds. Normally, people use MP3-players and their mobile phone within the time for regeneration or during leisure time. During this time, mobile learning has to compete with all other MP3-genres. The alternative is to replace activities within the time available for production; for pupils that means the time for school and homework. Perhaps the A-level student is motivated enough to accept Orhan Pamuk as part of her leisure time. The work by Orhan Pamuk is quite an exciting listening experience, which can successfully compete with other leisure time programmes. The WDR-podcast on measuring the width of a river is part of a well know children’s TV programme. It fits easily in the motivation phase of a lesson.

Changing time budgets for media use (see: Fritz and Klingler 2006, p. 226)

The time available for listening to MP3 files and using mobile phones could be limited to the time budget available during school time. Teachers need to consider what potential curricular options can be derived from the entertaining (ring tones, games), interactive (calling, text) and recording (photos) functions of everyday life. Of course, different school systems

⑤ Zeitbudgets der Medien im Wochenverlauf 2000 und 2005

BRD gesamt, Mo-Sa, 5.00-24.00 Uhr

	2000		2005	
	in Min/ Tag	Anteil in %	in Min/ Tag	Anteil in %
Fernsehen	185	37	220	37
Hörfunk	206	41	221	37
Tageszeitung	30	6	28	5
CD/MC/LP/MP3	36	7	45	8
Bücher	18	4	25	4
Zeitschriften	10	2	12	2
Internet	13	3	44	7
Video/DVD	4	1	5	1
Gesamt	502	100	600	100

Quelle: Massenkommunikation 2000 und 2005.

Figure 5.4: Weekly time budget for media use 2000 to 2005

(Source: Fritz and Klingler 2006, p. 226)

cover and structure the school day differently. But an intended media use has to take into account the necessary increase of the time budget for media consumption.

Between 2000 and 2005, media use per day increased by 100 minutes. When one compares the statistics for 1980 and 2005, the over-14-year-olds almost doubled their media time from 346 minutes in 1980 up to 600 minutes per day in 2005. This increase occurred mainly in leisure time and production time. The doubling of the amount of media time indicates, as well a generational shift in the everyday life patterns, a high competition between media and their genres although competition between media is not the adequate description, because media fit in their specific time and patterns of use (Fritz and Klingler, 2006, p. 227):

Radio = throughout the day

TV = late afternoon and evening

Newspaper = morning

Internet = whole day.

There are quite specific time patterns for media use. These patterns are more or less known: TV is watched more in leisure time; radio is more closely related to production time etc. The culturally newer MP3-player and other mobile devices fit into these patterns or compete with them, e.g. podcasts replace the broadcast radio. At the moment one can observe an increase in the daily time for production and leisure activities but without a dramatic change of the existing relations between regeneration, production and leisure time. Fritz and Klingler (2006, p. 229) note almost no change in the time budget for media use for the phase of regeneration (in 2000 = 74 min. / in 2005 = 81 min.). But in the area of production the time for media expanded 35 minutes daily from the year 2000 with 140 minutes to 175 minutes in 2005. A bigger daily increase of 42 minutes occurred in leisure time: year 2000 = 258 min / year 2005 = 300 min.

If one considers the fact that the daily time budget is limited to 24 hours, then the addition of media time in the region of half an hour up to three quarters of an hour per day is rather significant, particularly in terms of defining what is important and what can be replaced etc. Furthermore, one can expect that mobile communication will cover the whole day and not only leisure time and time for regeneration.

If the school intends to widen the participation of at-risk learners such as boys from immigrant families and from families with a relative distance to formal education (see e.g. Deutsches PISA Konsortium, 2001, pp. 399 ff.), then the media preferences within the cultural background of these

groups have to be taken seriously. To find and interpret relevant research result should, therefore, be on the agenda of the discussion about the role and use of digital technologies in education.

2.2 Media set of the 12- to 19-year-olds

The results of a recent German longitudinal study on young people and media (Feierabend and Rathgeb, 2006) make it obvious that mobile phones, CD-players and radio are fully or almost completely integrated in everyday life. MP3-devices are quite close to this stage.

TV is integrated into family life, but not as an object of un-negotiated disposition for young people. In Germany, parents are still the gatekeepers and hesitate to put a TV set into the children's bedroom. In respect of the availability of computers there is a discrepancy of 18% between

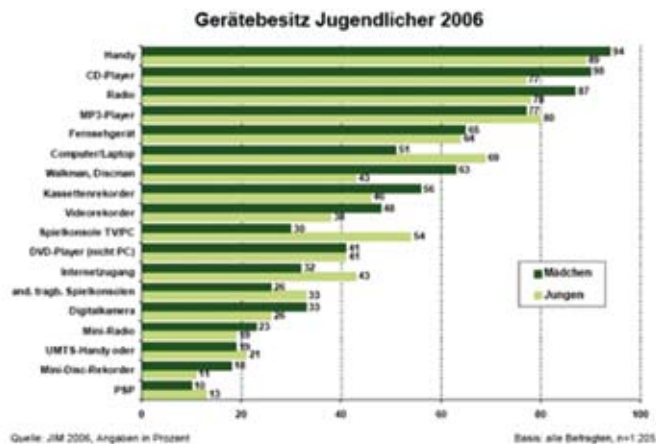


Figure 5.5: Possession of media devices by young people (Source: Feierabend and Rathgeb, 2006, p. 10 (JIM 2006))

boys and girls. Just half of the girls have a computer at their disposal, although nearly all families with children (98%) own one or more. But 69% of the boys are PC owners.

What are the main trends?

Everyday and non-linear media

The mobile phone is definitely part of everyday life for 12 – 19-year-olds. As such, mobile phones are subject to the structures of everyday life, which are taken for granted and usually not reflected on any more. But the media technology of everyday life influences and changes the structure of everyday life and the relation to the media set. The ongoing change is significant. With MP3 and CD players young people can be independent from traditional providers such as broadcasters, channels etc. The availability of MP3-players in families and for the young is three times higher than 4 years ago. In 2003, 28% of German households with children and 14% of young people owned an MP3-player, in 2006 the figure had risen to 87% of households and 79% of young people had an MP3-device. One has to take into account that MP3-devices are not part of the traditional structure of mass communication, which was based on the broadcasting of programmes in a linear manner. The significant increase of MP3-devices leads to non-linear media use, which is becoming the norm. For a short period this development opens up a generational gap in respect of the preferred use of the media. The parental generation grew up with linear media use within a system defined by broadcasting.

The discourse model governing teaching and learning discussed briefly above (Sharples, 2005; Laurillard, 2002 and Chapter 6) is still based on personal interaction which is typical for the school as an institution: learners are asking, explaining, defining despite the fact that mass

communication influences the way we engage with and learn from and about the world. Suffice it to mention three features here:

- learning in everyday life is an integral part of entertainment;
- the individualised and personal framing of the world; and
- there increasingly exists a range of different acquisition patterns rather than objectively, extraneously given approaches to generally relevant topics.

In light of these assumptions, non-linear media use, such as podcasts, enhances entertainment, which is the typical cultural frame of learner groups outside school. As a frame of reference, the curriculum loses power. Some groups of learners do not align their personal patterns of acquisition with the preferred patterns of school learning, for example “to demonstrate understanding of models and problem solutions” (see Laurillard, 2002 and elsewhere in this publication).

Gender bias

Gender bias in relation to the media set is normal. Relative to boys, girls have more CD-players, radio, audio cassette recorders, video recorders and digital cameras. Boys possess more computers / laptops, digital game consoles and have more internet access. Teaching and learning based around mobile devices has to be aware of this gender bias.

Social bias

A remarkable proportion of children and young people still has reduced access to individually programmable (= non-linear) and mobile media devices. There is also a social class bias which tends to lead to the exclusion of children and young people from social groups with low



Figure 5.6: Possession of media devices by young people in Germany relative to school types (Source: Feierabend and Rathgeb 2006, p. 11 (JIM 2006))

Note: The German school system is divided into three hierarchically – and socially – discriminated types of school: Hauptschule = school type with a high proportion of children from working class and migration families; Realschule = school type with orientation to administrative professions; Gymnasium = school type which opens the way to university.



Figure 5.7: Frequency of media use during leisure time by girls and boys (daily/more than once per week) (Source: Feierabend and Rathgeb 2006, p. 12 (JIM 2006))

income and distance to school-based education. In the short term, this social bias could influence efforts to widen participation in education supported by the mobile phone and MP3-players.

2.3 Media preferences during leisure time

Leisure time competes with time for regeneration and for production. As noted above, in Germany each of these three time allocations covers more or less a third. In Germany the term 'competition' seems an appropriate description of the relationship between the three allocations because the children and young people spend in the main only around half a day at school. After school, they are expected to do their homework but the division of the available time between homework and leisure activities is left to families and young people. Also, the German concept of school and education separates learning and entertainment, although the media offer a lot of knowledge-based programmes within entertainment formats such as game shows. At present, the media preferences within leisure time still show a preponderance for TV. There is also a quite remarkable gender difference which applies particularly to the internet and digital games consoles. More girls prefer music CDs and radio, more boys MP3s, computers and the internet. Games on consoles are definitely the domain of boys (boys = 32%, girls = 6%). If the 2.30 min podcast "How to measure the width of a river" or the 2:30 hours Orhan Pamuk audio book is to be used outside the school this competition for time has to be considered carefully, as do the different media priorities of boys and girls.

2.4 Genre, content, program(me)s

It is useful to combine the rather divergent concepts of genre, content and program(me)s because new media also establish new 'content'.



Figure 5.8: Contacts and communication with friends (Source: Feierabend and Rathgeb, 2006, p. 14 (JIM 2006))

At this quite early stage of the development of the mobile phone into the leading medium of everyday life, it is possible to keep the terminology ambivalent. But one development was to be expected: the transformation of this technology from portable telephone to a 'full medium' was publicly discussed in relation to violent content. Looking back, when video first impacted on everyday life, this media innovation was scorned publicly for its harmful content. Traditionally, harmful content has been society's mechanism for becoming aware of a new medium. In Germany in 2005, the recording or photographing of violent performances in school playgrounds was a big issue ('happy slapping'), which indicates the awareness of self produced content alongside the traditional functionality of making calls. The sound genre "ring tones" was considered to be harmful for children and young people in terms of their being duped by advertising. In the dynamic of multi-media convergence, the advertisements for ring tones led to 'hits' like the *Crazy Frog*.

The semiotic use of the concept genre stresses social functions. Therefore, a descriptive view of social activities negotiated via the mobile phone is worthwhile in order to identify specific genres within the range of modes afforded by the mobile phone of supporting and enhancing social contacts. In relation to the use of the mobile phone for contacting friends and peers, the German data suggests that it is still only one mode of interaction alongside others. Just as with TV, the mobile phone is mainly integrated into interaction within peer group and friends. 92% of young people see each other daily or several times per week. However, to get in touch with friends 71% of girls and 62% of boys use texting and MMS. 42% of girls and 49% of boys use mobile phones to call their friends. One can consider the present 73% of landline use as an area for considerable growth for mobile phones.

Radio and the MP3-player: from a linear to a non-linear medium

The MP3-player, either as integrated part of the mobile phone or as separate mobile device, connects the mobile with traditional media content, which is produced within an editorial context. Radio, the traditional linear medium, increasingly delivers programme offerings via the internet to MP3-players and is on its way to adopting non-linear media structures. To compare the traditional editorial media of sound programmes, i.e. radio broadcasts, with the MP3-player highlights a change in cultural trends from linear to non-linear mass communication. On the one hand, the MP3-player carries the content of the radio, on the other, it disrupts the linearity of producing, delivering and using the medium. The MP3-player does not need an editorial structure of the kind needed by the traditional radio, which pushes defined programme elements within a given time structure to the audience. A user has simply to decide if s/he wants to listen or switch off/tune into another station. By contrast to such a *push* strategy,

the user of a MP3-player *pulls* his/her preferred programme from a programme storage, supported by software such as iTunes, from a website and listens within his or her personal time structure.

94% of the 12- to 18-year-olds use MP3-players to listen to music. But their radio preferences include news, comedy, information on regional events, coverage of regional relevance, sport (note the gender differences discussed above), concerts etc., and information with relevance to internet or computer games.

But the data from 2004 presented earlier shows that the mobile phone re-shapes traditional genres (c.f. ring tones), but also invites young people to download traditional material. All together *sound* comprises 61% of the content on mobile phones, followed by games (23%), logos and pictures

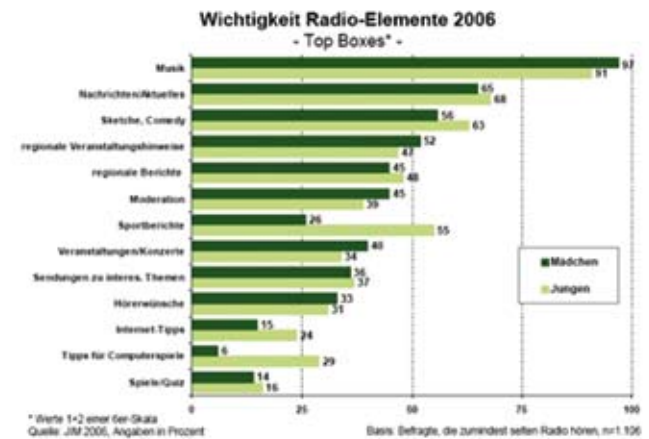


Figure 5.9: Relevance of radio offerings (Source: Feierabend and Rathgeb 2006, p.30 (JIM 2006))

(12%), and 3% mailbox messages, background images and screensavers and downloaded videos etc.

Music

97% of girls and 91% of boys listen to music on the radio, and 65% of girls and 68% of boys listen to news and information on current issues. Information on local issues and offers are used by almost half of the young people surveyed. It can, therefore, be argued that such content on mobile devices would be positively received by students given its relevance for everyday life.

In terms of school-based instruction, it seems rather straightforward to introduce into the curriculum the genres relating to information on general and regional issues. Rather more difficult, it seems, is the use of music genres for instructional purposes. It is argued here that creative ideas are needed how to 'curricularise' the genre preferences from everyday life in relation to mobile devices, or at least to bring them into a meaningful and supportive relationship with school-based teaching and learning. If the mobile phone is not just for motivation and updating the curriculum with the latest entertainment technology, the curricular functions delineated by Patten et al. (2006, pp.294, 297 ff.) have to be addressed, i.e. administrative, referential, interactive, microworld, data collection, location aware and collaborative. A brief look at the media of everyday life reveals some provisional ideas. Given the focus of this chapter, i.e. to explore media use in everyday life as an important basis for curricularising mobile devices, the following examples are deliberately taken from everyday life.

Example: Favourite music as genre for mobiles

In Bonn, 6000 owners of mobile phones downloaded Beethoven's 'Ode an die Freude' as a ring tone. They performed Beethoven's ring tone to blackbirds with the intention of getting male blackbirds to learn to whistle the tune. Teaching blackbirds to whistle a melody works on the biological assumption that male blackbirds compete with possible rivals by answering their 'call signs'. The context of this project was established by an artist, probably to enhance an impression of the overwhelming repetition of classic melodies within spaces of consumption.

Using the curricular categories of Patten et al. (2006, p.299) this project with a music genre realises the categories "location aware", "collaborative" and to some extent also "microworld".

- **collaborative:** the experiment is organised as social project, which affords, as a first step, opportunities for small talk within a town and, after the project is completed, for follow-on discussion outside the context of the project.
- **location aware:** the 6000 inhabitants of Bonn are encouraged to analyse the marketing function of classical music and its trivialisation within shopping site and as ring tones. Additionally, their world is considered as living space for birds. Curious behaviour of animals and the trivialisation of classical music occur in their own world, which is usually taken for granted and not reflected on.
- **microworld:** aspects of structure and function of the world as well as the biological basis of the whistling of birds become known. Blackbirds do not learn a melody because they like a melody or they

like to repeat it. Male blackbirds just whistle a ring tone because they understand it as unfriendly signal from an intruding competitor. A blackbird uses the 'Ode to Joy' as sign against an intruder.

Example: Social analysis with camera phones and MMS

The German women's magazine *Brigitte** offered its female readers a test on the attractiveness of men and how to begin a friendship. It is a psychological test of the typology of female identity. A female reader is invited to choose one of five pictures of men. The pictures are printed above an elaborate text on the social psychology of the initial phase of relationship and the role personality features play. One has to select one out of five images of men, i.e. take with one's mobile a picture of one's favourite man depicted on pages 146–149 of the magazine. The reader is invited to send their chosen picture, using the subject line 'MAN', by mobile phone (via MMS) to a psychologist who answers by SMS and interprets the chosen type. (see *Brigitte* 13/2007, p.150)

From a learning perspective, this procedure is similar to using the camera phone function on a visit to a museum (see Patten et al., 2006, pp.299 f.: "location aware", "collaborative"), which is by now a common proposal for 'creative' use of media in learning sites outside the school. When students walk through a museum they have to identify and compare pictures in order to find features within the picture. Before taking a photo they have to make a decision on the basis of features identified in the picture. Afterwards, and supported by the teacher, the students reflect on the features, mainly by talking on a higher level of reflection.

* Brigitte, Hamburg 2007, No. 13, June 6th 2007, pp.157, 145–151: Die Gesetze des Kennenlernens (The laws of getting to know one another)

Usually a further level of reflection is reached by means of reading more theoretical documents and writing an essay. The magazine *Brigitte* offers the pictures within the frame of a quite theoretical article on the beginning of personal relationships. However, in contrast to school, it does not ask the reader to write a short essay but to take a photo. Of course, to write an essay would not be acceptable in an entertainment context. Therefore, the essay is replaced by the photo, which is to be sent to the magazine. There are, however, significant differences in taking a picture and writing an essay. This example reveals differences in the mode of reflection in school and entertainment. The essay necessarily requires higher order thinking, the former does not. One can just take a picture based on very little reflectivity. Nevertheless, this 'task design' gives the reader the option of identifying a feature within a picture through the eye of a camera. On the basis of an anonymous interaction with the psychologist, the reader receives feedback via the mobile phone's text function.

This example reveals curricular application in the context of the conversation model. One could also identify learning outcomes in relation to the levels of literacy required by the test of the "Programme for International Student Assessment" (Deutsches PISA-Konsortium, 2001, p. 89). Readers of the magazine *Brigitte* engaging with the 'task' are asked to identify features within a text (pictures plus written text). PISA identifies three dimensions of literacy: a) to identify information, b) to interpret a text and c) to reflect and evaluate. A participant in the women's magazine's test has to work on all three dimensions, which is possible only by using two application of the mobile phone: taking a photo and texting.

2.5 Media trendsetter

In 2005, the German longitudinal study for media use (Reitze and Ridder,

2006, pp. 178–199) asked 6% of the population with the highest score in media use and media equipment to learn from them about trends. With reference to m-learning, the trends underline the transformation of mass communication away from the linear broadcasting model towards non-linear media use. Furthermore, media trendsetters show a rather remarkable preference for genres relating to socially relevant issues.

Trend towards non-linear media use

Trendsetter own and use media outside the traditional broadcasting system which provides programmes in a linear way. Within linear mass communication, media such as TV channels push programme to the audience. In a non-linear medium, the audience is able to control and determine the media flow by pulling programme elements. Digital video recorders and MP3-players support a non-linear media flow and the pulling of programmes on demand. In 2005, media trendsetters used digital video recordings twice as frequently and MP3-players almost three times more often compared with other audience groups (Reitze and Ridder 2006, p.185):

Digital video recording:

average media user = 17,1% / media trendsetter = 45,2%

MP3-player, iPod:

average media user = 26,2% / media trendsetter = 75,1%

Agenda setting

Which are currently the most relevant societal issues? The following issues are important for trendsetters (Reitze and Ridder, 2006, p. 189):

Social Policy (Gesellschaftspolitik/Soziales) 79%

Economy, jobs, profession (Wirtschaft/ Arbeitsmarkt/Beruf)	68%
Politics (politische Themen)	62%
Technological, scientific development (technologisch/ wissenschaftlicher Fortschritt)	45%
New media, communication (neue Medien/ Kommunikation)	38%
Environment (Umweltprobleme)	33%
Energy (Energie)	28%
Poverty in the 3rd world (Armut in der 3. Welt)	15%
Human relations (menschliches Miteinander)	10%

Figure 5.10: Extract from the list of the important issues for media trend setters

(Source: Reitze and Ridder, 2006, p. 189)

It is surprising that the media issues, which trendsetters are concerned with, do have a positive correlation with the typical and traditional school agenda. The question that remains unanswered is what this implies for attempts at widening the participation of at-risk learners in the school, because learners at risk do not belong to the group of media trendsetters.

3. A short overview of complex patterns of activities related to media

The ongoing process of individualisation and social fragmentation is negotiated and enforced by the media of everyday life. In this dynamic, media are cultural objects among various commodities with relevance to everyday life. They function as symbolic material within a standardised offer, which is open for consumption within, and for building personal life worlds. The shift from mass communication based on linear to

non-linear principles fits into the process of individualisation which enables, or may enable, students to construct their own knowledge. It is argued here that m-learning correlates with constructivist curricular approaches to innovating a static model of school instruction. These constructivist curricular approaches correlate with the personalised construction of life worlds, which have become taken for granted.

Personal life worlds include the individualisation of collective risks (see Giddens 1991, pp. 109 ff.) and a self-referential frame of personalised experiences of reality (see Schulze 1992, pp. 34 ff.). These two impacts of personalised life worlds have found their way into school in the form of constructivist curricular approaches. In view of these developments, the educational dimension of the introduction of mobile devices in formal learning has to be considered critically between the poles of enhancing meaningful and situated learning (constructivist learning) and of individualising cultural and social risks by personalised and self-referential experiences.

As well as the necessary theoretical consideration, data on media consumption are discussed below. M-learning is framed by features of the socio-cultural milieus and already habitualised patterns of media use.

In addition, a very short summary of the results on TV and internet will be given in this section.

3.1 Media preferences of socio-cultural milieus

In the first instance, milieus can be identified as socio-cultural frames for the identification of media patterns. The milieu-related organisation of our society has emerged during the past two decades. Following the cultural

Meta-Milieus in Westeuropa

Higher 1	Established	Intellectual	Modern Performing
Middle 2	Traditional	Modern Mainstream	Sensation Orientated
Lower 3		Consumer-Materialistic	
Social Status Basic Values	A Traditional Sense of Duty and Order	B Modernisation Individualisation, Self-actualisation, Pleasure	C Re-orientation Multiple Options, Experimentation, Flexibility

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Figure 5.11: Social Milieus in Western Europe (Source: Sinus Sociovision®, 2007)



Figure 5.12: Style of living rooms – milieu 'modern performer' (Source: Sinus-Milieus®, 2001, p. 10)



Figure 5.13: Style of living rooms – milieu 'traditionalists' (Source: Sinus-Milieus® 2001, p. 12)

sociology of Anthony Giddens (1991) or Gerhard Schulze (1992), and looking at the results of the respective empirical research, it can be noted that industrialised European societies are segmented into the following milieus. Their construction follows two dimensions (Source: Sinus-Milieus®, 2001, p. 5):

- a) Social Status: high, middle, lower; and
- b) Basic Values: traditional (sense of duty and order), modernisation (individualisation, self-actualisation, pleasure), re-orientation (multi options, experimentation, paradoxes).

The above-mentioned media trendsetter belong to the higher scorers on the dimension *Basic Values* and *Social Status* (see Figure 5.11). Probably they are part of the milieu *Modern Performing* or of the *Modern Mainstream* as well as of the milieu *Consumer-Materialistics*.

The spatial personal environment, that is the living room or the bedroom, of the milieu *Modern Performer* is likely to be similar to the one depicted in Figure 5.12. The media trendsetters usually do not belong to a tradition-oriented milieu living in rooms like the example in Figure 5.13.

If a teacher invites students to use mobile devices in a constructivist learning environment, the *value orientation* of the *Modern Performers* are closer to such a project than young people from a traditional cultural environment. Certain projects will require quite a strong motivation for students from a traditional background with higher or lower social status and income. But it is rather likely that the traditionally orientated groups appreciate mobile calendars or organiser (“administrative function”, Patten et al., 2006, p. 296), dictionaries (“referential function” Patten et

al., 2006, p. 296) or the basic learning input like *drill and test* (“interactive function, Patten et al., 2006, p. 296). These kinds of learning tools are accepted by milieus with a more traditional orientation. One can assume that the three different “basic values” map onto different preferences in respect to school, teaching and learning. They are: “A: Traditional, sense of duty and order”, “B: Modernisation, individualisation, self-actualisation, pleasure” and “C: Re-orientation, multiple options, experimentation, paradoxes” (see Figure 5.11). A traditional values orientation can be seen to go hand in hand with traditional methods of schooling.

Also, genre preferences are pre-structured by the social milieu. For example, the podcast with the short video “How to measure the width of a river” belongs to a well know children’s TV series “Die Sendung mit der Maus”. Children from innovative milieus with higher social status are more likely to watch this series, but children with a traditional orientation prefer information programmes. By looking at the socio-cultural milieus of the pupils, a teacher can tailor specific inputs to activate specific media habits and media preferences for m-learning.

3.2. Activity patterns within the media set and family life of children

Within the context of the cultural transformation of mass communication from linear to non-linear dispositional modes, and the relevance of cultural practices in terms of the segmentation of society, children are acquiring specific patterns of activities by using certain media sets in their family life. The children’s TV channel SuperRTL investigated these patterns at the end of 1990s and the beginning of the year 2000 (2000 & 2002), when TV was still the dominant medium of the media set of children.

The research project focused on four kinds of patterns:

- activity patterns in leisure time: different levels of activity and external orientation; level of activities: low / high,
- patterns of emotions and feelings;
- patterns of social and self experiences;
- patterns of the social and organised worlds of children;
- parental style of education.

The activity patterns range from casual watching of TV to complex patterns of integration of TV programmes into mundane and individual action patterns with different levels of activity and external orientation, as well as “emotional patterns”.

a) Activity patterns of children in leisure time (SuperRTL 2000, pp. 58 ff.)

There are two main dimensions of activities:

- orientation towards the outer world or to the inner world;
- level of activities.

Identified activity patterns

- the “passive children” with few of their own activities, however with a great deal of action-rich television consumption (22% of children);
- the “play-children” with many toys and fairy tales (22% of children);
- the “intellectuals” who concentrate on “more knowledge, in order to receive an achievement-orientated advantage”



Figure 5.14: Children’s activity patterns in leisure time (Source: SuperRTL 2000, p. 60)

(15% of children);

- the “game players” with their plethora of “games, fun, and excitement” (16% of children);
- the “unnoticeables” with their love for animals and openness to new things (11% of children);
- “fun and action kids” who are “young, dynamic, and rarely alone” (7% of children); and
- the “allrounders” with a “need for leadership” and “corners and edges” (7% of children).

The keywords from marketing such as play-children or fun and action kids are rather superficial but indicate the differences between groups of children in- and outside a classroom. If mobile devices are to be integrated

into learning activities, teachers need to re-think these different patterns of activities on different levels and in relation to different orientations to the inner or outside world of children.

These activity patterns map onto patterns of emotions and feelings and patterns of social and self experiences, which regulate the integration of media use in everyday life.

b) Media/TV are elements in patterns of emotions

- boredom;
- relaxation;
- regulation through anger;
- mood of sadness;
- mood of separation and retreat; and
- getting comfort.

c) Patterns of social and personal experiences

The dimensions of these patterns are:

- comfort and attention in the family;
- self-determined retreat;
- friends;
- excitement and surprise;
- learning and desire for knowledge;
- curiosity for others;
- retreat, disinterest and boredom and
- dramatic search for suspense.

d) Modes of organising children's worlds

There are other patterns which regulate the social worlds of children

especially in the way parents organise family life and educate their child or children (Source: SuperRTL 2002, pp. 74 ff.).

Clusters of educative styles of parents inclusive of TV

A) Over-educative and regulative style	
• controller	7%
• (over)protective	16%
• contradictory	11%
B) Engaged and communicative style	
• open minded	17%
• generous, liberal	18%
(C) Distant	
• weak orientation towards family	12%
• indifferent	19%

Figure 5.15: Educative style of parents (Source: SuperRTL, 2002, p. 74)

The 35% of children (see Figure 5.15: section B) who benefit from an engaged and communicative style of education are likely to respond positively to teachers offering the use of mobile phones and application such as camera phones for *collaborative* investigations of *real world domains* such as the museum or to work within the *microworld* of models offered by mobile devices (see Patten at al. 2006, p. 296). This group of children is familiar with working autonomously which is essential for successful constructivist learning. These positive experiences are also important for collaborative investigations of real world domains or creative use of the small world of mobile games etc. (microworld). But there is also

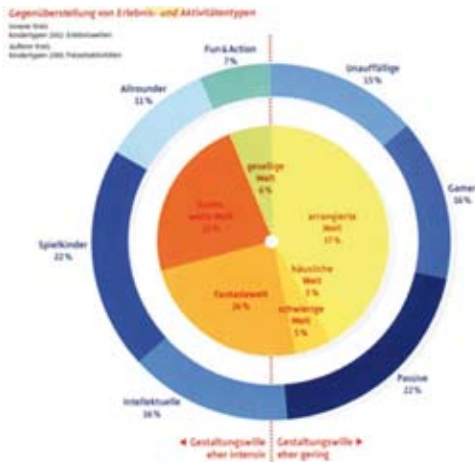


Figure 5.16: Correspondences between activity styles of the children (outer circle), the organisation of their everyday life world (inner circle) and the children's capability in relation to formation and organisation (left sphere: more intensive, to the right: limited) (Source: SuperRTL, 2002, p. 77)

a large proportion of students who expect clear regulations (23% with controlling and overprotective parents; see section A of Figure 5.15) or who do not have positive experiences in terms of support from their parents.

In Germany, 37% of children live in an *organised world*, 23% in an *open-minded world*, 24% in a *world of fantasies*. But 5% of children live in a world which can be described as challenging. Correlating the activity styles of children with the mode of organising the worlds children live in, one can see differences in the way or degree to which children can contribute to or influence and form their world. It can be assumed that the ability to influence and form their own world to a greater or lesser degree correlates closely with learning modes. Almost half the children

expect a low degree of opportunity for forming, influencing and creating. They probably lack experiences which they could use as positive learning frames for creative media use.

These children need positive experiences in school through meaningful and constructivist learning. Their organisation of everyday life suggests starting with calendars and organisers (Patten et al., 2006: administrative function), drill and test-software (Patten et al., 2006: interactive function), or dictionaries (Patten et al., 2006: referential function).

3.3 Typology for TV and internet use

Empirical data concerning activity and engagement patterns within the media set as well as the educational dispositions within families can help to identify at-risk learners and their ways of coping with everyday life as a prerequisite for curricular organisation and learning. Also, the research on typologies of media users affords relevant information on media habits which have the potential to support successful m-learning even for at-risk learners.

German public broadcasting developed user typologies for TV and the internet. Dehm and Storll (2003) identified the following five factors of involvement with TV and also with the internet:

- 1) emotions (e.g. to have fun, to laugh, to relax);
- 2) orientation (e.g. input for reflection, something for learning);
- 3) balance, compensation (e.g. distraction from everyday life problems);
- 4) diversion, to pass the time (e.g. meaningful use of time, habit); and
- 5) social experience (e.g. to have the feeling to belong to, to participate to the life of others).

On the basis of these five factors of involvement with TV, Dehm, Storll and Beeske (2004, pp. 217 ff.) found seven distinct profiles of TV viewing:

1) involved enthusiasm	11%
2) emotionally involved connoisseurship	15%
3) knowledge acquisition with pleasure	16%
4) habitualised orientation seeking	12%
5) habitualised participation	21%
6) undemanding coping with stress	14%
7) sceptical distance	10%

These seven types of TV viewers are now using mobile phones and MP3-players. Usually teachers do not have much of an idea which profile of TV viewing is associated with a successful or a weak student. As schools move towards the integration of mobile technologies, these issues and considerations are increasingly coming to the fore.

In addition, internet users can be described by the five factors of media involvement: emotions, orientation, balance and compensation, diversion (to pass the time), social experience. On the basis of these five factors, four distinct types of internet user were identified (Dehm, Storll and Beeske 2006, p. 96):

• hedonistic participation	18%
• habitualised surfer for knowledge acquisition	31%
• curious surfer seeking compensation	26%
• browser	25%.

Again, the question arises whether and how students combine their internet habits with the curricular offer of mobile devices.

4. A provisional summary: m-learning and media in everyday life

The data, patterns and typologies reported here provide the basis for media-related resources and conditions from everyday life for m-learning. School education – in the German tradition: didactics – can still be seen to be characterised by a notion of autonomy which excludes relevant media resources from everyday life and does not tend to refer to them explicitly in the planning of teaching and learning.

In the following an attempt is made to extract from the various data sources presented above some provisional features which seem particularly pertinent for m-learning.

Time

- Increase of daily media use of approximately 100 minutes leads to high competition between media within leisure time and production time. It is necessary to conceive of genres of m-learning which fit into leisure time or regeneration time. M-learning genres in the form of games should be seen in conjunction with the mobile phone.

Genres

- Trend setters prefer socially intelligent and valid genres.
- New genres are emerging in and for everyday life, which also widen the possibility for formal education.

- In line with changes in mass communication, mobile devices are affording non-linear systems of dissemination. Therefore, schools need a specific awareness in relation to archiving.

Social status and socio-cultural milieus: expected biases

- Trendsetters prefer non-linear media. One can expect barriers in m-learning for children from traditional milieus and from milieus with a lower social status.
- TV will continue to be the main medium for social groups and milieus with lesser orientation to and flexibility for innovation, also for milieus with a lower social status. This will influence daily time structures and genre experiences.
- Elements of children's TV programmes with a focus on information could serve as an introduction to complex forms of m-learning for milieus with a less strongly developed orientation towards modernisation and with lower social status.

Consumerism and the life world of young people*

- Young people's life worlds are an amalgamation of typical issues of youth, peer groups and commodities.
- For the older age group the mobile phone is more important, and the relevance of TV and printed material like magazines decreases.

*The "Bravo Faktor Jugend 6. Lebenswelten und Konsum" investigated the relation of young people (12 – 18 years) to 5 areas of consumption: fashion and clothing, shoes, softdrinks, mobile phone, provider for mobile networks. Bravo Faktor Jugend 6. Lebenswelten und Konsum. Bauer Media AG. October 2002. <http://www.bauermedia.com>

Patterns of children's media and family world

- Almost half the children do not live in a life world which enhances experiences to form, to influence and to create. These children need positive experiences in the school with meaningful and constructivist learning activities. The organisation of their everyday lives suggests beginning with calendars and organisers (Patten et al., 2006: administrative function), drill and test-software (Patten et al., 2006: interactive function), or dictionaries (Patten et al., 2006: referential function).
- At-risk learners need sensitive support to use mobile devices for formative and creative activities outside their expectation of educational needs and pursuits.

TV and internet typologies

- Three of the five factors of TV and internet use in everyday life could be helpful as a guide for planning m-learning activities: emotions, orientation, social experience. These three factors of users' involvement in TV and the internet can also direct the involvement with m-learning.
- Acquired internet habits seem to be supportive of school and m-learning: 'hedonistic participation' (18%); habitualised surfers, who are searching for knowledge (31%); curious surfers, who are seeking compensation (26%); surfers who are looking with distance for information (25%).

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