Informal Learning and Digital Media
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Edited by

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and Kim Christian Schrøder

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INTRODUCTION

CONCEPTUAL AND RELATIONAL VAGARIES
OF LEARNING AND MEDIA

KIRSTEN DROTNER, HANS SIGGAARD JENSEN
AND KIM CHRISTIAN SCHRØDER

Learning holds a paradoxical position in contemporary societies. The widespread discourse that we live in knowledge economies, or knowledge societies, has propelled policies and practices of education and learning to the center of public attention unknown a few decades ago. Yet, at the same time the conceptual boundaries of learning and education are contested and transmuting.

The present volume cuts into that paradox by exploring answers to the simple question: in what ways, if any, do digital media play a role in the formation and possible handlings of this paradox? The overarching perspective framing the following contributions is to analyse and attempting to understand the current relations between digital media and learning in order to advance the possible benefits that may be reaped from their interaction. These benefits may range from conceptual synergy through empirical practices on to policy implications, and the volume is structured so as to cover all three dimensions.

Contributors also approach these dimensions from different fields such as media studies, ICT studies and education studies. But indicative of the intensified collaboration between these fields, the contributors share an interest in what may be termed a relational approach to digital media and to learning. In terms of media, this means an approach which acknowledges that digitization facilitates a joint technological platform for text and image, sound and numbers, and a blurring of boundaries between media that are born digital, so to speak, such as the personal computer, the internet, games consoles and mobile devices, and media that may be, or already are, digitized such as books and newspapers, television, film and radio. Digital media, in the this perspective, encompass information and
communication technologies, or ICTs, as well as print and broadcast media. Importantly, such a perspective serves to transform scholarly interest from technology to substance and uses, to textual and social relations.

The relational perspective equally informs our understanding of learning. The increasing scholarly and practical interest in learning as much as education not only signals the contested nature of the boundaries between the two. It does. But, more important to this volume, it signals an increased interest in the social processes of knowledge formation, irrespective of the means, sites and objectives of these processes. The term informal learning, in this perspective, highlights this relational take on learning in two capacities. It defines learning as socially situated processes of knowledge formation; and it acknowledges that these processes can be thought about and take shape within a number of boundaries that mutually help define one another, as in the case of the term informal which immediately invites its opposite formal.

Both digital media and informal learning are conflictual terms, and their respective transmutations are taken up in several contributions. Still, the key interest rests with the relations between the two. One need not buy into the rhetoric, often of a celebratory or concerned nature, about the knowledge society in order to realise that digital media do hold a potential to transform learning in a number of important ways. Online games, social networking websites such as the videosharing site YouTube and community-generated encyclopedias such as Wikipedia all offer new means of communication, collaboration and creation for their users. Equally, it seems beyond doubt that school no longer holds a monopoly as a site for learning experiences that are deemed relevant by learners. Notably the internet and mobile devices have been instrumental for a dispersion of sites for potential learning. In terms of physical place, the advanced mobile technologies now available in many areas of the world facilitate location-based learning options as users may generate and share images, surf the internet and use so-called satellite maps, or sat maps. In terms of virtual space, the internet facilitates an immediacy of exchange and interaction whose full potentials are still to be explored.

When the dispersion of physical and virtual settings for learning is matched by the ever-increasing storage capacities of computing, it seems obvious that both digital media and learning are transmuting phenomena, whose relation merits closer inspection. Still, technological change often outpaces socio-cultural practices. A relational research perspective, therefore, fundamentally involves that we pay close attention to the particulars of just how learning processes and digital media interact -
under which circumstances, through which practices, and with what outcomes and implications. Questions of inclusion and exclusion immediately spring to mind, just as do questions of the economic ramifications within which digital media are explored for learning.

In terms of digital media, questions of inclusion and exclusion are debated as questions of so-called digital divides (Warschauer 2004). These divides are often tackled as problems of access, while their most drastic implications are possibly to do with inequalities of use – of children having very pronounced differences in terms of learning and knowing how to handle the complexities of media in ways that are relevant to their current lives and future situation. Digital divides demonstrate an intimate connection to familiar fault lines in terms of class, gender, ethnicity, age and region (Fox 2005, Peter & Valkenburg 2006). Questions need to be asked about the ways in which we must structure and develop learning in order to minimise such divides, and several contributors offer theory-based empirical answers.

The economic ramifications, within which relations between digital media and learning are currently explored, equally merit close inspection. While education in many countries upholds democratic ideals of access based on personal, not financial, abilities, learning processes hold no such promises, since, in principle, they may take place anywhere. When learning takes shape through the appropriation of digital media, economic considerations loom even larger. It may be argued that internet technology is free for the end user, but access is not, or only rarely so. Equally, most other digital media are developed as commercial enterprises, both in terms of hardware and software. Use comes at a price, and often a substantial one. However, the commercial nature of most processes of digital learning is easily downplayed in favour of more visible aspects of appropriation and policy-making - a structural bias which is taken up most directly by Julian Sefton-Green in the book’s concluding chapter.

**The organization of the book**

The chapters which make up this book originate in the conference *Informal learning and digital media: Constructions, contexts, consequences*, organized by the Danish Research Centre on Education and Advanced Media Materials (DREAM) in September 2006 (http://www.sdu.dk/Om_SDU/Institutter_centre/Dream.aspx), and are organized in three parts. Part One, *Practices of Production*, is opened by Kirsten Drotner’s chapter "Informal learning and digital media: Perceptions, practices and perspectives”, which lays out the relations
between informal learning and digital media in conceptual as well as policy terms. Her claim, in brief, is that the increasing interest in this relation is based on conflictual remappings of competence formation that the pervasive discourses on the knowledge society have brought about, and she argues for an inclusive and critical definition of digital literacy as a key competence that may help bridge boundaries between informal and formal takes on learning.

In Chapter Two, "Googling movies: Digital media production and the ‘culture of appropriation’", Øystein Gilje argues that the digitization of media makes it much easier to appropriate, combine and remix semiotic material than ever before. The chapter presents both quantitative and qualitative data from a new media and communication subject in the curriculum of the upper secondary school in Norway. Gilje argues that digital software and an internet connection, as cultural tools, provide the learner with new affordances in the process of editing video, and discusses literacy practices that evolve in the ‘culture of appropriation’.

In Chapter Three, "Acting and learning with avatars: Sense-making strategies of reflection in the virtual world of a massively multi-user online role-playing game", Sisse Siggaard Jensen reports from an ongoing research project on actors and avatars communicating in virtual worlds. She suggests that we should study the informal learning processes of massively multi-user online role-playing games (MMORPGs) in order to help us inform a designing strategy for virtual framings aimed for acts of reflection. Using video-interviewing to follow the actors while they are playing the role-playing game of EverQuest, Jensen explores whether such framings may support informal learning and show new directions for organizational learning.

Part Two, Contexts of Use, opens with Glynda Hull and Nora Kenney’s chapter, “Hopeful children, hybrid spaces: Learning with media after school,” in which they focus on a case study of a digitally very proficient young boy and his experience in an informal, non-scholastic, after-school learning environment. This environment was established in order to give new learning opportunities and forms of learning experience to young people in a city area close to UC Berkeley, thus making it possible to study media and digital learning in a multimodal context. Based both on close case studies and theoretical reflection, the chapter contributes to our understanding of learning, popular culture and digital literacy in today’s society.

Sarita Yardi’s chapter, "From multimedia to multiple voices: Conflicts in collaborative learning cultures,” discusses the role of collaboration in formal and informal learning environments and the challenges posed by
the use, reuse, and appropriation of different types of media. Like the previous chapter, it is based on an after-school program in which students participated in collaborative digital story telling activities, and it applies Mikhail Bakhtin’s theory of dialogism to describe the factors that contribute to students’ ideas about ways in which they can collaborate in classroom activities. The study thus explores how the collaborative tensions can be transformed into a positive learning environment in the classroom.

In Chapter Six, "(Student) life’s a game: Personal development planning as an interactive simulation,” Kirkpatrick, Lancaster and Wilson describe an on-line game which has been developed for first year undergraduate students at the University of Manchester in the U.K. The purpose of the project was to develop a computer game to support the students’ Personal Development Planning (PDP). It focuses on the experience of actually playing the game, and discusses game play as a particular repertoire of learning in the digital domain.

In the last chapter in Part Two, "When all else fails: The internet and adolescent-immigrants’ informal learning,” Nelly Elias and Dafna Lemish look into the roles of the internet in the lives of immigrant adolescents, whose social situation is characterized on the one hand by social isolation and the weakening of traditional socializing agents, and distrust of the local socializing agents, on the other. They find that for these adolescents the internet serves as a central agent of socialization, a source of information about their new society, its mores, norms, and culture, as well as an important resource to teach peers about their homeland and to build self esteem.

Part Three includes five insightful contributions that illuminate Perspectives for Education. The first, Chapter Eight, “Learning theory, video games, and popular culture,” by James Paul Gee is based on the basic – and new – assumption that the best current model of the mind is a video game. The astonishing successes of video games have significant implications for learning theory and the design of learning processes. Various aspects of video games, both connected to their character as simulations and as games, are explored. The fact that the player is both inside and outside the game - has a proxy in the game - is significant, and so is the experience of seeing the world from different and new perspectives through playing the game, and being forced to make important decisions. Finally the potential for taking the learning principles of video games – not made for learning explicitly – into design of games made explicitly for learning is explored for a game of urban planning.
In Chapter Ten, “Literacy on a social networking site,” Håvard Skaar presents an ethnographic study of a group of 6th graders’ (aged 11-12) literacy on a social networking site called Piczo, where the users present themselves not only through written text, but also by the use of photos, animations, sounds, music, video clips, and other kinds of semiotic resources. Skaar develops a typology of literacy types and subsequently discusses the commercial aspects of the pupils’ literacy on the Piczo site in contrast to the normative aspects of literacy in the school environment.

Moving to internet terrain that is perhaps more familiar to international readers, Dan Perkel in the chapter titled “Copy and paste literacy? Literacy practices in the production of a Myspace profile” argues that MySpace is an environment that fosters the development of new literacies. Drawing on examples from fieldwork and his own use of the site, the analysis is based on a model that tries to reconcile social and technical perspectives on literacy. The expressive power found in the creation of a MySpace profile concerns a technically simple but socially complex practice: the copying and pasting of code as a way to appropriate and reuse other people’s media products. By integrating theories of appropriation and reuse of media with theories of literacy, a new way of thinking about this practice emerges in which “participation” and “remix” are important concepts to describe the social and technical aspects of these new literacy practices.

In chapter Eleven, “Creating media literacy in Japan: Initiatives for new Citizenship,” Yosuke Morimoto discusses the challenges facing Japanese students in the advanced media society, and the need for systematic media literacy education in Japanese schools, on the basis of the Takatsuki Media Literacy Project, a three year research project being conducted by the Japan Media Literacy Research Institute (JMLRI). In Japan, Media Literacy Education has not been integrated into the curriculum of the formal educational system, and no government initiatives currently exist to promote media literacy, so it is up to centres like the Tonda Youth Center to actively foster new citizenship, which includes media literacy. The chapter includes a survey mapping the current media environment of young people in Japan 2006 and the influence of the mainstream media on students’ life styles and values.

In the final chapter on “Informal learning: A solution in search of a problem?”, Julian Sefton-Green self-critically examines the notion of informal learning and its close association with commercial media uses in out-of-school contexts. Bringing a much-needed historical perspective to the ongoing and conflictual discussions on informal learning, Sefton-Green critiques applications of the term for a general analytical disregard of the political economy involved in informal learning practices with
digital media, and thus tacitly assuming an empowering potential that may not be empirically substantiated.

As this brief appetizer to the work collected in this volume has hopefully demonstrated, the contributions are diverse in their varying emphases on and mixtures of theoretical, methodological and empirical perspectives on mediatised learning along the continuum from informal to formal learning environments. Moreover, the authors represent a wide international range of scholarly experience and expertise, a range that not only documents important, empirical variations, but equally testifies to the deep interest across sites and settings in exploring the relations between informal learning and digital media. However, all contributors share a commitment to explore the ways in which the media/learning nexus is creatively played out by young people in our more and more pervasively digital age. And in the course of their explorations they manage to challenge their readers to reflect imaginatively on what precisely we mean by ‘digital literacies’, on the ways to research these, and the measures to be adopted if we want to promote them.

References

PART I:

PRACTICES OF PRODUCTION
In informal learning, there is a much-used, some would say misused, term in educational theory and debate. Indications of the wide interest in sustaining organized, professional dialogue around informal learning and related terms are, for example, the emergence of the *Informal Learning Review, Journal of Informal Science Education, The Handbook of Implicit Learning* (Stadler and Frensch 1998) and the not-for-profit internet sites www.infed.org, which hosts an encyclopedia and archive, and www.informalscience.org, which resources research on learning at science centres and museums.

How may informal learning be defined? How is it applied and developed? What is its intellectual and pedagogical heritage? The many answers given to questions such as these have primarily focused on conceptual characteristics and pedagogical applications, with rather less offered in the way of intellectual discourses and historical contextualization of the term. In order to help balance our understanding of the term, I will first address its discursive positionings before discussing some of the key attempts to define its substance and ramifications as these pertain to digital media. For, the basic claim underlying the present chapter, is that digital media serve to transform our understanding and appropriations of informal learning, not only in conceptual terms, but in policy and practical terms, as well.

**Informal learning as supplement: Liberal discourses**

The term informal learning immediately conjures up its opposite, namely formal learning. Whoever applies the term informal learning does so with a view to what lies beyond, evades or is neglected by formal learning...
policies and practices. In discursive terms, informal learning invariably carries on a tacit or explicit dialogue with current understandings of formal learning, which is most often defined as the educational system or schooling. Naturally, this system involves a number of dimensions, legal, organisational, physical and pedagogical, and in the second part of this chapter I return to the ways in which these dimensions impinge upon our substantive definitions of informal learning. At this stage, the important point to be made is that different discourses on informal learning tell us as much about different conceptions of educational systems as they do about informal learning itself. With this caveat in mind, we may distinguish between three discourses on informal learning, namely a liberal, a critical and a functional discourse. Each of these maps on to similar discursive distinctions of formal learning, and they may partly be linked to different aims, spatial settings and temporal cycles of what learning is for, and where and when it takes place.

The liberal discourse takes informal learning to be an important, even necessary, supplement to what school has to offer both in terms of aims and processes of learning. The German term *Bildung*, dating from the late 18th century, neatly sums up the ideal of a rounded character formation which school may not always attain in its attempts to inculcate more concrete skills and competences. And while the actual term informal was not used to define the many music schools, drama societies and sports clubs emerging during the late 19th and early 20th centuries in newly urbanised and industrialised areas of Europe and North America, their rationale and pedagogical focus speak centrally to a liberal understanding of informal learning which still informs current trends. The individual is at the core of attention, and the arts offer important topics of interest.

The liberal discourse unfolds at a time when industrial societies develop mass schooling that trains pupils within demarcated parts of their lives in well-defined skills based on the three Rs, reading, writing and arithmetic. In tandem with these organisational developments, and informing their aims, psychology develops a view upon the formation of the human mind as a gradual progression in ages and stages, thus lending credibility to the individualist view upon learning. Today, such views are reflected when educationalists argue for self-paced progression as an important asset of informal learning, and when it is claimed that learning needs no organisational underpinnings but may result from unplanned, everyday interactions.
Informal learning as alternative: Critical discourses

Informal learning is defined as an alternative to formal learning within discourses that take a critical view on schooling. The Brazilian educationalist Paulo Freire’s approach is exemplary of this tradition in its insistence upon the inherently social and dialogical character of learning and in its sustained linking of knowledge, power and social change (Freire 1972, 1995). Also, Austrian-born Ivan Illich has influenced the critical discourse with his insistence that the very organisational framework of schooling is a key constraint on learning (Illich 1971). The critical approach has particular resonance in societies that demonstrate stark social divides in the access to formal schooling and in societies struggling to develop educational structures. Thus, from its inception UNESCO has strongly supported informal learning as a democratising force and as a means of social inclusion (Fundamental Education 1947, Faure et al. 1972, Singh 2005).

Unlike the liberal discourse, the critical discourse on informal learning extends its focus of interest to include adults in addition to the younger generations. Bearing in mind the political economy of most societies, this extended focus offers new possibilities to address the power implications resulting from unequal distribution of resources for learning. Critical educational policies advancing informal learning structures in opposition to school follow in the ideological footsteps of Britain’s so-called working-men’s institutes flourishing in the 19th century. These self-organised institutions were based on a claim that knowledge is power and a belief in learning as a joint practice. Still, learning was defined in relation to the type of knowledge-formation generated through schooling rather than through the learning practices that many participants would be familiar with from their daily work in the workshop or the mine. However, the hands-on learning processes of the workplace, or in direct preparation for a job, have assumed increasing professional interest since the 1980s, not least with community groups and non-governmental organisations (see overview in Colley et al. 2003). Informal aspects of vocational training have since been taken up in a big way by more functional discourses on informal learning.

Informal learning as extension: Functionalist discourses

Today, it is difficult to conceive of learning as a process neatly confined to specific physical and organisational domains or to particular phases of the
human biography. In some sense, the concept of lifelong learning, which has assumed a key policy importance in many parts of the world, harks back to age-old ways of learning in terms of apprentices and helping-hands. Research on lifelong learning ranges from critical to more celebratory positions (Knowles 1970, Bentley 1998, McGivney 1999). But most researchers and policy-makers associate lifelong learning with vocational work and with ongoing training that may take different degrees of planning, organisation and validation – from work interactions and in-house training to longer spells of certified competence development. Informal learning is defined as a key element in these processes, and a central point of debate is whether or not to develop systems of validation of their outcome (Bjørnåvold 2000).

Particularly in education policy, informal learning is seen in functional terms as an ongoing and flexible means through which the workforce may update specific skills necessary to operate successfully in dynamic societies. For example, the European Union has pushed for integration of informal learning schemes into the general education provision in its member states as a critical element in fulfilling the Union’s vision of making Europe one of the leading knowledge-based economies of the world (European Commission 2001, Edwards and Boreham 2003). Similar efforts are made in countries such as Australia and Canada (Misko et al. 2007, Livingstone 2001, Unlocking 2007).

### Informal learning and knowledge societies

Indeed, the functionalist discourse on informal learning is nurtured by even more pervasive discourses, namely that current societies are information societies, knowledge societies, learning societies or network societies (Castells 1996, Hutchins 1968, Husén 1974, Ransom 1994, Stehr 1994). Irrespective of terminology and scientific tradition, these discourses claim that we have witnessed a qualitative transformation from material to immaterial forms of production, distribution and consumption. What is more, it is claimed that the crucial drivers of this transformation are digital technologies including the internet, the personal computer and mobile forms of communication. While the technological optimism underlying such claims has been severely criticised (Robins and Webster 1999, Garnham 2000), the discourses have nevertheless had what Roland Barthes in another context called a “reality effect.” For, in tandem with these discursive developments, and indicative of their surmised implications, have been intensive economic, technological and political initiatives and interventions on a national as well as an international scale.
to help further what is perceived as a massive transformation in competence formation.

Two aspects of this transformation are crucial to note in order to understand the complex interlocking of informal learning and digital media. First, it is assumed that the vital tenets of knowledge societies, to use a shorthand for the numerous terms applied, are the storage, formation, processing and increasingly global communication of signs – be they numbers, text, sound or images. A key competence is therefore semiotic competence, that is the ability to give shape to and handle an increasingly complex constellation of signs as part of everyday collaboration, communication and participation. Second, since the internet and mobile devices facilitate access to these complex, semiotic learning processes at different spatial and temporal locations, school is seen as no longer holding a monopoly on resourcing literacies that are deemed necessary for the 21st century (Drotner 2007). More and more social practices are defined as learning processes, and more and more aspects of identity are enrolled as potential competences. For example, online and mobile forms of communication involve (unsolicited) encounters with distant others, and successful communication during these encounters involves participants’ ability to deal with such “semiotic othernesses” by drawing on a range of situated personal capacities.

As is evident, the reality effect following from the discourse on the knowledge society and similar terms serves to renew discussions about informal learning, and, I would claim, to transform our understanding of the relations between formal and informal dimensions of learning. In order to substantiate these claims to be unfolded below, I will first revisit some of the key attempts to define informal learning and its associated terms.

**Defining informal learning: A nexus of family resemblances**

There is no dearth in offers of defining informal learning and its properties. For example, Daniel Schugurensky specifies it as “learning that is not organized as a pedagogical activity by an educational institution, and it can happen both outside and within educational institutions” (Schugurensky 2006, 166). David Livingstone details informal learning as “any activity involving the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria (...) in any context outside the pre-established curricula of educative institutions’ (Livingstone 2001, 4). Other researchers, reviewing the diverse attempts of definition, second the conclusion drawn by Helen
Colley and her colleagues that “either the boundaries between formal, non-formal and informal learning or education, or the relationships between them, can only be understood within particular contexts” (Colley et al. 2003, 6). More explicit criticism of the concept is leveled by Gerald Straka who notes that “‘informal learning’ is a metaphor with a severe problem, namely the lack of systematically and empirically grounded valid evidence on why, where, when, how and what is learned under ‘informal conditions’” (Straka 2004, 2).

Informal learning is, indeed, a fuzzy term and one which competes for scientific currency with a range of related terms. These include implicit learning (Reber 1993), non-formal learning (Eraut 2000), situated learning (Lave and Wenger 1991), self-directed learning (Knowles 1975), incidental learning (Marsick and Watkins 1990), informal education (Jeffs and Smith 1996), non-formal education (Simkins 1977) and tacit knowledge (Polanyi 1967). Over the years, a gradual terminological change may be observed in that learning gradually ousts education as the prevalent term in definitions of the organisations and activities beyond curricular frameworks, just as non-formal and informal juggle for priority of use. These transformations indicate a shift of professional focus from institutions and outcomes on to processes and people, a shift that mirrors wider transformations of scholarly knowledge interests in parts of the humanities and social sciences from structural to more relational takes on research topics.

However, there is persistent diversity in researchers’ theoretical approach and in the detail with which they break down their definitions – ranging from two properties (Eraut 2000) to 20 properties (Colley et al. 2003). Many also acknowledge the relational character of any definitional endeavour. However, as indicated by the examples above, all definitions of informal learning and its related terms include two key dimensions, namely the degree to which the context of learning is structured and planned and the degree to which the learner defines, or is aware of, the process going on as an act of learning. It follows from these dimensions that it makes no sense to describe learning itself as more or less formal; and so, in a literal sense, informal learning is an empty term.

Rather than contributing to the ongoing debates over the correct terminology, I would argue that scholars would do well to focus interest on the very fuzziness of the term. Perhaps it is the semantic interlacings between related terms that should merit closer inspection. According to Ludwig Wittgenstein’s famous dictum in his Philosophical Investigations some definitions are best made through what he terms family resemblances (Familienähnlichkeit). Family members do not all look the
same but share some traits that together define them as belonging to that particular family. In the same vein, the overlaps and criss-crossings between different terms help delineate the topical hotspots of scholarly interest. These hotspots circle around the two key dimensions, mentioned above, namely contexts and subjects of learning. Both of these dimensions of learning are currently undergoing substantial transformations; and formative to these transformations are the divergent socio-cultural embeddings of digital forms of communication.

**Digital media as transformative resources of learning**

Digital media is a catch phrase for an ensemble of technologies. Some of these are “born” digital, such as the personal computer, the internet, games consoles and mobile devices; others can be made digital, such as print media, radio and television, because of the technical possibilities to digitize all signs so that text, image, sound and numbers can be brought on to the same technological platform and begin to “speak together” in multifaceted ways. Fundamentally, the increasing range of communication channels available and the complexity of their uses help push spatial, temporal and social boundaries of learning and knowledge formation. Terms such as distance learning and e-learning are indicative of the possible dispersion of learning sites just as m-learning is gaining ground as an indication that learning is, in very concrete terms, an ongoing activity. Moreover, social sites of learning are being distributed across different online communities; across broadcast, web-based and interpersonal forms of communication; and across ad-hoc networks and established organisations. One result of this redistribution is a renewed contestation of what counts as legitimate forms of knowledge and which institutional frameworks best promote relevant forms of knowledge. The conceptual flourishing of informal learning and its family resemblances are both symptoms of, and suggested answers to, these contestations of knowledge formation, its pace and the sites of learning. Both contexts, learners and the substance of learning are brought into play here.

While cultural-historical education theorists may rightly claim that new technologies merely highlight what was always the case, namely that learning is socially situated and integral to everyday interactions (Säljö 2000, Wertsch 1985), we nevertheless need to specify in what ways digital media serve to transform these processes. The key here is the meaning-making across time and place. Media are particular technologies that facilitate the storage and modification, articulation and exchange of signs, be they text, images, numbers or sound. Signs are tools of meaning-
making, and so media may be defined as meaning-making technologies. Media are material tools, and mostly commercial tools (books, television sets, mobile phones), and as such media are like many other tools such as cars, toothbrushes and saucepans. But, unlike such object-like tools, media are also immaterial tools of signification, of meaning-making. This dual definition of media as both material and immaterial tools (Carey 1989) places them at a particular cultural vantage point.

Unlike interpersonal forms of meaning-making, such as dinner conversation, the forms of meaning-making taking shape through media may be preserved and handed down through time, and they may cross boundaries of place. Media are also selective cultural resources, in that they mostly require a bit of money, some free time and sometimes also some formal knowledge of the semiotic codes (reading, writing, numeracy) as prerequisites of use. In short, media are means through which we may express ourselves and reflect upon the world; and they are means through which we may connect to other people, times and places beyond our immediate spheres of interaction.

In terms of the immaterial aspects of media then, users’ relations to media may be defined as means through which they can connect to and encounter other realities and as means of engaging with other people beyond their physical reach – what I defined above as “semiotic othernesses”. In terms of the material aspects of media, these encounters and relations may be regulated through institutional arrangements or personal rules of access and use such as broadband availability at school, work or home and organisational limitations on gaming or texting; through structural or economic shortcomings such as lack of books, computers or money; or through insufficient skills to break the codes of expression, understanding and use such as illiteracy, ignorance of internet distribution networks or sparse insights into the handling of texts and images.

Digital media latch on to existing media cultures which serve to modify the introduction of mobile media, computer games and the internet, just as these digital media serve to relocate existing media cultures both in terms of discourses, legal frameworks and social uses. Crucially, media that are digital from their inception, are all commercial products whose survival is largely dependent upon their success on globalised markets. Unlike some radio and television channels that belong to a public-service, and often a national, domain, most digital media access depends on potential users’ economic acumen and priorities. Since economic divides and socio-cultural patterns of production and use change at a much slower pace than do technologies, the transformations brought about by digital media should not be overstated. Still, four characteristics
of digital media serve as catalysts of qualitative changes in relation to uses and to learning practices, namely:

<table>
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<tr>
<th><strong>Semiotic codes</strong></th>
<th>digital media invite more seamless forms of multimodal (co-)production and interactivity</th>
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<tbody>
<tr>
<td><strong>Time</strong></td>
<td>digital media allow immediate exchange of mediatized forms of communication and, for mobile media, ad-hoc coordination</td>
</tr>
<tr>
<td><strong>Place</strong></td>
<td>digital media widen options of mediatized communication virtually everywhere</td>
</tr>
<tr>
<td><strong>Social relations</strong></td>
<td>digital media intensify meaning-making practices as forms of action, participation, collaboration, and reflexivity.</td>
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As for the multimodality of *semiotic codes*, it should be noted that this is not particular to digital media. Even the earliest books display a mixture of text and images, so the novelty of digital media is rather the ease with which different sign systems may be brought on to the same platform and manipulated there. Moreover, this manipulation of signs is also well-known from other media – writing letters or modifying photo negatives through special forms of development. Again, it is the immediacy and relative ease with which such manipulations may be carried out that are particular to digital media and are unknown to analogue media apart from the telephone. Young people in particular also (co-)produce new mixtures of visuals, graphics and sound, and these processes involve often complex handleings of a range of semiotic codes and conventions (Gilje this volume, Perkel this volume). Several studies demonstrate that young people’s out-of-school uses of digital resources are more varied, more advanced and less task-oriented than are their uses at school (Livingstone and Bovill, 2001; Levin and Arafeh 2002, Erstad 2005, Arnseth et al. 2007). A key, and contested, issue is whether or not such activities are learning processes of relevance for future competence formation or are, indeed, competences. I will discuss this issue in the final part of the chapter.

That media help orchestrate users’ *time* is well known from studies of television for example, especially prior to the introduction of the VCR, and this still holds true for young children and special programmes such as Disney animated cartoons in some countries (Lemish 1987, Drotner 2004). Exchanging communication across time through media is also known to many of earlier generations who have treasured letters to distant friends.
and relatives; who have coordinated arrangements on the family landline phone; and who may have written to the so-called agony columns of magazines in search of advice on looks, friendship or fashion. But mobile phones, internet messaging and social networking sites on the internet allow synchronous, continuous and easy exchanges. Moreover, these forms of communication serve to integrate what we may term “distant intimacies” as mundane, and increasingly mobile, elements of people’s everyday lives in many parts of the world (Drotner 2005, Ito et al. 2005, Ling and Haddon 2008).

Notably, mobile devices and the internet impact on social relations in that they serve to widen users’ options of creation, communication and participation across space, and these options become increasingly globalized (Harasim 1993, Holloway and Valentine 2003). Since the 1980s, satellites in the sky, cables under the sea and corporate mergers and acquisitions have brought about an intensified media globalization and commodification, so that today most people around the world, irrespective of their actual options of taking up and engaging with globalized media, know about their existence and relate to perceived assumptions about mediatized forms of otherness (Block and Buckingham 2007, Feilitzen and Carlsson 2002). Digital and increasingly globalized media, then, are both symptoms of and possible solutions to the demands made on many people in late-modern societies to exert temporal coordination, spatial flexibility, and personal identity performance. As such, they have attained a central importance, not accorded to media with former generations.

Digital media also impact on social relations and practices. Because of the ease with which signs may be manipulated and modified, digital media offer more, and more advanced, possibilities than other media technologies of semiotic production, such as is evident when users make their own profiles on social networking websites such as Facebook or MySpace. Moreover, because of their flexible and often mobile nature of joint meaning-making, digital media intensify modes of virtual co-production and collaboration, as when friends edit images and circulate them via their mobile, discuss work tasks or do homework together on the internet. In particular, the so-called second-generation services on the internet, called web 2.0 - such as social networking sites, free, user-generated encyclopedias (wikipedia or wikis) and internet diaries (weblogs or blogs) - offer more and easier ways of social participation and networking, of shaping and sharing content. The rapid takeup of these services by the younger generation in many parts of the world has meant an enormous expansion of informal communication, participation and play.
Even if the research literature is still limited and inconclusive, several studies indicate that these virtual social sites offer a good many young people new ways both of expressing intimacies and of reflecting upon the reactions brought about by their articulations (Brake 2007). Some of the most advanced digital experiences are brought about through gaming, since these processes both assume and advance virtual action – to be a gamer one has to do something in a very concrete sense, such as manipulating objects or figures, and thereby one helps create and sustain universes of practice (see Gee this volume, Jensen this volume). These universes offer spaces of articulation, collaborative experimentation and playful action, to which are sometimes added options for reflection if the gamer joins one of the many game communities.

Digital media, then, do impact on temporal, spatial and socio-cultural arrangements of relevance to the boundaries drawn up between formal and informal definitions of learning. A key question, of course, is whether or not this pushing of boundaries has, or could have, any bearing on the ways in which learning is understood and practiced; and, similarly, on the ways in which media environments are developing.

Digital divides: A challenge to informality?

Much has been made of the potentials inherent in the rapid take-up of digital devices, not least by young people, and the embedding of complex media environments into people’s daily lives. Still, recent studies of digital divides note the intimate connection to familiar fault lines in terms of class, gender, ethnicity, age and region (Fox 2005, Peter and Valkenburg 2006). Broadly speaking, the digital elites are young, Caucasian people from middle-class backgrounds with women having a slight critical advantage in terms of digital forms of communication such as phoning and blogging while their male counterparts are more avid gamers. These results confirm previous studies of the diffusion of new media technologies, and in three important ways: technological availability does not guarantee equal access; access to a particular media technology does not guarantee equitable use; and, most important in the present context, use of particular media resources does not equal competence (Rogers 1962, Buckingham 2000, Livingstone and Bovill 2001).

So, is anything new under the sun when it comes to the current situation in terms of the media environment? The answer is yes in so far as my argument made above is accepted that the reality effect following from the pervasive discourse on the knowledge society and similar terms implies a change in the demands made on learning and its outcome in
terms of competence formation. A fundamental form of infrastructure in globalised knowledge societies are interconnected networks and these increasingly hinge on the handling of interlocking media environments. So, future competence formation fundamentally concerns advanced handling of digital semiotic resources, be they numbers, text, images or sound – or intricate mixtures of all. Therefore, the digital divides of today may be regarded as economic, social and political divides of tomorrow.

Several studies note how the current media environment serves to reframe articulations of inequality both within and between societies so that symbolic exclusion for some segments becomes as important as material exploitation. For example, Scott Lash speaks about an "underclass" which is excluded in both material and symbolic terms, and in a similar vein Zygmunt Bauman speaks about first and second world inhabitants, defined not in terms of positions of place but of symbolic space and resources of articulation and action (Lash 1994, Bauman 1998). Manuel Castells extends this mode of reasoning to also include areas of cities and entire regions into what he terms a "fourth world" (Castells 1998). However, in noting that digital divides are basically social divides, Castells also stresses that education plays a key role both in the formation and the potential dissolution of these divides.

Education systems in democratic societies serve a dual function in that they operate as primary means of social selection while at the same time holding the possibility of being one of the only social sites of sustained learning that may cross boundaries of age, class and gender. The ways in which competences are defined and deployed by education systems are therefore of vital importance to schools’ abilities to minimise the digital divides that pupils bring to the classroom. How do schools today sustain and advance pupils’ competences in handling the meaning-making resources offered by an increasingly complex and interlaced media environment, so that they may be competent participants of tomorrow’s knowledge societies? Answers to this question basically follow the three discourses on informal learning outlined above, and this is not very surprising. Because, as already noted, informal and formal understandings of learning are discursive twins, and so the discourses on informal learning mirror, indeed are part of, the discourses on formal learning either as their supplement, alternative or extension.

Transforming informal learning?

According to the liberal discourse on informal learning, digital competences formation is already well served through users’ voluntary
and often entertaining engagements in out-of-school contexts. Within this context, we find arguments to the effect that users already know what is best for them and are in a position to exercise their own choices. The education system should not enter the wider field of informal learning, including out-of-school digital practices, but should keep to well-trodden paths of training basic skills, possibly followed by voluntary parental advice on self-regulation or co-regulation of children and young people’s media uses. In its emphasis on individual choice and voice, the liberal discourse on informal learning may act as an endorsement of assertions made by commercial stakeholders who define users as already savvy and sophisticated consumers, particularly when it comes to the younger generation. Statutory training would be seen as a means of top-down regulation of use that is ill-suited to the liberal arguments for consumers’ self-regulation or stakeholders’ co-regulation.

Critical discourses on informal learning define learning as an embedded social practice and informal learning as an alternative to what is perceived as curriculum-driven and evidence-based school environments. Crucially, informal learning is seen as a lever of possible change in these educational priorities, and such notions find particular resonance with advocates of digital literacy as a competence that should be systematically exercised within the curriculum. Skeptical of the commercial and individualised nature of out-of-school learning in the digital domain, they define digital literacy as a critical social resource for citizenship as much as for vocational work or consumer society (Buckingham 2007, Sefton-Green this volume). While liberal discourses focus on individual choice and digital practices as personal resources in everyday life, critical discourses take their perspective more from political economy in their insistence on institutional and commercial constraints. While both take a normative approach to digital learning, the liberalists tend to assume their knowledge interests unlike the critics most of whom spell out their wish to minimise social inequalities.

According to the functionalist discourse, informal learning with digital media is first and foremost defined in relation to work with information and communication technologies (ICTs), that is primarily computers and the internet. E-learning, computer literacy (Turner, Sweany and Husman 2000) and information literacy (Bruce 1997) are among the "hyphenated literacies" that are advocated with the aim of furthering efficient online collaboration and solution of well-defined problems. Unlike both the liberal and critical takes on informal learning and digital media, the functionalist approach tend to see ICTs as stand-alone and transparent tools applied in order to reach specific goals. Advocates see these tools as