

Microlearning and (Micro)Didaktik (On Microlearning)

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Abstract: In research associated with curriculum and cognition, questions of content and context have been both important and problematic. Cognitivism has traditionally seen cognition, content and context as separate; and recent attempts to overcome this separation (e.g., situated cognition) have been criticized for being insufficient (e.g., Lave, 1988). Curriculum designs in North America have conventionally sought to be “teacher-proof” (Westbury, 1998) especially through integration with standardized testing, and have attempted to restrict instructional and contextual adaptation. Although more recent developments in cognitive science and curriculum development (e.g., design-based research, learning objects) attempt to address these issues in various ways, the ongoing proliferation of forms and opportunities for learning (e.g., mobile learning, micro-learning) invite a more radical re-thinking. This paper explores the possibilities for such a re-thinking presented by *Didaktik*, an area of research familiar in the German-speaking world, but little known beyond it. The paper begins by presenting a historical overview of the term “didactic” from both English and German-language perspectives. It then explores through comparisons and examples, how connections between content, context and learning made in this research tradition point to the possibility of a “microdidaktik.” This is a didactic approach in which the intertwining of practice, content and context are understood and fostered between learner, teacher and content, on a “micro” level, and in terms of the relationships of what is known as the “didaktik triangle.”

1. Introduction

The term “didactic” brings with it a particular cross-cultural complexity and ambiguity that has challenged scholarship in the past. At the same time, it presents a rich opportunity for cross-cultural exploration. Such an examination may be useful not only to native English readers, but also for understandings of microlearning and aspects of education more generally – especially as curricula and accreditation coordination become issues of increasing international concern.

“Didactic” and its German cognate “Didaktik” point not only to a common Greek root, *didaktikos* (apt at teaching), but also bring with them varied and sometimes surprising histories and associations. These are the subject of the first part of this paper. It begins with an overview of this history, contrasting the didactic tradition with research in the English-speaking world, and above all, with the still-dominant tradition of cognitivism.

The term “didactic” has an ambivalent and largely colloquial history in the English language. But it is marked by a very lively and scholarly history in German. (Its equivalents in the Nordic and Flemish languages have enjoyed similarly significant histories and academic associations.) The academic and theoretical significance of the term “didactic” in German-speaking countries is only infrequently mentioned in English-language publications; but there have recently been signs of growing interest, especially in the area of curriculum studies (e.g.; Hudson et al. 1999; Gudem & Hopmann, 1998; Westbury, Hopmann, & Riquarts, 2000; Kertz-Welzel, 2004).

Didaktik, Bildung, Geisteswissenschaften

In the German-speaking world, “Didaktik” designates a sub-discipline of Pedagogy (*Pädagogik*) that is concerned with the theory of instruction, and more broadly, with theory and practice of learning and teaching (e.g., Weniger, 2000). Defined in these very general terms, Didaktik does not appear in any obvious way to delimit an area of scholarship that is not already covered by fields in English-language scholarship such as instructional design, curriculum, and perhaps especially, educational psychology.

What differentiates Didaktik is not so much any formal definition, but the overall orientation of the field, its interrelationship with other disciplines, and the organization of its subordinate specializations. The relationship between Didaktik and what would be its English-language equivalents is orthogonal and disjointed, not simply opposed on some points and in agreement on others. As Ian Westbury explains, Didaktik is embedded in a unique practical and cultural context – representing a “very different intellectual system” that has developed from “very different starting points,” and for “very different intellectual and practical” purposes. As a result, even the simplest introduction cannot help but highlight differences in cultures and in ways of thinking that are perhaps too easily papered over in discussions about technologies and pedagogies in English-dominated eLearning research. In itself, the relationship between Didaktik and its Anglo-

American counterpart(s) is also important evidence of the heterogeneous and culturally-determined nature of education and of understandings of learning and development generally. As such, it presents on its own a significant counter-argument against the redefinition of these phenomena in terms of natural-scientific paradigms (e.g. brain-, learning-, or cognitive-science) that would claim to rise above cultural or historical influence.

The relationship between Didaktik and didactic involves not only cultural, but also linguistic differences. (The German word Didaktik is capitalized here, as are all German nouns in general.) For example, Gundem and Hopmann observe,

many of the meaning-conveying educational concepts, terms and words of the German-Scandinavian language area [related to education and Didaktik] lack counterparts in English – and resist exact translation. Indeed the term Didaktik itself with its comprehensive intertwining of action and reflection, practice and theory, is one such untranslatable concept. (1998)

Two further, untranslatable yet indispensable terms are *Bildung* and *Geisteswissenschaft*. Both underscore the overall philosophical and humanistic orientation of Didaktik. *Bildung*, on the one hand, designates “the character-forming surplus beyond mere knowledge and skills’ that is at the centre of didaktik” (Künzli, as quoted in Westbury, 1998; 60). The term denotes an excess or a remainder that is not captured by standardized testing, performance measures or learning outcomes. Its meaning may most readily find illustration in the word *Bildungsroman*. This imported literary term refers to the novel of education or formation – of which *Adventures of Huckleberry Finn* or *To Kill A Mockingbird* are prominent English-language examples. As the themes and developments in each of these novels suggests, *Bildung* refers to a dialectical process of becoming an individual (on the one hand), and becoming part of a society and culture (on the other): “*Bildung* is understood,” as one of its modern proponents, Wolfgang Klafki explains, “as a qualification for reasonable self-determination, which presupposes and includes emancipation from determination by others” (Klafki, 2000). Some recent scholars of *Bildung* describe such a broad, dialectical process in terms that come close to definitions of “socialization” or “social reproduction” articulated in anthropological and critical-theoretical studies of education in English. Weniger, Mollenhauer, and Klafki, for example, all speak of education in terms of “intellectual encounters” between generations, or the identification and representation of aspects of one’s culture

for the purposes of inter-generational mediation (Weniger, as cited in Künzli, 2000, 46; Mollenhauer, 2003; Klafki, 1986). Klafki phrases this as a question that he sees as important for every topic and every teacher: “What constitutes the topic’s significance for the students’ future?” (as cited in Kertz-Welzel, 2004). Instead of understanding such a selection and representation process strictly in terms of the reproduction of hegemony, as confined simply in the private sphere of the family, or more rationalistically, as the transfer of competencies (Lave & Wenger, 1991), this process is instead understood as public, and as both necessary and positive.

Geisteswissenschaft, literally the science of the mind or spirit, serves as academic nomenclature in German-speaking countries to designate what in English is commonly referred to as the Humanities. But unlike the English term, *Geisteswissenschaften* include psychology, linguistics, and importantly, education (i.e. Pädagogik and with it, Didaktik). Also significant is the inclusion of the term for science, “Wissenschaft” in this compound word. English is one of the few Western European languages to reserve the term “science” (and with it, intimations of the rigour, status, and authority) generally for the natural sciences. While English-language research and scholarship in education have correspondingly been compelled to justify themselves in (natural) scientific terms, a different dynamic has unfolded in many research in northern continental European countries. German research in Didaktik has favored dialectical, normative (i.e. explicitly ethical), anthropological and even aesthetic approaches, paying relatively little attention to the successive waves of behaviourism and cognitivism that have washed over English-language educational theory. While the likes of Thorndike, Skinner and Miller enjoy canonical status in the annals of American educational research, the influence of the philosophers such as Habermas, Hegel, and Rousseau often seems paramount German educational texts. This general emphasis is reflected in the subdivisions or different models of Didaktik, which reference theoretical frameworks ranging from Bildung through Habermas’ communicative action to Luhmann’s constructivist systems theory:

- Didaktik (or more recently, critical-constructive Didaktik)
- curricular Didaktik
- Didaktik of learning and teaching theory
- cybernetic Didaktik
- communicative Didaktik
- subjective Didaktik

- constructivist Didaktik
- subject-oriented or disciplinary Didaktik
- action-oriented Didaktik¹

(Adapted from Wikipedia, 2006)

Naturally, an introduction to these individual disciplinary models is beyond the scope of this paper. However, to highlight linguistic and other differences, this paper gives special emphasis to critical-constructive understandings of Didaktik. But before turning to these and other aspects of Didaktik, it is important to consider briefly the significance of the term “didactic” in English.

2. Didactic in English: Dewey’s Loss and Thorndike’s Gain

The freighted character of this term in English-language education research can be difficult to explain or isolate unequivocally, but can be illustrated though reference the short history of the phrase “guided didactic conversation.” It was originally coined by Börje Holmberg, an administrator of distance (i.e. technologically mediated) education institutions in Sweden and Germany. Used to describe the dialogic relationship between learner and teacher that includes “both real and simulated communication processes,” the phrase has come to be associated with well-developed self-instructional material (e.g. informal study guides) and with the planning and guidance of student work in distance education contexts. Linked with Dewey’s notion of “interaction,” Holmberg’s notion of “guided didactic conversation” has gone on to play a pivotal role in Michael G. Moore’s prominent educational theory of “Transactional Distance.” Despite this fact, Holmberg, in a recent presentation to an American audience, describes his initial formulation as a strategic error:

unfortunately, I talked about the didactic conversation. I don’t like the expression didactic conversation because didactic, to many English speaking people, particularly in the U.K., means that if you do something in a didactic way, you lay down the rules, you tell people what things are. It’s also a sort of authoritarian approach. And

1 Unless otherwise noted, all translations of this and other German texts are those of the author.

my approach is something entirely different from something that is authoritarian. (2004)

At best, the English term “didactic” refers to instruction (rather than the more substantial processes such as, “education” or “development”), and often applies to a kind of moralizing instruction that accompanies entertainment. It carries a strong secondary significance, variously characterized as “making moral observations” or as “excessively instructive.” (e.g. Merriam-Webster, 2006; WordNet, 2006).

But at the same time, it is apparent that the term was not always understood so narrowly. For example, Walter Doyle “refers to the term didactics ... with the astonishing remark that a chair of didactics was created at the State University of Iowa in 1873.” (Kansanen, 1999, 27). Moreover, we know that educational luminaries contemporary to this development, such as John Dewey, were enthusiastic readers of didactic theorists such as Herbart and Lotze – names long since forgotten in the annals of English-language research.

What led to this forgetting? One American observer has a simple answer: “One cannot understand the history of education in the United States unless one realizes that Edward L. Thorndike won and John Dewey lost.” (Lagemann, 1989). The implications of this statement are easily illustrated by considering the legacy of these two figures: Thorndike studied animal behaviour early in the 20th century to understand human learning, and his work anticipated both Skinner on operant conditioning and current connectionist research in neuroscience and cognitive psychology. To him we owe the now familiar terms “mental map” and “learning curve.” Dewey, on the other hand, is counted as an important member of the pragmatic school of philosophy, and as a key early 20th century writer in the American progressivist tradition in education. Although he has been ascribed the role of the “patron saint” of American education, it sometimes appears that this designation is more honorific than substantive. As Lagemann observes,

If Dewey has been revered among some educators and his thought has had a greater influence across a range of scholarly domains – philosophy, sociology, politics, and social psychology, among them – Thorndike’s thought has been more influential in education. It helped to shape public school practice as well as scholarship about education. (Lagemann, 1989)

Correspondingly, Dewey's work receives relatively little attention in educational technology research. Moreover, where it *is* referenced – e.g., Dewey's aforementioned notion of "interaction" in Moore and elsewhere – the implications of his sophisticated pragmatism are disregarded.

Dewey's loss and Thorndike's gain is further confirmed by the trajectory of Thorndike's influence. His research, and its natural-scientific and quantitative impulses, can be said to delineate the overall path taken by research in North American educational research. This may be especially the case in educational technology, where the history of research in learning is conventionally presented as a progression through two paradigms, both clearly prefigured in Thorndike's work: the behaviourist paradigm (firmly grounding research in the natural sciences, basing theories of learning in behaviour observable in both humans and animals), and the cognitivist paradigm (understanding mental function in terms of computational models, including connectionist ones).

3. Didaktik Technology

The ultimate purpose of explicating the different understandings associated with the term "Didaktik" up to this point has been to explore their relationship to Internet and Web technologies in general, and microlearning in particular. The two diagrams provided below can serve as starting points for such an exploration. The first, from Morrison, Kemp and Ross (2001), shows the steps for designing instruction and instructional content. These steps are often utilized in the design and implementation of educational technologies, and identical or similar diagrams are to be found in instructional and curriculum design textbooks. The second is the "didactic triangle," variations of which can be found in almost any German-language introduction to Didaktik (e.g., see Meyer, 1988).

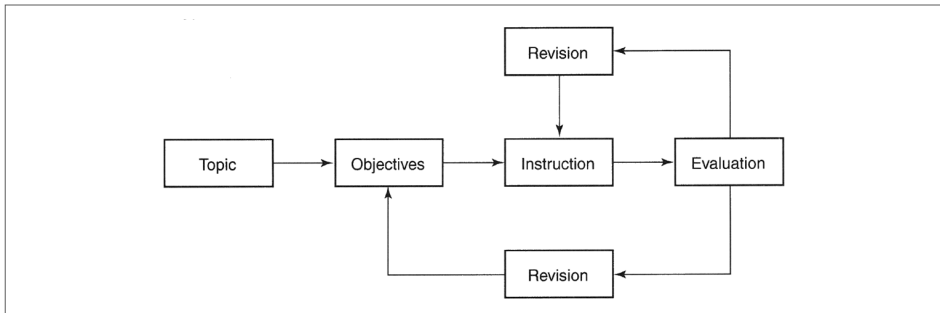


Figure 1: "A Typical Instructional Design Model"

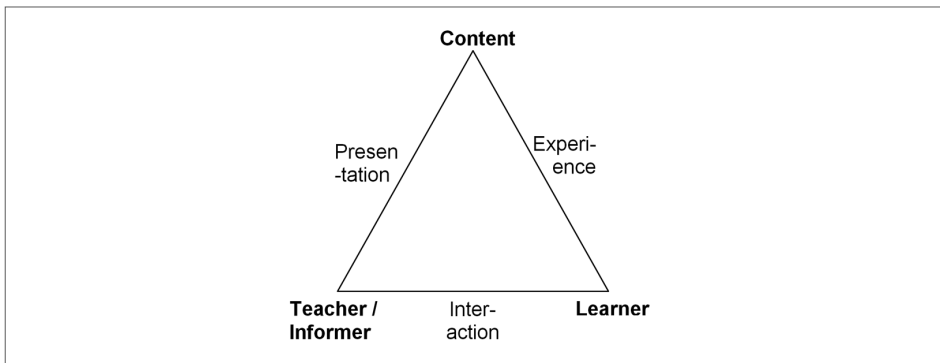


Figure 2: The Didactic Triangle

Like the empirical English-language and dialectical, continental traditions from which they respectively originate, the two diagrams relate to one another orthogonally, but a number of differences in overall emphasis are clear: The "instructional design model" emphasizes a goal-oriented instructional development process, with linear, systemic and procedural steps involved in such a process. Significantly, the purpose of this process is the revision or adjustment of instruction and objectives for an objectively "given" content or topic. The "topic" component in this diagram is not subject to feedback from any other components in the system, and could, in theory, be operationalized as any kind of content or subject. In principle, the instructional "output" of this process is ultimately perfectible: Once instruction and objectives for a given topic are revised to maximize the results of evaluation, a stable end-state may be reached. Finally, as the arrows in the diagram indicate, the relationships between each of these

steps are all reducible purely to function, in terms of inputs and outputs. As Westbury (2000) interprets North American curriculum approaches generally, one could say that it is the *system* depicted in the diagram that is primary, and student, instructor and subject are all subordinate to it. (However, instructional designers would likely object that the user and her requirements generally represented through initial or iterative needs analyses).

Regardless of the variations and interpretations applicable to the instructional design model, it depicts a system whose ultimate goal, *qua* system, is its own equilibrium, and its final outputs. On the other hand, the didactic triangle can be said to delineate a set of relations whose dynamics are dependent on tension and contradiction, rather than on equilibrium or entropy. In this sense, it does not describe a process or set of relationships that are somehow perfectible. Instead, it describes a process that has been characterized as both conversational and dialectical:

The instructional process is a dialectical, internally contradictory, complex and often also conflict-rich process. Teaching and learning are not related simply as “giving” and “receiving” are related to one another. Between learning and teaching processes, there exist manifold tensions. (Klingberg, 1982)

In the context of the Didaktik triangle, tensions between and combinations of contradictory opinions and positions can be integrated to arrive at a position which supersedes the two. So, for example, the position of the individual and that of her society can be superseded through the gradual development of a self whose independence is realized in the context of social participation. These types of educational processes can also be described in terms that are broadly conversational – for example as a relationship between a self and an other (self) in which the difference between self and other is simultaneously respected and addressed. Indeed, Klafki asserts the effective identity of dialectic and dialogue: “the logic of dialogue is a dialectical logic” (1973). Didaktik scholars such as Klafki highlight understandings of conversation articulated by the likes of Martin Buber and Hans-Georg Gadamer –both of whom emphasize the irreducibility of conversation to predictive logic or, indeed, to the control or intentions of either conversant:

We say that we “have” a conversation; but in reality, the more authentic the conversation is, the less it is the possession or will of one or the other interlocutors. So

the authentic conversation is never something that we can want to control. Instead, it is in general more correct to say that we end up in a conversation ... No one knows in advance where such a conversation itself "ends up." (Gadamer, 1960)

It is likely, in fact, that it is this kind of conversational interaction that Holmberg had in mind in coining the phrase "guided didactic conversation." The role of the teacher in *guiding* (to use Holmberg's term) but not controlling this conversation involves not only interaction with students, but also the selection and use of appropriate content. This implies that a dialogical dynamic also applies to the teacher's "presentational" relation to content, in which aspects of culture are selected for (and excluded from) emphasis as part of a more general process cultural mediation or reproduction. Unlike the instructional systems diagram, content is neither objectively given nor neutral in relationship to other components in the Didaktik triangle. Instead, content can be said to be interpenetrated with the dialectic/dialogical character of the other terms in the triangle. Indeed, this dialectic/dialogic dynamic can be said to interpenetrate the relationships between all of the terms in the Didaktik triangle. This includes the student's "experiential" relationship with content, which can also be understood in terms of an encounter between self and other. Such a relationship can additionally be understood in terms of the emphasis on experience in Dewey's intricate pragmatics, as described, for example, in his *Experience and Education* or *Art as Experience*.

Finally, all of the relationships in the Didaktik triangle should also be understood, as mentioned earlier, in terms of a "comprehensive intertwining of action and reflection, practice and theory" – an understanding of theory and practice in which the relationship between the two is an object of explicit concern and reflection. By comparison, in the instructional design model, this same theory-practice relationship is addressed, but not directly problematized, in terms of the feedback processes provided through evaluation.

4. Learning Objects

The implications of both of these very different instructional approaches for technology can be further explored by considering their application to one specific technology, or technical format – learning objects; "chunks" of digital, multimedial instructional content. Learning objects have been defined variously; most generally (and originally) as

“any entity, digital or non-digital, that can be used, re-used or referenced during technology-supported learning” (IEEE, 2004). Perhaps more practically, learning objects have also been understood as modular, interchangeable, and reusable resources that are available over the Internet and the Web. This paper will first look at examples of particular learning objects (or rather learning object collections) that are associated with each tradition. This will then enable a detailed consideration of the kinds of relationships between technology and instruction that are characteristic of both traditions or approaches.



Figure 3: LearnAlberta.ca collection

Within the context of the “typical instructional design model,” the learning object is first and foremost understood as an “instructional” product resulting from the combination of a topic and one or more learning objectives. In more elaborate models, these stages of the process are generally further decompartmentalized and extended through the introduction of further components. These might involve, as William Ried explains, the “selection from the total content available to be learned, ‘display’ of that content, and ‘control’ of the learning process” (1998). But “[w]hat is *authoritative*” in these stages, Reid stresses, “is not so much content [itself] as ... how [it] can be assembled, sifted, itemized and made available for selection by or on behalf of the student” (1998). Such a characterization of selection, combination, display and control is remarkably reminiscent of descriptions of what has been envisioned for learning objects, especially in the context of K-12 curricula development and in training settings. One educational ministry in Canada, for example, has spent tens of millions of dollars on such a collection

(Alberta Government, 2005). The end product is the provision of organized access to “multimedia learning resources that are correlated to Alberta Education’s [that ministry’s] programs of study” (LearnAlberta.ca 2006) and to very specific educational outcomes for individual subjects and levels of study. (See figure 3 for an image from this collection.) A similar emphasis on the centrality of selection, itemization and controlled presentation can be found in other descriptions, above all in those concerning the use of learning objects in training and in contexts using what is known as the “SCORM” architecture:

learners can be uniquely identified, content can be specifically personalized, and learner progress can be monitored, supported, and assessed. Technologically and technically, researchers are making progress toward realizing the personalized learning dream with adaptive learning object technology. (Martinez, 2001)

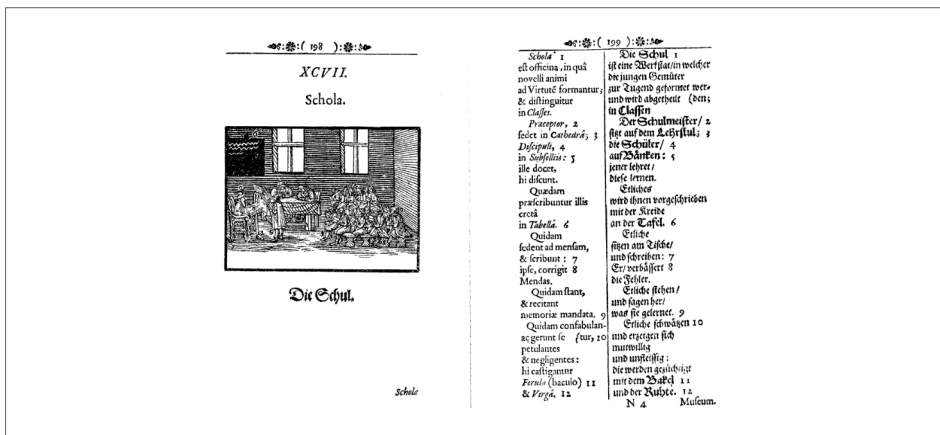


Figure 4: Example of a topic from Comenius' *The Visible World*.

In such descriptions, information and communication technologies, and underlying curricular, training or instructional conceptions relate to one another in terms of mutual interpenetration or even identity. The technology and the design process or system itself are nearly indistinguishable: both are purposive-rational devices, utilizing a particular set of means to effect a particular outcome or output, all according to empirically-established causal or associative relationships. This output, whether we are speaking of instructional systems or the technology through which they are realized, is supposed

to be maximally effective instruction. Moreover, the way this is conceptualized allows for the processes of selection, delivery and presentation to be undertaken either through human intervention or automated processes (hence the “personalized learning dream” and the goal of “teacher-proof” curricula). Characterizations of the near identity of instructional systems and technology are further supported by the fact that such systems diagrams can be used either to map out the relationships between computer systems components, or the compartmentalized expertise of design and curriculum experts.

Given that a learning object can be considered as “any entity, digital or *non-digital*” (emphasis mine), an example of a learning object “project” or “collection” long seen as exemplifying the Didaktik approach is considered here: That of Johannes Comenius, entitled “The Visible World” (*Orbis sensualium pictus; Die sichtbare Welt*), originally published 1658 –using the contemporaneously “new media” of print. The book consists of 150 small lessons (loosely, 150 multimedia learning objects) for children, each providing an illustration of settings and activities accompanied by explanations in the linguistic media of German and Latin. The page shown above is one of the first in the collection, and depicts an adult (or teacher) showing to child (learner) various things in the visible world around them. This image and the corresponding text serve to frame the content of the book as a whole, making this content into something that is shown to the learner by the adult teacher. Klaus Mollenhauer explains the “preeminently Didaktik function” of the images and texts in this collection by emphasizing above all the connections within and between them:

No one thing is presented individually [in this collection] but instead, each individual thing, each activity, is shown in its interrelationship with other things and activities. Underlying this is a critical intent: [Specifically, to counter] the factual ... principles of representation [proper to] the encyclopedia ... which was becoming fashionable at the time. (Mollenhauer, 2003)

So what makes this “learning object” exemplary from the perspective of Didaktik are the context and connections established both within it, and with the other objects in this collection. What gives the object its Didaktik value, in this sense, is its context – as provided by other content, the non-neutrality and non-modularity of the context it presents. Finally, what makes this “object” valuable for education is the fact that it is really

not an interchangeable chunk of disinterested content, an object that can be itemized, disassembled and reconfigured with any other object.

This example of didactic content reveals quite a different relationship between technology and educational intent than that existing between instructional systems and the curricular resource collection described earlier. Compared with the diagram of the instructional design process – which is thoroughly interpenetrated with the technological – the print-based “learning object” example provided above illustrates only two discrete points of contact between technology and instruction: First, in its multi-medial, multi-linguistic presentation illustrates the role of technology as a medium contributing to the student’s experience of a particular content. Second, as suggested (somewhat indirectly) by the depiction and framing of student and teacher in Comenius’ text, this technology can also its role as a medium connecting learner and teacher. The capability of Internet and Web technologies to provide potentially “rich” teaching and learning materials and flexible communication between teachers and students has, of course, received significant attention (in various ways) in both German-language and Anglo-American literature. Both literatures have also emphasized how the hypermedia environment of the Web can provide students and teachers with a range of synchronous and asynchronous communication opportunities, and can contextualize and interrelate content in unique and powerful ways. (It is perhaps worth noting that some German-language sources have suggested that that a specifically didactic quality can be conferred on such hypermedia through “systematic and therefore clearly structured navigation” [Swertz, 2005]. However, in this and other conceptions of the Didaktik value of the Web as content, the “general background” context presented by the Internet and Web as wholes remains problematic.)

5. Technology: Experience, Interaction, and Content

One of these points of contact – perhaps most orthogonal to the Anglo-American frameworks – is the relationship of technologies to Didaktik not as a tool or means for enhancing relationships between triangulated terms, but as *subject matter*. Information and communication technologies (ICTs) are always relevant to Didaktik, in other words, also as content. In the words of Klafki, information and telecommunication technologies constitute one of eight “key problems” for our era: “For a future-oriented education

system, we need... a tiered, critical, information- and communications- technological curricular foundation as a part of everyone's education" (Klafki, 1996). (The other "key problems" identified by Klafki include those of peace, the environment, social justice, multiculturalism, and –hearkening back to Buber's notion of dialogue – an "I-Thou" relationship in teaching and learning. [See Klafki, 1996]). The key problems of ICTs –together with the seven other key problems or themes – is as much a part of Klafki's understanding of critical-constructive didactic as are the categories of curriculum (Lehrplan) or Bildung, and it has significant consequences. Perhaps most notably, this question gives the use of technology in instruction a self-referential or reflexive character. It implies that the use of technologies in instruction and education is not simply about making use of a particular function that is indifferent or neutral in its relationship to content and to pedagogy generally (e.g. see Friesen, 2004). It ensures that this application of technology is instead (also) about a learner's "participation... in their [own] highly mediatized culture and society" – to use Kerres' and de Witt's definition of "Media-Bildung" (Kerres & de Witt, 2002). The matter of going beyond function to the question of participation in a highly mediated, technological culture and society is always at least tacitly present as a "background" theme or issue in the application of technology in education. However, the key question of ICTs, or the "message" inevitably brought along with the medium is all too easily unheeded, unthematized or unproblematized. There is no arrow in the typical instructional design system, other words, that would point to its own character as a technical system, and enable this to be considered as a specific "topic." Overcoming the blindness of the system to its own technical (and social) character needs would enable designers and others to engage in more directly social and participatory implementation. Explicit recognition of the inevitable character of the medium as the message would encourage a more open and critical consideration of its non-neutrality concerning content, instruction and pedagogy generally.

But it is the dialectical and dialogical characteristics of the interrelationships in the Didaktik triangle that is perhaps the most important – and limiting – factor in considering the interrelationship of technology and Didaktik. It is these that also help us to see (finally) the possible outlines of a didactic of microlearning. The dialectical/dialogical quality of the relationships between all of the elements in the Didaktik triangle is pivotal in defining both the potential and limitations of ICTs in education. One illustration of this that is of direct relevance to microlearning is to be found in discussions related to content. In more than one German-language discussion of Didaktik and ICT's, the rather general character of Didaktik

understandings and models (e.g. the Didaktik triangle, Habermasian models of communicative action) is seen as creating significant difficulties: Namely, these models are seen as too general to provide guidance on the specifics of the design and implementation of these technologies for particular contexts and contents:

A big problem...is that traditional pedagogical-didactic models either are too coarse-grained or that they have no direct relationship to the possibilities of new, interactive media. Only very recently have there been attempts to flesh out the characteristics of didactic scenarios that are relevant to web-based learning. Representative of such attempts is work by Meder and Schulmeister. (Baumgartner, 2004)

Both of the examples cited in this passage (Meder and Schulmeister), deal with the development of ontologies or classifications for tools, knowledge-forms and activities for learning. These kinds of classifications will be familiar to anyone who has been exposed to educational metadata, especially Learning Object Metadata and IMS Learning Design. However, as has been noted by those involved in standards and their implementation, such approaches to the design and reuse of didactic scenarios are associated with practical paradoxes (e.g. Wiley, 2004; Downes, 2003) and can conflict with typical economies of scale for educational organizations (Friesen, 2004).

As indicated earlier, the dialogic character of the relationships in the Didaktik triangle are such that they cannot be controlled or manipulated by either the teacher or student for own ends. As common phrasing suggests, student and teacher "enter into" these relationships; and these relationships are subject as much to their own particular dynamics as they are themselves subject to the participants' designs. Some important implications of this for a microdidactic can be identified using the terms supplied by a researcher most familiar in Anglo-American contexts. These are taken from Lucy Suchman, and her book-length study, *Plans and situated actions: The problem of human machine communication*. Suchman's essential argument is that the titular categories of "plan" and "situated action" need to be reconsidered, and that rationally "'planned' character of our actions is not... inherent [in these actions] but is demonstrably achieved." What Suchman means by this is that plans are *not* realized in reality not through events that inevitably unfold "according to plan," in a pre-arranged and methodical manner. Instead, plans serve as rough guidelines for activity that become complete only after they are realized in action. Plans are realized in the form of situat-

ed actions, which are improvisatory and unforeseeable (“unplannable”) in advance. In her own words, Suchman’s “primary concern in [the book is] to suggest a “shift in the status of plans from ...control structures that universally precede and determine actions, to discursive resources produced and used within the course of certain forms of human activity” (2003).

What is of primary concern for this paper is the similarity of improvised and unpredictable situated activity to the “conversational” dialogical/dialectical character of Didaktik relations. If plans are just guidelines or *a posteriori* descriptions of what occurs in situated experience, conversation and action, it then follows that instructional and Didaktik objectives, patterns and sequences need to be viewed with caution – especially when understood on the micro-level of dialogue and dialectic. Just as plans change in their status when they are viewed in terms of the particularity and variability of situated action, Didaktik and instructional plans, structures and patterns acquire a new status when the focus is on the micro-level. Didaktik and instructional plans, structures and objectives, too, become discursive resources produced, used and limited to in particular teaching and learning contexts. On the micro-level, then, the dialogical/dialectical character of Didaktik relations make plans and designs not just difficult, but also possibly counter-productive.

6. Conclusion: Towards a Microdidaktik

This last point regarding the adequacy or even possibility of micro-level descriptions, plans, or by extension, didactical structures is perhaps the most significant for a potential microdidaktik. It points to the importance of assiduously *avoiding* the imposition of structures and limitations on local, contingent micro-level activities. Technologies operating at this level instead need to be flexible and accommodating of such improvisation: Cell phones, for example, become more effective not by specifically supporting the micro-structures of conversational interaction, but by providing affordances to support situated and improvisational action that are part of conversation: hands-free operation, SMS, email, video and other conversational “modalities,” for example. This implies further the importance of understanding not only the relationship of the micro, of improvisation and conversation, to the macro, instructional plans, learning objectives, but also consideration of a kind of meso-level where they might be seen as interacting.

A second potentially important contribution to Didaktik of microlearning is the interrelation of Didaktik and technology on the level of content – in other words, the “problem” of technology as “key to our epoch” (Klafki, 1986). Not only does this relationship serve as an arresting or counter-intuitive illustration of the non-neutrality of both Didaktik and Didaktik contents, but it underscores the unavoidably of cultural, historical, economic and generally problematic character of technology – a character which is all too easily forgotten when technology is considered on its own, function and instrumental terms. To again use the cell phone as an example, the same physical or technical device can be said to be constituted differently in different contexts: Especially in parts of Europe and Asia, economic and social factors have emphasized its text messaging functions at the expense of others; in parts of Africa, it has taken on the character of a fixed-location device, used by entire towns and neighbourhoods as the primary means of remote contact (e.g., see Plant, 2001). At the same time, this technology fits in with and builds on patterns of uses established historically by the land line phone and other communications technologies (e.g. Hutchby, 2001; Arminen, 2005). As McLuhan famously said, the medium as the message; and the messages sent by the appropriation of technology in education are manifold and powerful. Only by paying attention to these messages, and by understanding technology as a cultural and historical “problem” as well as a functional solution, will it be possible develop further a didactic sensitive to the vicissitudes of situated, contingent micro-activity.

7. References

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