

Micro-learning Elements in the Intel® Advanced Training Course (Changing Patterns of Learning: Schools, Universities, Vocational Training)

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1. Micro-learning Elements in the Intel® Advanced Training Course

Micro-learning – at least in the German-speaking world, the concept is clearly still largely unknown. There are no matches in the German version of Wikipedia or in the German EducationalDatabase. Similarly low is the hit rate for related terms like micro-teaching. Methods of study which fall under the banner of ‘micro-learning’, can encompass a time period of anywhere from a few seconds (e.g. with mobile learning) up to 15 minutes (study objects which are sent by e-mail). There is some contiguity with older concepts such as ‘micro-teaching’. Naturally with the concept of micro-learning, questions also arise with regard to an adequate ‘micro-pedagogy’ and ‘micro-didactics’ as well as the problem of studying in general.

By ‘micro-content’, one understands a small, self-contained chunk of digital information, which can be approached individually and used in different, loosely structured ‘macro-contexts’, or ‘macro-containers’. Micro-content comprises a very limited amount of information compared to other forms of cultural ‘content’. This is due to physical constraints (screen size, complexity of the interface, see also ‘micromedia’) and cognitive boundaries (limited attention span of PC and internet users, but also media users in general).

Moreover, micro-content can be individually called up and addressed: it is defined, or at least can be defined, through a formally determined meta-data record (like its own URL, a time marker (e.g. construction/change time), the name of the author, an IP-address, connection data, a title, an HTML-tag or keyword, etc.). Micro-content is the (smallest) element, from which a 'metaweb' can be formed. Furthermore, micro-content is self-contained: it is – not only formally (through meta-data), but also in content – an independent information unit. It can be clearly differentiated from a macro context. It is not implicit in either a macro context or – importantly for Web 2.0 – in an individual application. It focuses on a single idea, or a few connected ideas. It is accompanied and defined by explicit or implicit meta-data.

New approaches should now be demonstrated, as details of the Intel Education initiative refer to the concept of micro-learning. 'Intel® Teach to the Future' is a worldwide program, developed by educators, for educators. The goal is the effective application of technology in teaching practices, in order to improve the learning environment for students; teaching forces experience here, how they can integrate technological aids into their teaching units.

The teacher training program Intel® Teach to the Future reached more than 300,000 teachers within four years in Germany, covering all types of school – from primary school to grammar school, to vocational school – as well as all subjects and year group levels.

The program was integrated into existing training infrastructure by state initiatives, partnering with the Academy for Teacher Training and Staffing in Dillingen, with ministries of education, pedagogical institutes and media centers. A core component of the training course are the approximately 10,000 Master Teachers and Senior Master Teachers nationwide (teachers from every school-type), who carry out the training inside or across schools. Because of the overwhelming demand, as well as suggestions and requests on the part of participants, the measure was taken to create 'Intel® Teach to the Future: Online Training and Collaborative Learning', an extension course with new emphases. The Advanced Training Course for educators and trainee teachers began in 2004; the training is subject-oriented and communicates multifaceted suggestions for teaching practice.

Thus, the widening of methodological competence through the application of digital media and the enhancement of schoolchildren's learning capabilities take on a spe-

cial meaning. In terms of helping collegial practice, examples of proven teaching methods are placed at educators' disposal in the form of 'learning paths' which have been specially prepared for the training, so that participants can be instructed step-by-step, try out the content and methods themselves and adapt them to suit their own specific needs.



With Intel® Teach to the Future: Online Training and Collaborative Learning, subject-specific and curriculum-wide themes are tackled, with individual exercises designed to aid the expansion of media competence also integrated into the 'learning paths'. The materials are available through a training platform which is constantly updated and expanded. This forms the basis for internal school training, supports subject-specific or cross-curricular teamwork, and enables school-wide collaboration with teachers from other schools. The official recognition of all teachers follows in the form of a certificate of participation from the state and Intel.

The Intel® Education initiative prepares teachers and students for the demands of tomorrow. Intel Education reflects Intel's commitment to education and the effective introduction of technology in classrooms all over the world.

The goals of the initiative are:

- The improvement of teaching in mathematics and natural sciences in primary and secondary schools
- The upgrading of the effective usage of technology in education
- To increase access to technology
- To encourage the general public, particularly women and minority groups, to take up technical positions

The Intel® Advanced Training Course is primarily apportioned to 'macro-learning'. In particular, the learning paths are complex and require some time to adapt. Nevertheless, the Intel® Advanced Training Course is a good example of the application of micro-learning principles. This can be demonstrated with some examples:

The basic principal of the Intel® Advanced Training Course is the self-facilitated development (in teams of 4-6 people) of new studying concepts from existing 'learning paths' for personal education. There is no fixed 'course'. Participants determine themselves the times, types of organisation and materials with which they work. The relation to micro-learning becomes apparent in that the learners choose for themselves from the small details of the materials, those which they need for their current practices. Learning is established communicatively in small groups, and learning materials can be extracted and regrouped from their original context or used in a different context at any time. The study group and every individual member of it can decide themselves the time to adapt the individual steps further, and learning is based in the usual working environment.

With regard to the materials for teaching practice, the platform for the Intel® Advanced Training Course contains several hundred examples of teaching methods. As well as the description of the teaching process, the materials also contain short texts, graphics, and sometimes photos and other media aids which have been used before, but can also be used in a different context. Through these small study units, with a processing time of at most 15 minutes and multifaceted combinability for different purposes, there exist interesting links to micro-learning. For examples of these, please have a look at

http://aufbaukurs.intel-lehren.de/preparation/m9691_7002_AB.pdf
or http://aufbaukurs.intel-lehren.de/preparation/,4139_01047-04.jpg.

1.1 Boundaries of the Compatibility of the Intel® Advanced Training Course with Micro-Learning Principles

The Intel® Advanced Training Course platform uses the ‘traditional’ internet and is formulated for use on standard (Windows-based) PCs and laptops. Use on smaller hardware platforms (e.g. PDAs) is not intended, as there are few signs today of a larger adoption in schools.

Table1. References of the Intel® Advanced Training Course’s Learning Paths to Micro-Learning

Example

Concrete Examples of Teaching Materials as Micro-Learning Units:

- Learning Idea ‘The Great Tuber’
<http://aufbaukurs.intel-lehren.de/index?s=3260>
Extra materials:
<http://aufbaukurs.intel-lehren.de/index?s=3263>
- Learning path ‘GPS in Teaching’: examples of teaching methods and materials:
<http://www.gps.medienecken.de/index.html>
- Learning path ‘Learning in Stages Using the Example of ‘The Bolero’
<http://home.arcor.de/german.bausch/fb-musik/music/bolero.mid>
- Learning path ‘Application of Tools Using the Example of Statistics and Diagrams – in a Green Nutshell’
<http://aufbaukurs.intel-lehren.de/index?s=2023>
- Learning path for German: Application of Tools Using the Example

Micro-Learning Reference

Features:

Interactive cards on the exercise and learning control (mediator, time consumption a few minutes per exercise).

Perfectly structured, illustrated theme-sites, individually accessible.

Midi-data, also adaptable for other teaching concepts.

Clearly structured teaching documentation (very quick to receive); good, clear teaching materials

Here e.g. in the teaching documentation, an extremely concise but expressive half-page summary

<p>'The Mystery of Treasure Island' http://aufbaukurs.intel-lehren.de/index?s=1335 http://www.lo-net.de/class/GNeumann-5a/personen.htm</p> <ul style="list-style-type: none"> • Learning path for geography, chemistry, biology: Self-Organised Studying Using the Example of the Theme of Water Teaching documentation -> Advance Organizer Map (Mindmap with complex preparation of the whole project http://aufbaukurs.intel-lehren.de/index?s=1200 	<p>The 'Index of Persons' contains extremely short, graphically well-prepared characteristics</p> <p>Very compact overview with links to other concise information</p>
<p>The 'Library': This contains – mostly text-based – pieces of information, which are mostly very compact.</p> <ul style="list-style-type: none"> • Alphabet stories (primary school, German) http://aufbaukurs.intel-lehren.de/library/1063_Buchstaben_geschichten.pdf • Craft materials with Mediator 6 (primary school, case study) http://www.krebs-bammental.de/tutorials.html • The Content Path: study circle for teaching beginners' chemistry http://www.seilnacht.tuttlingen.com/Lernzirk.htm 	<p>Small, individually selectable units. Rudimentary meta-data (title, contents, media format) PDF-data (2.5 pages) with immediately adaptable graphics and texts.</p> <p>Web tutorial with small, independent units.</p> <p>Short clues; numerous work materials (1–2 pages) to download, immediately adaptable for teaching</p>
<p>Learning paths and learning ideas generally</p>	<p>Modular construction, meta-data, individual choice of constituent elements (own URLs)</p>