eleed
e-learning
& education

Issue 10
2014

Learning through life

Wiki-Learnia for lifelong learning

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urn:nbn:de:0009-5-40800

Zusammenfassung

Web 2.0 und soziale Netzwerke gaben erste Impulse für neue Formen der Online-Lehre, welche die umfassende Vernetzung von Objekten und Nutzern im Internet nachhaltig einsetzen. Die Vielfältigkeit der unterschiedlichen Systeme erschwert aber deren ganzheitliche Nutzung in einem umfassenden Lernszenario, das den Anforderungen der modernen Informationsgesellschaft genügt. In diesem Beitrag wird eine auf dem Konnektivismus basierende Plattform für die Online-Lehre namens “Wiki-Learnia” präsentiert, welche alle wesentlichen Abschnitte des lebenslangen Lernens abbildet. Unter Einsatz zeitgemäßer Technologien werden nicht nur Nutzer untereinander verbunden, sondern auch Nutzer mit dedizierten Inhalten sowie ggf. zugehörigen Autoren und/oder Tutoren verknüpft. Für ersteres werden verschiedene Kommunikations-Werkzeuge des Web 2.0 (soziale Netzwerke, Chats, Foren etc.) eingesetzt. Letzteres fußt auf dem sogenannten “Learning-Hub”-Ansatz, welcher mit Hilfe von Web-3.0-Mechanismen insbesondere durch eine semantische Metasuchmaschine instrumentiert wird. Zum Aufzeigen der praktischen Relevanz des Ansatzes wird das mediengestützte Juniorstudium der Universität Rostock vorgestellt, ein Projekt, das Schüler der Abiturstufe aufs Studium vorbereitet. Anhand der speziellen Anforderungen dieses Vorhabens werden der enorme Funktionsumfang und die große Flexibilität von Wiki-Learnia demonstriert.

Stichwörter: e-learning; lebenslanges Lernen; Learning-Hub; soziale Netzwerke; Web 3.0; Konnektivismus

Abstract

Web 2.0 and social networks introduced impulses for novel forms of online teaching using the comprehensive interconnections of objects and users within the Internet. The diversity of existing systems complicates a holistic usage in broad learning scenarios which meet the requirements of the modern information society. This contribution presents a connectivism-based platform for online teaching called “Wiki-Learnia”, which covers the most important periods of lifelong learning. Contemporary technologies are the foundation, which not only connect users to each other but also users with dedicated contents and possibly associated

authors and/or tutors. For the former, various communication tools of Web 2.0 (social networks, chats, forums, etc.) are used. The latter is using the so-called “Learning Hub”, which is based on Web 3.0 mechanisms, in particular a semantic meta-search engine. To show the practical relevance of the approach the media-based Junior Studies is presented, a project of the University of Rostock with the aim of preparing pupils to be fit for university life. Based on the specific requirements of this project, the enormous function range and the great flexibility of Wiki-Learnia are demonstrated.

Keywords: e-learning; lifelong learning; learning hub; social networks; web 3.0; connectivism

Introduction

Learning is a process that accompanies us during our whole life, which makes “lifelong learning” [1] an often mentioned term. Starting with school being followed by subsequent training or university studies up to extra-occupational further training, the necessary knowledge for a long successful employment is only partly acquired through the formal learning process. The constantly growing and changing requirements in working life as well as the changing aims and demands in private life (hobbies, voluntary work) have made “non-formal” and “informal” learning central points [2] [3], which are mainly self-organised.

Each of the three phases of formal learning mentioned above as well as the phases of all non-formal learning processes provide their own specific requirements for both, the learners themselves as well as the underlying learning methods and environments. Whereas schooling, besides the interaction of pupils among each other, is strongly tied to the relationship between teacher and pupil, the learner is granted a higher level of personal responsibility and self-organisation during training or studies. In case of (non-) formal advanced training programmes the missing social environment complicates the learning process as participants rarely know each other for a time. And finally, informal further education is usually characterized by complete self-regulation of one’s own learning process as well as missing opportunities for cooperation.

In this article an open online learning platform called “Wiki-Learnia” will be presented, which pursues the goal of supporting all mentioned learning phases of life. Therefore, the portal offers a central place to find, create, edit and discuss goal-oriented learning content. The basis is formed by a social learning environment, of which the main task is supporting the connection of users with the same learning interests as well as the cross-platform discussion of subject-related content through a variety of online communication tools. Furthermore, a “learning hub”, an essential component of the portal, serves to find dedicated learning material as well as information about the accompanying tutors and authors, who are able to provide individual online support. Hence, Wiki-Learnia represents a suitable instrument for the usage both in formal and non-formal learning phases. The media-based Junior Studies at the University of Rostock, a project aiming at preparation of pupils for university study, serves as an example to demonstrate – with an increased focus on the first two learning phases of life – the functionalities of Wiki-Learnia, which are able to address the specific school and university requirements on a learning platform. As shown in [4] and [5], both university and further training offers can be integrated perfectly well in Wiki-Learnia.

After explaining the underlying learning theories more closely in the following chapter, selected functionalities of the platform, which support the individual learning process, will be presented. The hereafter presented media-based Junior Studies project with its specific requirements on a learning environment regarding suitable communication and cooperation possibilities, in order to enable Group-oriented learning outside of class, serves as a practical illustration of the above mentioned functionalities. In conclusion, the key message of the article will be summarized.

Underlying learning theories

Due to the increasing technological developments in almost all areas of life there are new challenges for modern learning methods and environments. The so-called half-time of knowledge, the period of time between the acquisition of knowledge until the point in time, when half of it is out of date [6], is decreasing continuously [7]. According to [8], knowledge doubles every 18 months. Whether this is the very knowledge, i.e. personal, linked information, or only raw data of a specific topic [9], is not considered here. In order to meet the growing demands at work, people have to permanently take in information, transform it into new knowledge, and gain further qualifications. Here, the “social learning” environment Wiki-Learnia makes a contribution. In the following the underlying learning theories are examined at first.

The term “social learning” was first introduced by Bandura and Walters in 1963 [10] and later developed into the “social learning theory” [11]. It describes learning as a cognitive process, embedded into a social context, where the individual gains new insights by observing the behaviour of other group (or community) members and its consequences. Therefore, this approach combines characteristics of behaviourism as well as cognitivism and expands it by a social component. Whereas the first theory assumes that our behaviour is solely ruled by stimuli (rewards, punishments) coming from the environment [12], cognitivism considers the mental processes of the individual as an influence on the learning process [13].

Viewed in the context of the demands of our time, George Siemens depicted in his article “Connectivism: A Learning Theory for the Digital Age” [7] for the first time the limits of current learning theories by describing the influence of rapidly progressing technology and its implications for learning processes. The process of learning is equated with the connection of different “nodes” in a network, which have specialised knowledge and share it among themselves. According to a statement by Karen Stephenson individual experience is no longer sufficient as the only way of knowledge acquisition in our society [14]. We are no longer capable of independently converting all available information into new knowledge. Therefore, networking with other individuals and the exchange of experiences associated with it, is rated as the better alternative in order to acquire new knowledge (“collecting knowledge through collecting people”[14]). These connections, which enable the individual to learn something new, possess a greater importance than the actual, current knowledge (“the pipe is more important than the content within the pipe”). Hence, finding, managing and maintaining these connections is attributed as an essential task in connectivism in order to guarantee a continuous learning progress. The ability to extract

data for a learning purpose from the information flood is described as a further elementary core competence. In contrast to former learning theories, connectivism describes that also non-human entities can learn, e.g. organisations or computers [7].

The described central ideas of connectivism, above all the all-embracing networking between individuals as well as the filtering of relevant information, are taken up by the new learning platform Wiki-Learnia and are enhanced by new facets. By means of different communication technologies users with the same or similar learning interests are combined in communities. There, the different groups coexisting within Wiki-Learnia obtain information of particular interest to them by means of the so-called “learning hub”. By involving different internet-distributed repositories and services the information flood is searched for learning goal-oriented content, which is provided for the respective users and communities. Therefore, the portal Wiki-Learnia offers a central place to find and create individually oriented learning content, for learning and organising learning processes as well as the promotion of communication between the participants. Support of these learning processes is provided by four components:

- a semantic metasearch engine with links to various internet repositories for information and learning materials like massive open online course (MOOC) portals, online encyclopaedias, video platforms, news feeds, social networks and more;
- collaborative “What You See Is What You Get (WYSIWYG)” authoring tools for creating multi-media enriched learning modules (images, animations, videos, e-books, simulations, games, quiz etc.);
- mechanisms for the support of learning processes like learning goal and learning path generation, self-tests and the finding of different learning services from individual tutorial mentoring to the certified final exam;
- an independent social network with integration of external portals (e.g. Facebook, Twitter, YouTube), cross-network communication and e-portfolio.

Learning in Wiki-Learnia

After explaining the term “learning process” taking place in the learning hub (see figure 1), the individual properties of the four above distilled core parts of Wiki-Learnia (semantic metasearch, authoring tools, learning support and social network) for supporting learning activities (finding of contents, creating of materials, achieving learning progress and communicating with other users), are presented.

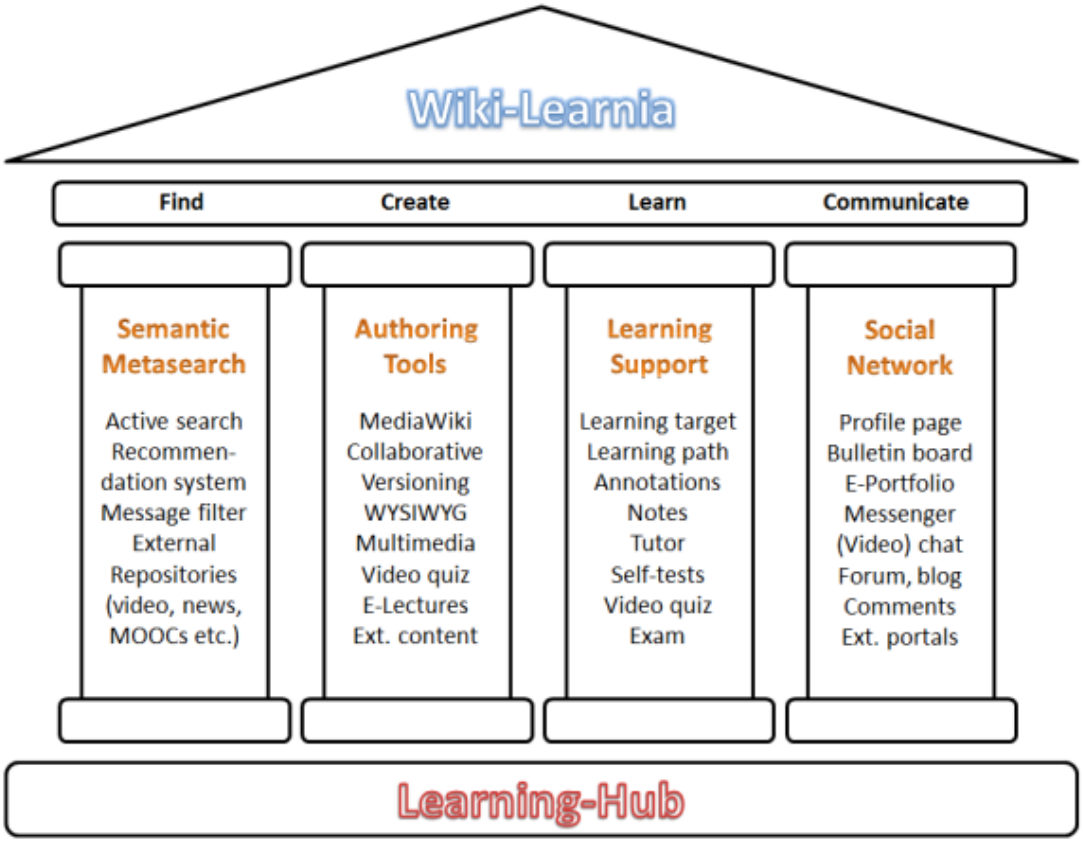

Figure 1 - Learning in Wiki-Learnia

Based on current models describing phases of school learning, here a more generalized description of the learning process serves as a starting point. Whereas, for example, the models in [15], [16] and [17] establish a strictly formal learning process with fixed structures (learning within a class for a defined period of time, for example one lesson) with active participation of the teacher (distribution of learning material, motivation in the shape of a task as well as assistance to come up with a solution), learning within Wiki-Learnia happens much more self-determined. Therefore five phases of learning are identified here:

1. Determining a learning target
2. Collecting learning materials
3. Extracting relevant information
4. Repeating/Practising the data
5. Assessment of the learnt material

Commenting on each phase, supporting features of the four core parts (illustrated as pillars in figure 1) will be explained in more detail in the following. These features serve both, as input and output of the learning hub. They include learning content and services as well as information on tutors and authors, who offer additional support for the learner in virtual one-to-one and group lessons and who also organise the certification tasks.

Semantic metasearch

In Wiki-Learnia the term connectivism is understood in broader terms than in the literature. Users cannot only connect themselves to other users, but they are additionally linked to learning goal-oriented content and the accompanying persons (e.g. authors, tutors) through the learning hub. The necessary technology is a semantic metasearch engine, of which the conceptual functional structure is depicted in figure 2.

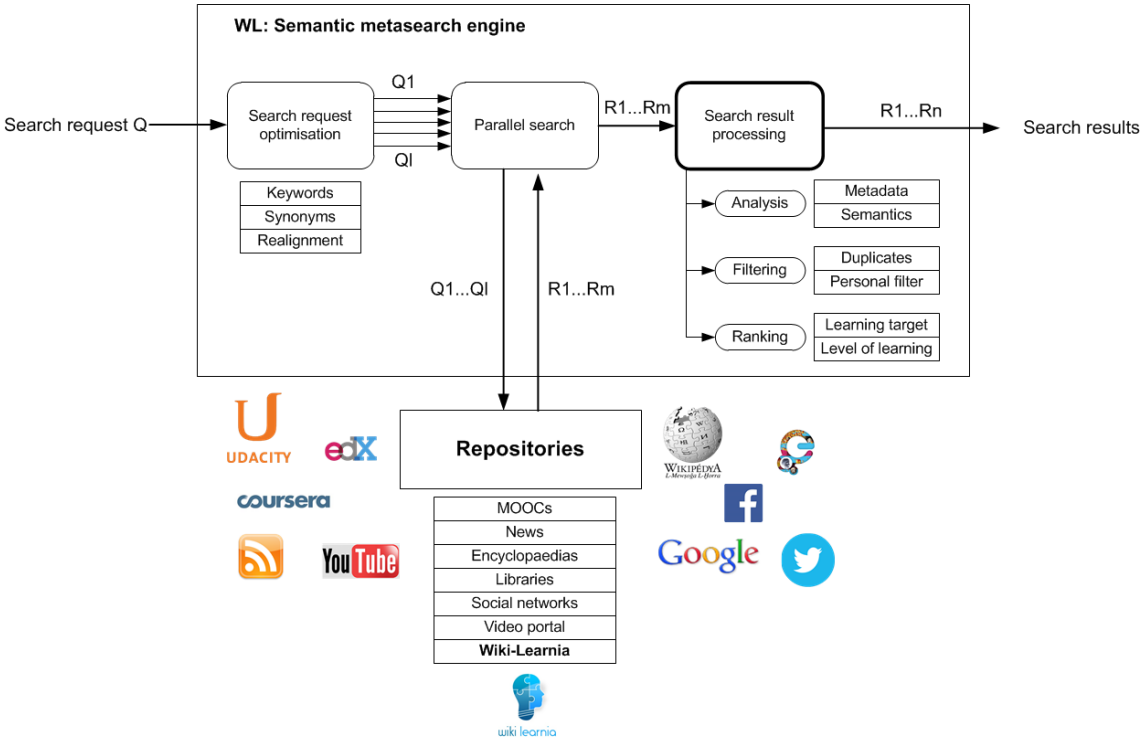

Figure 2 –Semantic metasearch engine of Wiki-Learnia

Before the actual search for matching learning content starts (phase 2 of the learning process), a search request optimisation is performed at first. Since the linked search engines work keyword-oriented, in a first step articles, pronouns, prepositions and conjunctions of the entered search phrase are removed by means of a dictionary. Based on the replacement of the remaining keyword with synonyms of internal and external dictionaries (openthesaurus.de) additional search requests are generated, which is relevant for the completeness of the search results. As the search engines of the linked repositories deliver partially different results due to a different word order, it is varied as well. Thus, this usually produces several search requests, which are subsequently executed in parallel. In addition to the internal Wiki-Learnia database different external sources on the internet (libraries, video platforms, social networks and many more) are searched, which represents the above indicated extension of the traditional connectivism term. Besides the connection between learners (“human-to-human-communication”) a “machine-to-machine-communication” takes place in this case to find matching content. The results collected during the search processes are distributed in a processed manner to the user. According to the current state of development identical search results are eliminated and the remaining entries are displayed in a categorised manner (see figure 3). As can be seen in

the example of the figure, there is a set of external materials like MOOCs, news and further web content (books, videos, articles etc.), in addition to Wiki-Learnia articles and users, wherein the search term occurs.

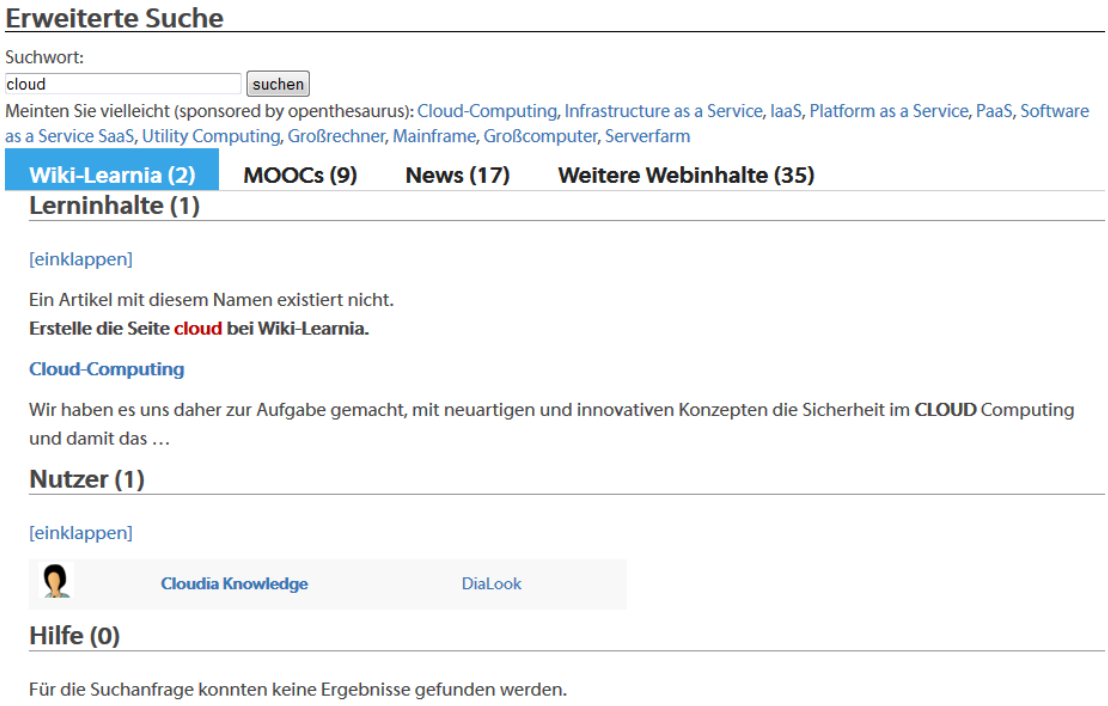

Figure 3 – display of search results

In further research, work methods are being developed to optimise search results on the basis of metadata and semantic analyses as well as by including the user context (learning target, level of learning, learning preferences). For this, the results are firstly analysed on the basis of existing metadata (source, data type, creation date, author, etc.). If, for example, the user selected “video” as preferred medium in the profile, he will be presented as a matter of priority with results from video hosting services or MOOC courses with lecture recordings. If an individual learning target has previously been selected, semantic analyses of content can be consulted to identify and offer matching material. In this way, the keyword-oriented metasearch engine including synonyms will in future develop to a meaning-deducing metasearch engine with the integration of ontologies for a more intensive purposeful linking of users with goal-approximated (tailored) content.

The semantic metasearch engine is completely integrated in the social environment of Wiki-Learnia. Apart from active data search the technology serves also as the basis for a recommendation system, which offers interesting results from all linked repositories to the user.

Authoring tools

Apart from the semantic metasearch engine for finding data, different authoring tools are provided to users to create their own content. As the name of the platform already implies, Wiki-Learnia is based on an extended Wiki-software, which serves in its standard version as an authoring tool for Wikipedia. This provides a powerful tool for collaborative creation and editing of learning content to the user. The input takes place by means of an intuitive WYSIWYG editor, which offers the well-known handling of common office programs. By means of various adjustments and extensions of the Wiki editor, which was primarily designed for the creation of textual contents, different media from external sources can be integrated by means of the learning hub, which allows the creation of multimedia learning objects, for example as a basis for MOOCs. A native versioning mechanism for the administration of different versions (e.g. a working and an examination version) completes the authoring tool.

Besides, there are two more tools for the creation of special learning materials, which can also be integrated into learning objects. One of them is used to create e-lectures, i.e. multimedia presentations including video recordings (see figure 4). Realised as a native app for mobile devices, lectures can be easily recorded and synchronised with accompanying slides on the way. Afterwards, the result can be seamlessly transferred to Wiki-Learnia and inserted into any content.

Figure 4 - Tool for the creation of E-lectures

A second tool is used to create a so-called “video quiz” (see figure 5). The online editor allows overlaying videos, also from external portals like YouTube, with different self-test exercises, which are provided to the learner at defined times in the video. The video itself remains unchanged, which allows the creation of any number of quizzes for a single video.

Depending on the answer to the question, the video can continue normally, jump to another position or refer to completely new content. The prototype of this application can be tested at http://quiz.wiki-learnia.org .

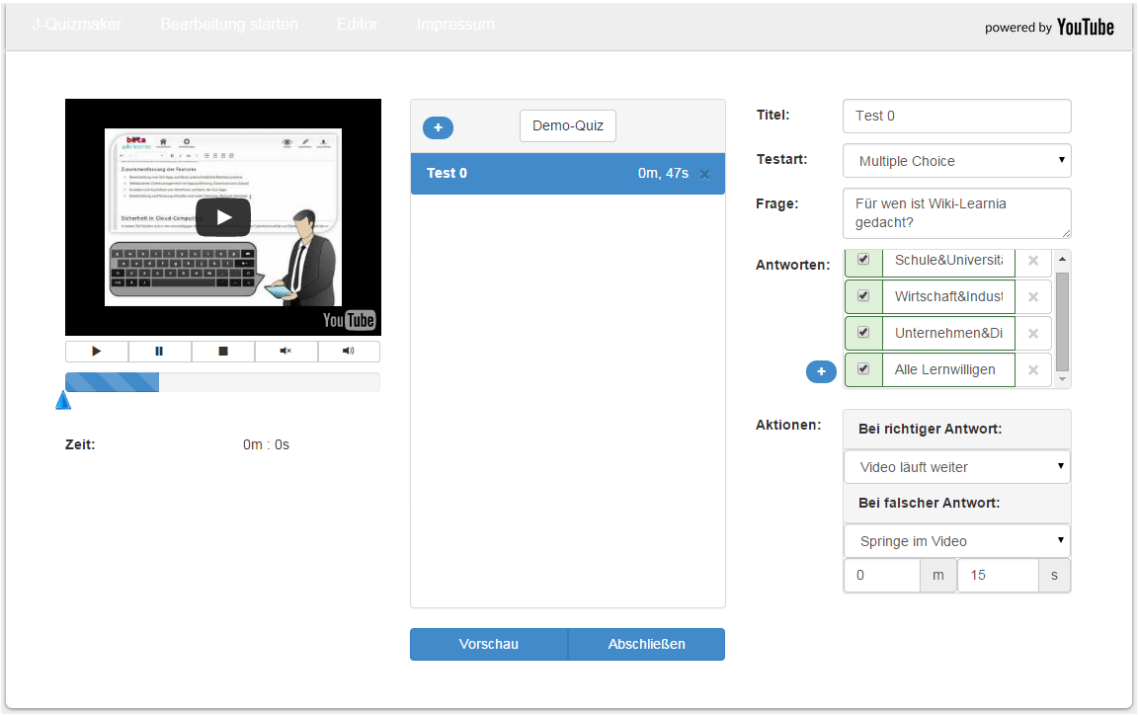

Figure 5 - Tool for the creation of video quizzes

The authoring tools play several roles in the individual learning process. On the one hand, personal content is created with their help, which in turn is available as learning material. On the other hand, knowledge, which was newly acquired during the learning process, can be extracted from external information and can be added to existing content or assembled into new content. This process has a reflexive character as the user has to summarize and reproduce independently newly learnt content. At the same time learnt content is reviewed by means of feedback and discussion with the community.

Learning support

Since learning is a process that every individual has to organise independently according to his or her needs, Wiki-Learnia offers further specific tools as support. One of these tools allows the setting of an individual learning target, which corresponds to the first phase of the learning process. The user can choose his or her learning target either manually or automatically, i.e. by the system based on the history of consumed content. The principle behind is based on the categorisation of Wiki-Learnia content. Authors can assign one or more categories to their learning modules by either choosing them from already existing categories or by formulating them independently. It is also possible to define main categories and sub-categories, which develop into hierarchies. Users can now specify any category as learning target in order to search afterwards specifically for matching content in

the linked repositories. The internal recommendation system also chooses its recommendations based on the current learning target. Furthermore, in this way users with the same or similar learning target can be located and aggregated to learning communities.

On the basis of WikiTrails [18] the user is also offered (semi-) automatically generated learning paths. This approach is based on the observation of individual user histories during learning. Read articles of users with similar learning targets are composed to form independent learning paths using specific linking strategies and observing community ratings. This can facilitate the search for suitable learning materials (phase 2 of the learning process) as well as extracting relevant information (phase 3 of the learning process) for the user.

Two further tools are used to create personal learning materials, which supports the third phase (information extraction) of learning. Learners can add individual notes to wiki contents with the so-called “annotator” (see figure 6). Private annotations (your own annotations are marked in yellow in the figure) are saved permanently, can be edited at any time, deleted or shared with friends (annotations by friends are marked red in the figure).

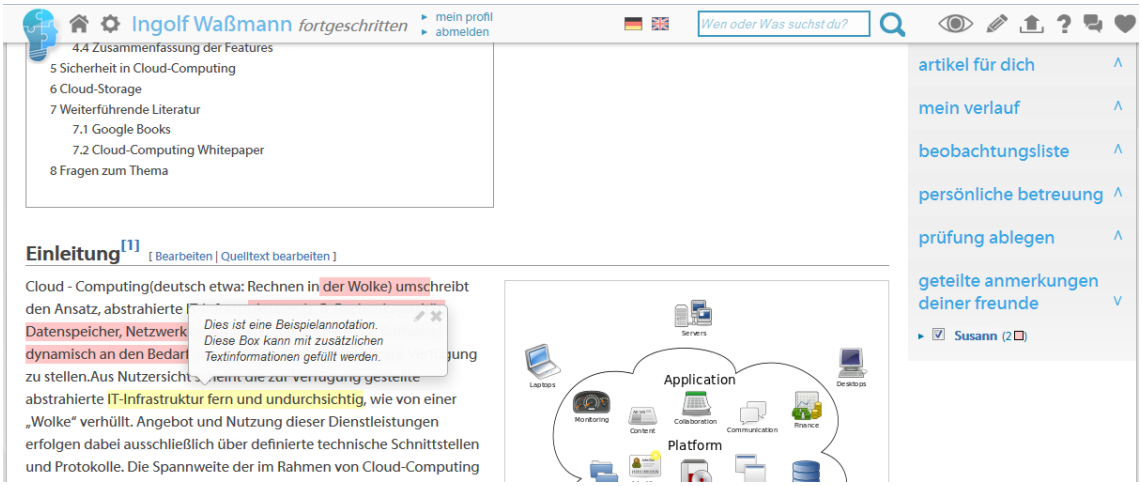

Figure 6 - Annotator

The “summarizer” is a tool for creating individual summaries (see figure 7). Any content from different modules of Wiki-Learnia can be added to private notes, which can be freely edited afterwards and, where applicable, can be enriched with further information. The summaries can also be shared with friends or can simply be downloaded on a mobile device and used for learning on the way.

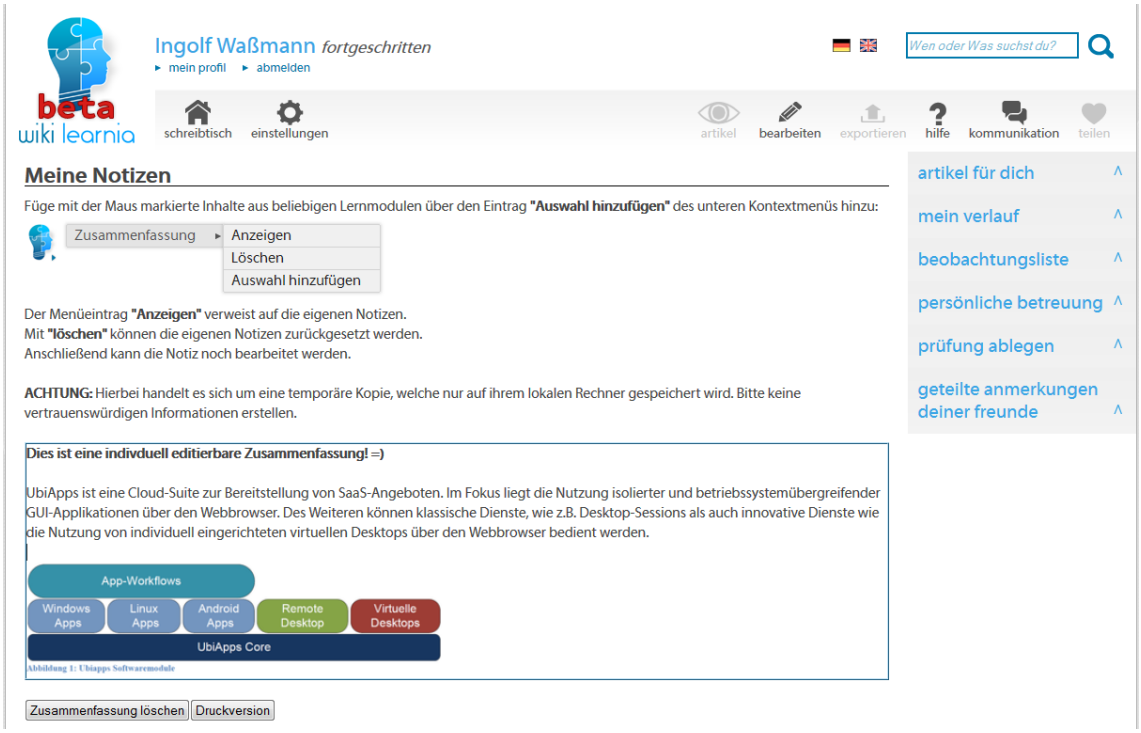

Figure 7 - Summarizer

Wiki-Learnia provides further support of the whole learning process by offering the possibility of tutorial support by professional experts as well as the certification of the learnt material.

Social network

According to the fundamentals of connectivism Wiki-Learnia natively supports the connection between users. The basis for this is a social network. Each member of the Wiki-Learnia community has his or her own profile page, where pictures and descriptions about the person can be stored. Here, all completed courses and acquired qualifications within Wiki-Learnia are automatically noted as well. The user is free to present this information to the outside world.

Members are able to connect to each other through profiles as well as to exchange information by means of different synchronous and asynchronous communication channels. The latter includes a message box, which archives incoming and outgoing messages and makes them available via a search function. The so-called “Wiki-Learnia wall” is a private bulletin board of each member to exchange and comment content. Furthermore, the comment function is integrated into the whole system, so that, for example, whole articles may be discussed. An integrated forum supports structured discussion. Synchronous communication is enabled by means of a live chat messenger, which is active at any time and everywhere within Wiki-Learnia. There is also the possibility of a multi-video chat, where multiple users can exchange information simultaneously by

videoconferencing. The underlying technology is based on the open standard for real-time communication WebRTC [19], which requires only a modern web browser and needs no additional software.

In order to guarantee cross-network exchange with users of other portals, the accounts of external services like Facebook and Twitter can be linked with the Wiki-Learnia account. As a result, the messages of the networks are synchronised and contributions of all platforms are shown together on the Wiki-Learnia wall (see figure 8). In order to control the information flood, contributions of individual sources can be switched off and on with a simple click of a button. In a further development, work is currently in progress to implement a semantic filter, which extracts all contributions on the Wiki-Learnia wall, which are best suited for the current learning target.

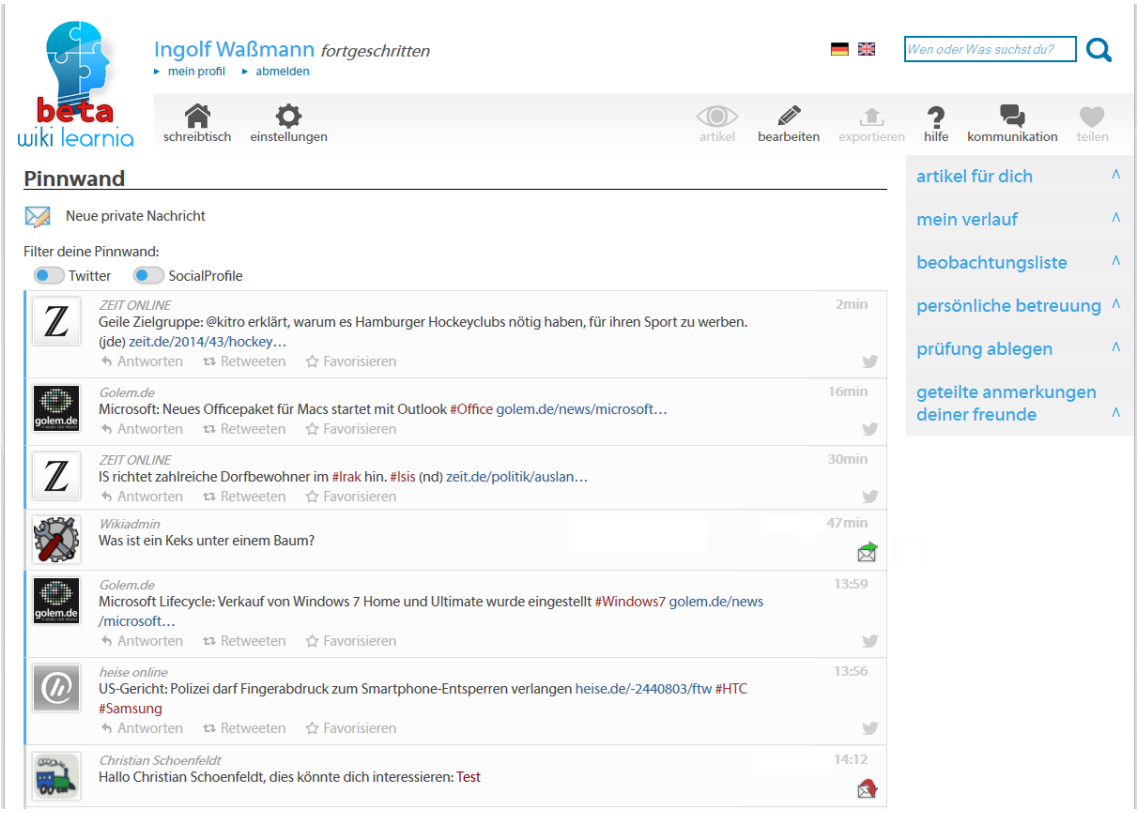

Figure 8 - Wiki-Learnia wall

Thus, the tools of the fourth pillar support the learning process in its entirety. Apart from the possibility to obtain suitable content from linked portals, the many means of communication aid particularly in reaching the individual learning target.

Wiki-Learnia in practice

Wiki-Learnia supports formal and non-formal ways of learning during the lifelong learning process. The transition between school and university is a phase in one's life, which on the one hand is marked by intensive learning, but on the other hand may bring strong changes in living and learning processes. Current studies substantiate that approximately one third

of German students drop out of university prematurely [20]. 38 % of all university dropouts give up their studies due to non-sufficient performance or insufficient motivation for their studies [21]. In face of a lack of skilled workers in many sectors of the German economy, this poses a serious problem. The media-based Junior Studies project of the University of Rostock aims at reducing the number of university dropouts by an intensive study preparation during school. It demonstrates very well the suitability of Wiki-Learnia for different learning processes of education and training periods. At first, the project will be introduced shortly, and then it is shown how individual features of Wiki-Learnia are used to support the Junior Studies learning process.

Media-based Junior Studies

The media-based Junior Studies project of the University of Rostock aims at providing pupils with online academic content of the first study semesters and at admitting them as virtual students. Thus, on the one hand a study-specific introduction is realised and on the other hand the organisational preparation is enabled, e.g. by intensive self-determined learning, as it will be necessary in later studying. Subject-specific study content is often hard to work on for upper secondary level pupils without the possibility of an intensive support by specialists. Traditional MOOCs, lecture slides or reference books, which are provided by many authors and universities, usually do not or do rarely enable social contacts to the authors of the content or to appropriate tutors and are therefore often unsuitable for pupils.

The media-based Junior Studies project provides pupils of the upper secondary level with the possibility to experience content and processes of later studying at an early stage. Regular lectures are offered in an adapted version for online learning as videos with added lecture content and are expanded with the possibility of online communication with lecturers as well as specialist tutors. Therefore, a platform is necessary for supplying content (video stream, slides, texts, exercises) as well as a learning management system (LMS) for communication and coordination of teaching sessions.

The media-based Junior Studies project has a few particular requirements on the LMS platform:

- The strong local distribution of users (the pupils come from all over Germany and partly from abroad) allows only a part of the students to participate in face-to-face lectures, so that both the complete communication of the pupils among each other and the communication of the pupils with tutors and lecturers have to be enabled through the LMS. The platform has to give priority to the principles of connectivism to provide virtual group-oriented learning for the individual learner. In particular, specialist discussions in small groups have to be possible online, which can be realised only inadequately with conventional chat systems. Working together on documents in connection with a video group chat must be supported.
- As some schools in Mecklenburg-Western Pomerania have integrated the offer of the Junior Studies into their regular compulsory subject choice of secondary level II classes, an evaluation of participation in the Junior Studies has to be possible and

comprehensible at any time (also, e.g., by teachers). This includes in particular an exact recording of the acquired competences in a flexible and extractable e-portfolio system.

So far, a conventional LMS with different extensions was used in the media-based Junior Studies project, which, however, is only insufficiently suitable for the provision of online learning content and for addressing the above mentioned requirements. For instance, the used system proved to be very counter-intuitive. Certain functions are only found after a longer search, which leads to significant hindrance and slow-down of learning processes. In addition, the LMS is characterized by errors and shows a series of bugs, which cannot be fixed by regular updates. Social network functions, such as the possibility to present a personal page, publishing pictures or videos, connecting users among each other as well as adding friends, are missing. Overall, the system appears out-of-date and not sufficient for the current requirements of a modern LMS, which should also contain elementary components for supporting a social network. Consequently, Wiki-Learnia seems a good choice for the Junior Studies project and to provide the target group of 15- to 20-year-old people with an adequate learning management system with an integrated social network.

Wiki-Learnia for the media-based Junior Studies

As already described in detail, Wiki-Learnia is based on a social network. Users are able to present themselves and their acquired competences through their profile page to the outside world; they can connect with other members of the community, communicate with each other, share content and thus learn together. These mechanisms are very well known to the pupils of the Junior Studies of the University of Rostock as they are digital natives. This increases motivation and lowers the inhibition level to work with the system and to engage in mutual exchange of experiences. They are in contact with these technologies through Facebook, Twitter etc. every day. With the ability to connect these networks with the Wiki-Learnia account, the forming of cross-network training and learning communities should be engaged. Furthermore, the collected contributions of external portals serve as an information source to support the individual learning process. For instance, data can be found by means of the semantic metasearch engine, which is linked to the current learning target, e.g. to provide news about a current topic or current debates. This additional learning content is especially important for junior students as they usually have no deep expert knowledge in the field of the learning content.

The specific requirements of various communication and discussion opportunities at the Junior Studies project are illustrated in figure 9 in more detail. Junior students have to be able to communicate synchronously with other participants both in textual form and also through audio and video connections, to enable professional discussions. This facilitates the realization of face-to-face events like small seminars, consultations or even exams, which cannot be attended by all pupils due to their local distribution. However, asynchronous communication also has to be possible to ensure temporal independence of the learner. Whereas traditional LMS usually only support textual communication, Wiki-Learnia allows the realisation of the full range of the presented communication options.

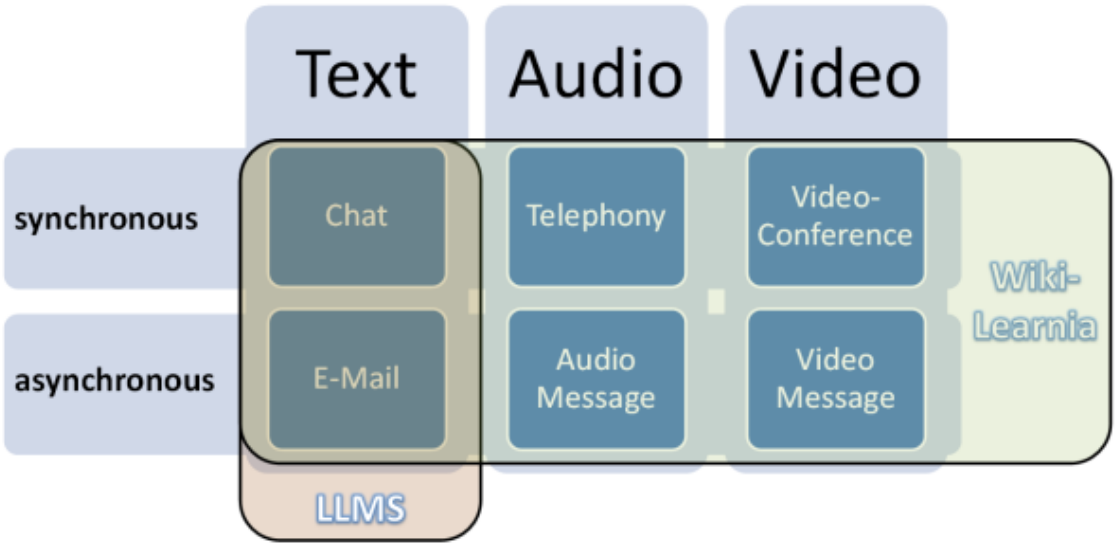

Figure 9 – communication LMS vs. Wiki-Learnia

Learning by teaching is popular as a tried and tested method of knowledge transfer [22]. By means of the Wiki basis, pupils are able to create content collaboratively and share it with other users. Here, the authors need to interact with each other and have to coordinate themselves independently, which corresponds to the basic idea of social learning. The annotator and the summarizer are two tools, which support the user during his individual work with the learning material. The sharing function of both tools facilitates cooperation between individual pupils.

The described possibilities of Wiki-Learnia make this software system an excellent tool to be used in online study environments like the here outlined Junior Studies project, which has been confirmed in initial tests. For instance, in August 2013 the usability of the platform was examined [23] (cf. [24]). By means of a qualitative analysis of think-aloud protocols (cf. [25]) of test users it was shown that Wiki-Learnia fulfils [23] the ISO standard 9241/110 (“dialogue principles” [26]; cf. [27]). With regard to the criteria of the standard (suitability for the task, self descriptiveness, controllability, conformity with user expectations and fault tolerance) problems were occasionally highlighted (ibid.), which, however, did not endanger the usability on a critical level. The errors have since been fixed. Nonetheless, it has to be pointed out that the study was conducted in a laboratory situation and that a large-scale study on the software in everyday use is still pending. As part of a prototypical use of Wiki-Learnia in the media-based Junior Studies project this is expected to be carried out in the near future.

Summary

In 2005, George Siemens indicated specific requirements of learning methods and environments of modern times, which are strongly influenced by technologies, especially by the diverse communication and networking capabilities of the digital age. Therefore, connecting people with each other and the associated exchange of experiences is regarded as the deciding path towards knowledge absorption [9]. The learning theory called

“connectivism” forms the basis for the learning platform “Wiki-Learnia”, which supports the linking of users to communities with the same learning target by means of different Web 2.0 mechanisms. With the new “learning hub” approach the basic idea of connectivism is expanded by linking the users with dedicated content and with collaborating authors as well as tutors. Wiki-Learnia is linked to a variety of external repositories like news feeds, online encyclopaedias, video portals, digital libraries, MOOC platforms and more, which are searched under consideration of the user context (learning target etc.) for matching content and used to provide this content to the user. At the same time, Wiki-Learnia with its latest authoring tools offers an ideal platform for the creation of multimedia-enhanced teaching and learning modules, with which a global e-learning market place with a high level of economic potential can be created to find, create, edit and share learning content.

The platform Wiki-Learnia with its properties, in particular the learning hub concept, could be used in future online learning environments, especially among the young generation of digital natives, for acquiring and distributing knowledge during all important learning phases in the course of life. Therefore, Wiki-Learnia will be used within the media-based Junior Studies, a preparatory program for university studies of the University of Rostock, which demonstrates its strengths especially in the field of the first two formal learning phases of life and the transition from school to university.

A demo version of Wiki-Learnia is available at http://www.wiki-learnia.org , where the majority of the described features is provided and can be tested. Alternatively, this short presentation video http://youtu.be/2_SdU6a63H4 offers a compact overview of the above mentioned functions.

Acknowledgements

We would like to express our special thanks to the Ministry of Education, Science and Culture of Mecklenburg-Western Pomerania for the promotion of our project to further develop the learning management system Wiki-Learnia as the focus of our R&D. Furthermore, we would like to thank the partners of the joint project “Virtual Higher Education Landscape Northern Germany – Computer Engineering Online (VHN-TIO)”, which have been a valuable support to our professional discussions in the past. The same applies to the reviewers of this paper, whose comments gave us insightful suggestions for improvement of this publication.

References

[1] Alheit, P.; Dausien, B.: Bildungsprozesse über die Lebensspanne und lebenslanges Lernen. VS Verlag für Sozialwissenschaften, 2002, pp. 565-585.

[2] Dehnbostel, Peter: Informelles Lernen: Arbeitserfahrungen und Kompetenzerwerb aus berufspädagogischer Sicht. Überarbeiteter Vortrag anlässlich der 4. Fachtagung des Programms „Schule/Wirtschaft/Arbeitsleben“ am 18./19. Sept. 2003 in Neukirchen/Pleiße mit dem Thema „Kompetenzen für die Berufsorientierung nach PISA – auf welche Kompetenzen kommt es an?“ 2003. Online verfügbar unter http://www.swa-programm.de/tagungen/neukirchen/vortrag_dehnbostel.pdf (last check 2014-11-10)

[3] Livingstone, David, W.: Informelles Lernen in der Wissensgesellschaft. Erste kanadische Erhebung über informelles Lernverhalten. In: QUEM-Report Heft 60: Kompetenz für Europa. Wandel durch Lernen – Lernen durch Wandel. Referate auf dem internationalen Fachkongress 21.–23. April 1999 in Berlin, pp. 65–91.

[4] Tavangarian, D.; Waßmann, I.: Studying without Borders. SDPS Proceedings, 2014.

[5] Waßmann, I.; Tavangarian, D.: “Computer Engineering Online” using the novel eLearning 3.0 platform Wiki-Learnia. In: International Journal of Advanced Corporate Learning (iJAC), Vol. 6, 2013, No 1.

[6] Machlup, F.: Knowledge production and distribution in the United States. Princeton University Press, Princeton, NJ: 1962.

[7] Siemens, G.: Connectivism: A learning theory for the digital age. In: International journal of instructional technology and distance learning, 2(1), 2005, pp. 3-10.

[8] Gonzalez, C.: The Role of Blended Learning in the World of Technology, 2004. http://www.unt.edu/benchmarks/archives/2004/september04/eis.htm (last check 2011-10-11)

[9] Tavangarian, D.: Wissensarmut: Definition - Ursachen - Lösungsansätze. Interdizsiplinäre Ringvorlesung, Universität Rostock, 2012.

[10] Bandura, A.; Walters, R. H.: Social learning and personality development. Holt, Rinehart & Winston, New York, 1963, 329 p. [Stanford Univ., Stanford, CA and Univ. Waterloo, Ontario, Canada].

[11] Bandura, A.: Social learning theory. Prentice Hall, Englewood Cliffs, N.J., 1977.

[12] Watson, J. B.: Psychology as the behaviorist views it. In: Psychological review, 20(2), 1913, p. 158.

[13] Holzinger, Andreas: Basiswissen Multimedia. Band 2: Lernen. Vogel Business Media, Würzburg, 2000.

[14] Stephenson, K.: What knowledge tears apart, networks make whole. In: Internal Communication Focus, 36, 1998, pp. 1-6.

[15] Roth, H.: Pädagogische Psychologie des Lehrens und Lernens. Hermann Schroedel Verlag, Hannover, 1957.

[16] Martens, E.: Methodik des Ethik-und Philosophieunterrichts: Philosophieren als elementare Kulturtechnik. Siebert, Hannover, 2003.

[17] Rolf Sistermann in: Zeitschrift für Didaktik der Philosophie und Ethik, Heft 1/2005, pp. 16-27 und Heft 4/ 2008, pp. 299-305.

[18] Reinhold, S.: WikiTrails: Augmenting wiki structure for collaborative, interdisciplinary learning. In: Proceedings of the 2006 international symposium on Wikis. ACM, 2006, August, pp. 47-58.

[19] WebRTC. http://www.webrtc.org/ (last check 2014-11-10)

[20] OECD, Statista: Anteil der Studierenden, die ihr Studium abbrechen, in ausgewählten Ländern im Jahr 2008: http://de.statista.com/statistik/daten/studie/162988/umfrage/studienabbruch-im-laendervergleich/ (last check 2014-11-10)

[21] HIS, Statista: Was war das ausschlaggebende Motiv für den Abbruch Ihres Studiums? http://de.statista.com/statistik/daten/studie/75078/umfrage/studium---motiv-fuer-den-abbruch (last check 2014-11-10)

[22] Martin, J. P.; Kelchner, R.: Lernen durch Lehren. Timm, Johannes P.(Hrsg.), 1998, pp. 211-219.

[23] Donick, M.: Usability-Evaluation von Wiki-Learnia. Universität Rostock, Interner Bericht, 2013.

[24] Donick, M.: “Offensichtlich weigert sich Facebook, mir darauf eine Antwort zu geben": Strukturelle Analysen und sinnfunktionale Interpretationen zu Unsicherheit und Ordnung der Computernutzung. Universität Rostock, Dissertation, 2014. [eingereicht Juni 2014]

[25] Van Someren, M. W.; Barnard, Y. F.; Sandberg, J. A.: The think aloud method: A practical guide to modelling cognitive processes. (Vol. 2). Academic Press, London, 1994.

[26] Hofmann, B.: Einführung in die ISO 9241-110. 2008. Online-Beitrag: http://www.fit-fuer-usability.de/archiv/einfuehrung-in-die-iso-9241-110/ (last check 2014-11-10)

[27] Prümper, J.; von Harten, G.: Software – ergonomisch gestaltet und geprüft. In: Computer und Arbeit 8-9/2007, pp. 17-21.