

Evaluation concept for storytelling in e-Learning

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Abstract: *Based on developments in knowledge society and in knowledge work, there is an increasing importance in efficient knowledge transfer in e-learning. As a result, this requires a deeper understanding of knowledge itself in order to maintain successful e-learning. Current IT-solutions in e-learning often lack the complex nature of processing knowledge. A modern approach to knowledge transfer uses narratives and storytelling. Telling stories is an intuitive and fundamental form of communication and therefore enables transfer of complex knowledge and experience within e-learning. The analysis shows that the main challenges of narratives in knowledge transfer are in the nature of the narratives themselves and in discursive evaluation processes. In a reflective evaluation process, narratives can be validated and codified to establish new e-learning approaches toward knowledge organisation, which can then improve the professional knowledge growing and its utilization. However, a quantified evaluation approach is still required. Therefore, in presented paper a mathematical term is derived to formally express the expansion of organisational knowledge, which is then applied to the findings of the narrative knowledge transfer. Thus, expansion of storytelling in special and knowledge transfer concepts in general, are given a more formal representation.*

Key words: *Storytelling, e-learning, Evaluation concept*

Introduction

Since many thousand years storytelling will be considered as a part of entertainment and enjoyment. The establishing of knowledge as the most important business factor in the growing knowledge society provides new impulses in usage and investigation of storytelling. The capability of storytelling in knowledge transfer in general and utilization of it in the e-learning in particular is a part of recent research as within knowledge management as within e-learning.

Narrative approach underlies the general thesis that experience and action of humans has the form of a story /1/. Because of that narrative supports natural form of knowledge generation and its transfer /2/. Stories can efficient disseminate non codified knowledge and also provide targeted support in one or another problem or situation /3, 4/. Stories supply "thick description" of specific context support this way an adequate understanding of complex problem case /5, 6/. Storytelling research and utilization in the business is focused on very practical targets. Narrative is identified as valuable and efficient medium for transfer of professional knowledge, experience, methodology etc. It contains the mixture of professional and everyday knowledge, experience, emotions, cognitive elements, facts, and norms.

Story represents one from of narrative. According to Gabriel /7/ story is "narratives with plots and characters, generating emotion in narrator and audience, through a poetic elaboration of symbolic material". Humans apperceive the reality in forms of stories, based on them peoples memorize historical facts and events. Stories make the learning and communication easier as for teachers as for learners /8/. Although storytelling is per definition on face-to-face aligned, it will be used in numerous applications using different (digital) media. Today storytelling will be used among others for a) process understanding /9/, b) discipline of corporate management /10/, c) instrument in business communication /11/, d) instrument of knowledge communication /12/. The next paragraph is devoted to the storytelling in e-learning.

Storytelling in e-learning

Explosive growth of gamification concepts in different application areas gets decisive impulses for development of storytelling. The storytelling definition of the National Storytelling Network as "...the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listener's imagination "one can fit for the e-learning as follows ***storytelling is the interactive art of using artefacts, words, and actions to reveal the elements and images of a story while encouraging the listener to learn some content.***

Following Frenzel et al. one can distinguish three different forms and goals of storytelling could be used for e-learning /9/. The first form of storytelling is focused on expression of ideas, values, and possibilities. The second one is oriented on sharing of ideas and own stories among the members of audience. The third form of storytelling is concentrated on evaluation of stories, development of general models, values, and approaches.

Supporting the flexibility of e-learning it is interesting to establish the story database and its management according to the profile of user, the qualification to be reached, resources available, and learning capabilities of an individual user. Different aspects of storytelling were analyzed by Ettl-Huber with respect to business communication and firm's strategy /13/. Herbst defined several types of stories in use – stories for employee, stories for journalist, stories for finance community, stories about the markets, international stories, and digital stories /11/. Every type has some value for e-learning activities – some of them are strong related to dissemination of professional knowledge support whereat others improve general knowledge, strength the social networking, team development or enterprise culture.

Digital storytelling is the most valuable part of storytelling for e-learning. The change from classic printed media to digital one extends the influence of the story on recipient. The mixture of text, video, audio, graphics, animation, networking, and interactive elements support the involvement of the user in the story development at the very high mental level. This could be used for efficient knowledge transfer in different e-learning activities. Hypertext and the concept of module oriented non-linear storytelling are the new essentials of storytelling today. Digitalizing of the society based on performant hardware like smartphone, tablets, etc. build the foundation for this development. Attractive photo-realistic software developed according results of research achieved in cognitive science, psychology, cybernetics, linguistics, engineering sciences complete the platform of resources needed for implementation of the e-learning applications. But the good story remains a good story and all available resources cannot replace it.

Evaluation of transferred knowledge

Utilization of storytelling in some e-learning activity has to be evaluated to estimate the impact of it on learning results. It could be done based on evaluation of professional knowledge transferred within the activity and owned at the end by recipient. The evaluation concept of the learning process will be described formal outgoing from the perspective of some enterprise. Scenario used represents the completion of e-learning course by one (or several) employees. Evaluation procedure is focused on changes in knowledge base of the enterprise and analyses of related characteristics. In this context only the human related knowledge will be considered. According to this the knowledge base of the enterprise before the e-learning activity will be defined by following formula:

$$KB_{En} = \sum kb_{Em}(x)$$

Here KB_{En} represents knowledge base of the enterprise, $kb_{Em}(x)$ represents individual knowledge bases of employee x , where x is the enumerator.

After the e-learning course the knowledge base of the enterprise will be

$$KB_{En} = \sum (kb_{Em}(x) + KnowledgeGrowth)$$

Here *KnowledgeGrowth* represents the growth of the knowledge in the knowledge base of the enterprise. In detail the growth of knowledge depends on different parameters, the summarized formula could be expressed as follows:

$$KnowledgeGrowth = \sum(\beta * LearningConcept)$$

β represents here the knowledge transfer factor for selected learning concept. It could be individual for every employee. Substitution of the last formula in the previous one will get following:

$$KB_{En} = \sum (kb_{Em}(x) + \sum (\beta * LearningConcept))$$

In this formula *LearningConcept* defines the concept of learning applied. β has a value between 0.0 and 1.0. If $\beta \rightarrow 0$ then *KnowledgeGrowth* $\rightarrow 0$ and knowledge growth will go again 0. The *LearningConcept* could be represented in relation to storytelling. To do this one can use the amount of knowledge transferred by selected learning concept. Related to storytelling this variable can be expressed by Y_{ST} . Also the knowledge transfer factor can be specified in the same way by β_{ST} . In both cases *ST* signify the storytelling.

$$KB_{En} = \sum (kb_{Em}(x) + (\beta_{ST} * Y_{ST}))$$

Considering different concepts of learning one can add other terms into the formula like further education courses, face-to-face learning, etc. On the other side the social networking could be integrated in the approach as well. It could be done e.g. using some momentum μ with values above 1.0. It will represent the growing of the knowledge in the case where employee after the completion of some further education course will disseminate his or her knowledge to other employees in the enterprise using internal social networks. In Addition one can add the negative aspects of knowledge growing. It could represent bad materials used in the learning course, poor supervision by instructor, low motivation, and complexity of course topics, etc. In the following summary formula γ represents some kind of mentioned noise.

$$KB_{En} = \sum (kb_{Em}(x) + \mu(\beta_{ST} * Y_{ST})) + \gamma$$

This formula can be specified according various individual features and concepts. It could be done after the investigation of the specific case together with the firm representatives.

Resume

In presented research different aspects of storytelling and they influence on e-learning are presented and discussed. Based on consideration of parameters of knowledge transfer new evaluation concept for storytelling in e-learning is described and discussed in detail. In the future part of the project the utilization of the approach developed will be implemented in partner enterprise and evaluated in the practice.

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