

Mohamed, Bahaaeldin; Köhler, Thomas

Web 2.0-based learning. A pedagogical model of participatory media in e-research

Fischer, Helge [Hrsg.]; Köhler, Thomas [Hrsg.]: Postgraduale Bildung mit digitalen Medien. Fallbeispiele aus den sächsischen Hochschulen. Münster u.a. : Waxmann 2014, S. 227-233. - (Medien in der Wissenschaft; 65)



Empfohlene Zitierung/ Suggested Citation:

Mohamed, Bahaaeldin; Köhler, Thomas: Web 2.0-based learning. A pedagogical model of participatory media in e-research - In: Fischer, Helge [Hrsg.]; Köhler, Thomas [Hrsg.]: Postgraduale Bildung mit digitalen Medien. Fallbeispiele aus den sächsischen Hochschulen. Münster u.a. : Waxmann 2014, S. 227-233 - URN: urn:nbn:de:01111-pedocs-105640

in Kooperation mit / in cooperation with:

WAXMANN
VERLAG GMBH
Münster · New York · München · Berlin



<http://www.waxmann.com>

Nutzungsbedingungen

Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Die Nutzung stellt keine Übertragung des Eigentumsrechts an diesem Dokument dar und gilt vorbehaltlich der folgenden Einschränkungen: Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

Terms of use

We grant a non-exclusive, non-transferable, individual and limited right to using this document.

This document is solely intended for your personal, non-commercial use. Use of this document does not include any transfer of property rights and it is conditional to the following limitations: All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Kontakt / Contact:

peDOCS
Deutsches Institut für Internationale Pädagogische Forschung (DIPF)
Informationszentrum (IZ) Bildung
E-Mail: pedocs@dipf.de
Internet: www.pedocs.de

Mitglied der


Leibniz-Gemeinschaft

Medien in der Wissenschaft

GMW
Gesellschaft
für Medien in der
Wissenschaft e.V.



Helge Fischer, Thomas Köhler (Hrsg.)

Postgraduale Bildung mit digitalen Medien

Fallbeispiele aus den sächsischen Hochschulen

WAXMANN

Postgraduale Bildung mit digitalen Medien

Helge Fischer
Thomas Köhler (Hrsg.)

Postgraduale Bildung mit digitalen Medien

Fallbeispiele aus den sächsischen Hochschulen



Waxmann 2014
Münster • New York

Bibliografische Informationen der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

Medien in der Wissenschaft; Band 65

Gesellschaft für Medien in der Wissenschaft e.V.

ISSN 1434-3436

ISBN 978-3-8309-2993-2

© Waxmann Verlag GmbH, Münster 2014

www.waxmann.com

info@waxmann.com

Umschlagentwurf: Pleßmann Kommunikationsdesign, Ascheberg

Titelbild: © Minerva Studio – www.fotolia.com

Druck: Hubert & Co., Göttingen

Gedruckt auf alterungsbeständigem Papier, säurefrei gemäß ISO 9706



Printed in Germany

Alle Rechte vorbehalten. Nachdruck, auch auszugsweise, verboten.

Kein Teil dieses Werkes darf ohne schriftliche Genehmigung des Verlages in irgendeiner Form reproduziert oder unter Verwendung elektronischer Systeme verarbeitet, vervielfältigt oder verbreitet werden.

Inhalt

Vorwort der Herausgeber zu Zielstellung und Struktur des Buches..... 7

1. Bestandsaufnahme

K. Wannemacher

Digitale Weiterbildungsangebote an deutschsprachigen Hochschulen 13

H. Fischer, T. Köhler

Digitale Weiterbildung an sächsischen Hochschulen. Unterstützungsangebote
und -strukturen 27

2. Für die Praxis – analytische Grundlagen

S. Döring, N. Rose

Qualitätsentwicklung im E-Learning durch zielgruppengerechte
mediendidaktische Weiterbildung..... 45

H. Fischer

Medieneinsatz im Weiterbildungsmarketing 57

A. Lißner, J. Schulz

Abgespeichert und vergessen? Plädoyer für eine außeruniversitäre
Nachnutzung geförderter E-Learning-Projekte..... 81

3. Aus der Praxis

3.1 Erfahrungen beim Medieneinsatz im grundständigen Studium

G. Damnik, A. Hilbig, A. Proske

Learners-as-Designers. Ein innovatives Lehrkonzept zum aktiven Erwerb
von inhaltlichem und didaktischem Wissen..... 95

C. Brodhun, N. Seidel, E. Teich, T. Claus

Vom Eignungstest zum benutzergenerierten Assessment. E-Assessment
im Lernmanagementsystem OPAL..... 105

J. Kawalek, A. Stark, E. Schuster

Bereitstellung von Vorlesungsaufzeichnungen für alle Studierende einer
Hochschule: Herausforderungen und Erfahrungen..... 113

D. Schulze, D. Prescher, C. Loitsch, M. Spindler, G. Weber

Vorlesungsinhalte inklusive: Barrierefreiheit in virtuellen Lernumgebungen 121

A. Weller, S. Herbst, S. Albrecht, N. Kahnwald, T. Köhler

Unterstützung informellen Lernens Studierender. Möglichkeiten
studentischen Arbeitens mit Social Software..... 131

T. Trautmann, P. Balzer
Zurück in die Zukunft: E-Learning wird wieder real..... 141

3.2 Erfahrungsberichte beim Medieneinsatz in der akademischen Weiterbildung

S. Löffler, S. Löffler, B. Weiler, G. Busch, C. Feja
Virtueller Rundgang durch die Anatomische Lehrsammlung 153

A. Graefe, B. Weiler
Postgraduale Weiterbildung Toxikologie an der Universität Leipzig 161

K. Jäger, R. Moros, A. Geißler, R. Gläser
Konzeption und Aufbau eines Blended-Learning-Weiterbildungskurses
„Technische Chemie“ (tc-compact^{BL})..... 169

N. Seidel, S. Azizi Ghanbari
Hochschuldidaktische Aus- und Weiterbildung von Hochschullehrern OWL:
Online-Wissen für die Lehre..... 177

C. Jödicke, H. Bukvova, E. Schoop
Virtual-Collaborative-Learning-Projekte. Der Transfer des Gruppenlernens
in den virtuellen Klassenraum..... 187

*J. Kožuško, I. Rudolph, J. Kuß, A. Abdel-Haq, H. Dietrich, S. Hebestadt,
C. Weichelt, U. Morgenstern*
E-Learning in der Biomedizinischen Technik: interdisziplinär,
internetbasiert, interaktiv und lebenslang 199

G. Rödel
Entwicklung des berufsbegleitenden Masterstudienganges
„Change Management in der Wasserwirtschaft“ 209

3.3 Erfahrungen beim Medieneinsatz außerhalb von Studium und Weiterbildung

J. Neumann, A. Ueberschaer
Web 2.0 in der dualen Berufsausbildung. Der Online-Ausbildungsnachweis
zur Stärkung der Lernortkooperation..... 219

B. Mohamed, T. Köhler
Web 2.0-based learning. A pedagogical model of participatory media
in e-research..... 227

Autorinnen und Autoren..... 235

Web 2.0-based learning

A pedagogical model of participatory media in e-research

Bahaaeldin Mohamed¹, Thomas Köhler, (Media Center, Dresden University of Technology)

Abstract: Over the course of the last decade, Web 2.0 technologies became one of the most fashionable applications for a whole range of Internet applications. However, many academics are unaware of Web 2.0 services and the benefits such applications have for learning. In this paper, we first provide a new perspective of the use of technology for research and knowledge sharing, in order to improve learning/research productivity through the use of such technologies. Second, we provide a literature review of the uses of Web 2.0 technologies in research and training. This serves to offer insight into the tools that are frequently used for particular learning/research activities. In other words, it depicts which tools are typically used for a particular task. For the purpose of this article, more than 47 pieces of research were reviewed that use various Web 2.0 technologies for formal and informal learning, training, and research. The results show in detail which factors can drive the learning process and how social media can accordingly scaffold these learning activities for training and scholarly research.

1 Introduction

For learning purposes, each learning tool has its own particular characteristics. Internet technologies have provided unprecedented opportunities and challenges for learning. Interactive technologies, such as Web 2.0 services, can also enhance collaboration and construction of knowledge between learners (Liaw et al., 2008). This paper presents a model for understanding the processes of research-based learning/project-based learning among PhDs and novice researchers and additionally explores the role of technology that serve these planned processes.

¹ Corresponding author.

E-mail address: Bahaaeldin_Khairy_Farag.Mohamed@tu-dresden.de (Bahaaeldin Mohamed)

2 Conceptual framework of project-based learning

To guide the literature search process, we developed a conceptual framework that identifies three key components that describe project-based learning through an informal/self-learning perspective. The study created a model, Community-Based Project Management learning (CBPM), which identifies four mixed components that describe project-based learning within the context of training and research as follows: (a) project-based learning (PBL) as a methodology that might help students investigate and control their own learning in a real environment; (b) project management (PM) as a scaffold for PBL for providing a construction that should manage and organize the stream of information within the project; (c) communities of practice (CoP) which are considered an environment to situate the learning processes among groups that share the same interests; and finally (d) Knowledge Management (KM) as an important related dimension that helps to create, represent, maintain, and share learners' tacit and explicit knowledge (Figure 1). Additionally, our final analysis and data evaluation answers the following question: What kinds of Web 2.0 technologies positively support and scaffold a study's learning framework (CBPM)?

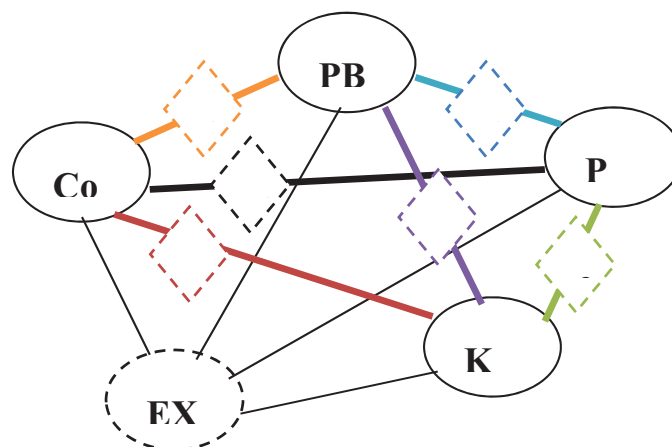


Figure 1 CBPM learning model

3 Methodology

In this study, 47 scientific articles were reviewed. Consequently, we conducted an extensive literature search for all articles related to Web 2.0 services in learning between 2003 and 2011 in two main academic databases, Elsevier and Pergamon. Search terms and keywords included combinations of some related concepts such as Web 2.0 in learning, design and develop web-based system, wiki, blog, twitter, learning management system, social media, computer support collaborative learning

CSCL, forum, and web-based community. The search process also covered the terms of formal and informal learning/self-regulated learning, including case studies, review studies, action research, and empirical studies.

Table 1 Literature criteria of selection

No.	Generating of new mixed Concepts	Sum of articles
1	Conceptual scaffold and procedures (PM-PBL)	5
2	Generic and suitable for standardization (PM-KM)	4
3	The behavioral elements that impact the management of projects (PM-CoP)	4
4	Knowledge management in a context where learning is fundamentally project-based (PBL-KM)	6
5	Situated learning (PBL-CoP)	10
6	Artifacts and histories which assist the transfer of knowledge (KM-CoP)	2
Total		31

4 Results and discussion

In the following section, the four main new mixed concepts/outputs of our model will be discussed as follows:

4.1 Conceptual scaffold and procedures PM-PBL

In this branch, five studies were analyzed (Hernandez-Serrano et al., 2009, Meyer, 2010a, Grosseck 2009, Keser & Karahoca 2010, Baltaci-Goktalay & Ozdilek 2010). These papers present the importance of Web 2.0 technologies and identify that they are helpful tools for the management research projects as well as project-based learning and can scaffold constructive support. The independent variables in these studies related to the use of chat, discussion forum, social network, wiki, weblog, micro blog, photo/video sharing, and course management system for the purpose of supporting all forms of social interaction, communication, understanding, reports about capacity, performance, and learners' perception. The majority of studies used quantitative methods for data collection. One study, however, conducted an open-ended survey as a qualitative method. The selected population ranged from 8 to 75 graduate students who came from Spain, Turkey, USA, and Romania, and were completing mas-

ter's and doctoral programs in engineering and pedagogy. As such, the results indicate that Web 2.0 technologies positively influence learning, enhancing hard skills, performance, and perception.

4.2 Generic and suitable for standardization PM-KM

The studies completed by Yoo & Kim, 2002, Liao, 2003, Rodriguez & Al-ashaab, 2005 present the role of Web 2.0 technologies for improving the processes of creation, enrichment, reusing, sharing, and disseminating knowledge as an important resource in modern organizations. The independent variables on one hand are correlated to web-based knowledge management, knowledge web-based systems, technologies that support collaborative product development, and web-based knowledge management systems. On the other hand, the dependent variables included enhancing and sharing product data, development of knowledge management, and sharing and producing data among application systems. These studies use case-studies and descriptions to depict their findings. There were 243 participants who came from different countries, primarily from South Korea, Taiwan, and the UK. The results indicate that Web 2.0 technologies positively influences the knowledge processes, facilitating the processes of creation, enrichment, sharing, reusing, retrieval, visualization, evaluation, and the coordinating, distributing and disseminating processes.

4.3 Situated learning PBL-CoP

The conclusions set forth by Meyer, 2010b, Purdy, 2010, Carmichael & Burchmore, 2010, Maranto & Barton 2010, Uzunboyly et al., 2010, Cavus & Kanbul, 2010, Sorapure, 2010, Ardaiz-Villanueva et al., 2010, Dehler et al., 2010 illustrate that Web 2.0 technologies might support collaboration in teams and facilitate engagement in communities of practice as a mixed output between PBL and CoP. These results emphasize the importance of using all Web 2.0 technologies, such as weblogs, wikis, social networks, group software, podcasts, and virtual learning environments to scaffold informal learning and developing academic writing skills as well as to raise awareness of theoretical and ethical issues among students and teachers, enhance students' critical competences, and increase the user's attitude for using such media. Data were collected quantitatively, exploratively, and via the meta-analysis method. The students studied ranged from undergraduate and graduate students, with between 24 and 76 participants from different countries such as Sweden, South Korea, Turkey, Malaysia, USA, Spain, Switzerland, and the UK. The results indicate that Web 2.0 technologies positively influenced supporting and promoting skills and experiences.

4.4 Artifacts and histories that aid the transfer of knowledge KM-CoP

Chikh & Berkani, 2010, Liaw et al., 2008 emphasize that Web 2.0 technologies improve the production process involved in developing artifacts for learning communities and histories, which aids the transfer of knowledge and increase understanding. Web 2.0 technologies such as web-based collaborative learning systems were precisely used. Concerning the dependent variables, e-learning use and the learner's attitude toward the technology were investigated using quantitative and explorative research methodologies. The data was collected from 178 undergraduate and graduate students from Saudi Arabia and Taiwan. The results emphasize that the use of Web 2.0 technologies positively enhance the understanding process of users' behavior and the process of adoption for technology. As a result, these outputs make the connection between knowledge management and community of practice more reasonable.

4.5 The role of social media in learning: Why Web 2.0 technologies?

As demonstrated above, Web 2.0 technologies can scaffold and serve the mixed concepts of situated, work-based, and informal learning. Accordingly, our conception for the role of media for assisting project-/ research- based learning and training might be understood across three main tiers: the tier of communication, the tier of management, and the tier of understanding. Our results remain constant with Maslow 2.0 pyramid (Web 2.0 hierarchy of needs, Bevarly, 2009). Basically, learners may take their own decisions when they can hold a meaningful dialog. In order to hold a meaningful dialog, learners should share some content, which can only be achieved if the learners are engaged in a learning situation. To fulfill engagement with a learning situation, learners should directly or indirectly foster connections with other learners. Accordingly, this pyramid presents the hierarchy of communication's need, which starts from the bottom to the top as follows: connection, structured engagement, content sharing, meaningful dialog, and enlightened decision-making. These levels can be interpreted as three main tiers: communication levels (connect, structured engagement), knowledge management level (content sharing), and understanding level (meaningful dialog). The challenge for learners is not only to know how to learn but also to be aware of how to use learning to create new techniques, and manage one's own knowledge, which requires the successful establishment of communication with the surrounding world (figure 2).

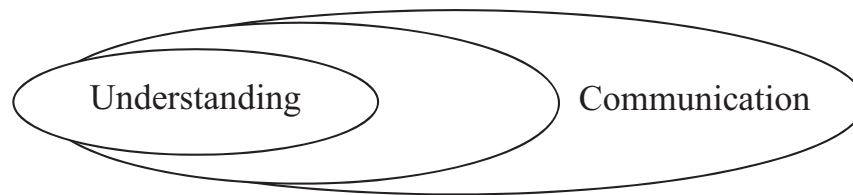


Figure 2 the role of web2.0 technology in learning

Our results can work as an extension of our previous study (Mohamed & Koehler, 2009) in which we developed a learning model for informal learning based on learning-based project. The main contribution of this study is to first provide a conceptual model that depicts a new understanding of learning-based project/research. This concept extracts and generates self-regulated learning through: learn what you need to know, when you need to know it; know where to find relevant information; and learn from peers and in informal situations rather than in formal curriculum (Cross et al., 2010).

The second goal of this study was to identify Web 2.0 technologies, in order to serve our proposed conceptual model of CBPM. Weblog and Micro blog are more likely to document daily activities and receive feedback from others that can be then used to reflect, test and correct. Online forums are typically used for more intensive interaction and deep conversation about a particular topic among individuals and groups. A wiki works as a collaborative writing tool for group-based activity and project-based learning. A learning Management system is a typical example of providing a formal course management system and managing the formal type of learning; it is thus more likely to act as a system for managing materials and content instead of facilitating the learning process. Finally, a social network is a system that manages profiles and activities; it is a typical example of an informal form of spontaneous learning. We should emphasize and recommend placing greater focus on defining learning methods, techniques, and pedagogy before selecting the right technology for a learning situation.

References

- Ardaiz-villanueva, O., Nicuesa-Chacon, X., & Brene-Artazcoz, O. (2010): Evaluation of computer tools for idea generation and team formation in project-base learning, *Computer & Education*, 1-12.
- Baltaci-Goktalay, S.,& Ozdilek, Z. (2010): Pre-service teachers' perceptions about web 2.0 technologies, *Procedia Social and Behavioral Sciences* 2, 4737-4741.
- Bevarly, D. (2009): *Maslow 2.0 – A new hierarchy of needs for collaboration*, weblog. (<http://www.aheadofideas.com/?p=156>) 14.12.2010.
- Carmichael, P.,& Burchmore, H. (2010): Social software and academic practice: postgraduate students as co-designers of web2.0 tools, *Internet and Higher Education* 13, 233-241.

- Cavus, N., Kanbul, S. (2010): Designation of web2.0 tools expected by the students on technology-based learning environment, *Procedia Social and Behavioral Sciences* 2, 5824-5829.
- Chikh, A., & Berkani, L. (2010): Communities of practice of e-learning, an innovative learning space for e-learning actors, *Procedia Social and Behavioral Sciences* 2, 5022-5027.
- Cross, J., Hart, J., Jennings, C., Jarcho, H., Quinn, C., & Husband, J. (2010): Working smarter with tera nova circa 2015, *E-learn Magazin: Education and Technology in Perspective*. (<http://www.elearnmag.org/subpage.cfm?section=articles&article=138-1>). 13.12.2010.
- Dehler, J., Bodemer, D., Buder, J., & Hesse, F.W. (2010): Guiding knowledge communication in CSCL via group knowledge awareness, *Computers in Human Behavior*, 2010.
- Grosseck, G. (2009): To use or not to use web 2.0 in higher education? *Procedia Social and Behavioral Sciences*, 1, 478-482.
- Hernandez-Serrano, M.J., Gonzalez-Sanchez, M., & Munoz-Rodriguez, J. (2009): Designing learning environments improving social interactions: essential variables for a virtual training space, *Procedia Social and Behavioral Sciences*, 1, 2411-2415.
- Keser, H., Karahoca, D. (2010): Designing a project management e-course by using project based learning, *Procedia Social and Behavioral Sciences* 2, 5744-5754.
- Liao, S. H. (2003): Knowledge management technologies and applications-literature review from 1995 to 2002, *Expert System with Applications* 25, 155-164.
- Liaw, S.S., Chen, G.D., & Huang, H-M. (2008): Users' attitudes toward web-based collaborative learning systems for knowledge management, *Computer and Education* 50, 950-961.
- Maranto, G., Barton, M. (2010): Paradox and Promise: myspace, facebook, and the sociopolitics of social networking in the writing classroom, *Computer and Composition* 27, 36-47.
- Meyer, K.A. (2010a): A comparison of web 2.0 tools in a doctoral course, *Internet and Higher Education*, 2010.
- Meyer, K.A. (2010b): Web2.0 research: introduction to the special issue, *Internet and Higher Education* 13, 177-178.
- Mohamed B., Koehler, T. (2009): *Learning Management Systems as a Tool for Community-based Project Management*. Proceeding of GeNeMe 2009, Dresden, Germany.
- Purdy, J.P. (2010): The changing space of research: web2.0 and the integration of research and writing environments, *Computers and Composition* 27, 48-58.
- Rodriguez, K., & Al-ashaab, A. (2005): Knowledge web-based system architecture for collaborative product development, *Computers in industry* 56, 125-140.
- Sorapure, M. (2010): Information visualization, web 2.0, and the teaching of writing, *Computers and Composition* 27, 59-70.
- Uzunboylu, H., Bicen, H., Cavus, N. (2010): The efficient virtual learning environment: a case study of web2.0 tools and windows live spaces, *Computer & Education*, 1-7.
- Yoo, S.B., & Kim, Y. (2002): web-based knowledge management for sharing product data in virtual enterprises, *Int. J. Production Economics* 75, 173-183.