

Please quote as: Hammer, N.; Janson, A. & Leimeister, J. M. (2014): Does culture matter? A qualitative and comparative study on eLearning in Germany and China. In: 27th Bled eConference, Bled, Slovenia.

27th Bled eConference

eEcosystems

June 1 - 5, 2014; Bled, Slovenia

Does culture matter?

A qualitative and comparative study on eLearning in Germany and China

Nadine Hammer

University of Kassel, Information Systems,
Research Center for IS Design (ITeG), Germany

hammer@uni-kassel.de

Andreas Janson

University of Kassel, Information Systems,
Research Center for IS Design (ITeG), Germany

andreas.janson@uni-kassel.de

Jan Marco Leimeister

University of Kassel, Information Systems,
Research Center for IS Design (ITeG), Germany

University of St. Gallen, Information Systems, Switzerland

leimeister@uni-kassel.de

Abstract

eLearning offers the exciting opportunity to acquire new material at any time and any place. It is also a means to teach a large number of people simultaneously, which is an important aspect when thinking about challenges in fast growing countries like China. We suggest that the successful usage of eLearning requires the consideration of didactic

socialization. While prior research has primarily focused on the overall success factors of eLearning, there is little understanding about how a specific learning culture context influences its usefulness. This study intends by a use of a proxy approach to investigate culture-sensitive success factors of eLearning measures regarding overall satisfaction and learning success. The results of the comparison of the German and East Asian learning context show that there are culturally specific requirements of eLearning success that cater to the specific didactic socialization.

Keywords: eLearning, eLearning success factors, culture, self-directed learning, China, user interface, Design principles

1 Introduction

Motivated by its continuously high economic growth, China is undergoing a transformation into a knowledge society, which is why knowledge becomes a central factor in the production process. This does not only alter labor market needs but also requires more flexible and modern education. The enthusiasm for information and communication technology in China provides the necessary innovation potential and can sustainably support economic growth. However, the education system is considered a critical factor concerning the realization of a knowledge society. The education sector suffers from insufficient financial support and investments, mainly in rural and poor areas. Quality and efficiency of education are not yet sufficient for the aspired international competitiveness. Besides the urgent need for qualified workers, tertiary education is insufficiently prevalent. Furthermore, education is not targeting the needs of a knowledge society (iMOVE, 2013). It is recognized that the available offerings are highly heterogeneous and find themselves under an enormous pressure for adaptation and change. Realistic solutions to this problem might well be important for global stability (iMOVE, 2013).

Export of - for instance - German eLearning offers that are considered high quality in China, constitute a possibility to face these challenges. eLearning is a means of allowing cost advantages in education export (Fraunhofer MOEZ, 2012) and can help to efficiently close the qualification gap (Zhang, 2004). It comprises more than a mere communication of knowledge via the Internet. According to Volery and Lord (2000), eLearning is based upon a cross-linking of learners, institutions, trainers, technical and administrative staff, as well as learning aids using the Internet and other technologies. However, exporting these services gives rise to significant problems. The providers face the challenge that eLearning concepts that have proven to be successful in Europe cannot simply be exported to China due to culture-specific differences (Borchert, 2009). A simple translation of content results in a poor learning success.

Therefore, a deep understanding of the culture of the target country is an important prerequisite for successful adaptation of contents (Fraunhofer MOEZ, 2012). Culture, here defined as a common set of values of a group of individuals (Straub, Loch, Evaristo, Karahanna, & Srite, 2002), is a construct which can explain global differences in learning and teaching concepts (Fischer & Kopp, 2007). Evidence from comparative

learning culture research (Hall & Hall, 1990; Hofstede, Hofstede, & Minkov, 2010) led to the conclusion that the consideration of learning conditions as well as cultural experiences of course participants offers great potential for a significant improvement of learning success.

But are there culture-specific requirements of eLearning? And what are these requirements? Information system research has paid attention to the factor of culture for quite some time now but the majority of contributions focus on the design of upstream and downstream development and implementation processes of eLearning applications in the respective country or culture area. There is a lack of reliable evidence regarding the necessity to respect cultural differences in the requirements for an export of the respective services (Krcmar, Böhm, & Sarkar, 2010). So far, the didactic and information-technological design of learning content has only been taken into account in a few studies, in spite of it comprising the central success factors for eLearning. Recognized principles for IT-supported learning have been developed for western culture but they need to be benchmarked with regard to their suitability for other culture areas. Therefore, the aim of this contribution is to address the question whether there are culture-specific requirements of eLearning. The following research questions (RQ) will be addressed:

RQ1: In how far can standardized eLearning concepts be transferred to foreign culture areas?

RQ2: What are the requirements of culture-specific eLearning?

The theoretical significance of the present paper lies in the consideration of culture theory for the analysis of requirements for an eLearning application. On the practical side, it provides success criteria for the culture-sensitive design and application of eLearning.

First, theoretical basics regarding eLearning, culture, and culture-sensitive eLearning will be presented. Hereafter, and using China as an East Asia example and Germany as an Europe example, the respective requirements will be demonstrated and analyzed on the basis of a qualitative study. The results of this study will be discussed. The paper concludes with the discussion of limitations and the next research steps.

2 Overview of the theoretical principles

2.1 eLearning

eLearning, also known as IT-supported learning or technology-mediated learning (Gupta & Bostrom, 2013), provides job-related learning for many individuals simultaneously and also allows for an exchange of experiences beyond spatial and temporal borders (Hofmann & Jarosch, 2011). It is further specified as an environment in which the interaction of learners with learning material, co-learners, and trainers is supported by technology (Alavi & Leidner, 2001; Volery & Lord, 2000). eLearning comprises web and computer based trainings, webinars, virtual classrooms, video based tutorials, and serious games, amongst others (Seel & Ifenthaler, 2009). Since this paper

does not focus on one specific method, these will be subsumed in the following under the terms ‘eLearning’, or ‘eLearning application’.

To ensure efficiency and effectiveness of an eLearning application, learning success and satisfaction need to be studied closely. A wealth of articles covering this topic is available. Factors that turned out to be significant parameters in these studies are: the learner, the trainer, the course, the technology, the design, the learning environment and the possibility of personalization (table 1). The models developed in these studies help to define the determinants for learning success and satisfaction of learners (Benson Soong, Chuan Chan, Chai Chua, & Fong Loh, 2001; Ozkan & Koseler, 2009; Shee & Wang, 2008; Sun, Tsai, Finger, Chen, & Yeh, 2008; Volery & Lord, 2000).

Success Factors of eLearning	References
Learner dimension	(Benson Soong et al., 2001; Ozkan & Koseler, 2009; Selim, 2007; Shee & Wang, 2008; Sun et al., 2008; Volery & Lord, 2000)
Instructor dimension	(Benson Soong et al., 2001; Ozkan & Koseler, 2009; Selim, 2007; Sun et al., 2008; Volery & Lord, 2000)
Course dimension	(Ozkan & Koseler, 2009; Shee & Wang, 2008; Sun et al., 2008)
Technology and support dimension	(Benson Soong et al., 2001; Ozkan & Koseler, 2009; Selim, 2007; Sun et al., 2008; Volery & Lord, 2000)
Design dimension	(Sun et al., 2008)
Environmental and collaborative dimension	(Benson Soong et al., 2001; Ozkan & Koseler, 2009; Shee & Wang, 2008; Sun et al., 2008)
Personalization	(Shee & Wang, 2008)

Table 1: Success Factors of eLearning

In summary, these success factors have been shown to be strongly dependent on a consideration of requirements of learners and trainers, a high quality of learning content, a user-friendly system, and the consideration of technological aspects, such as usability of administrative tools and interfaces. Thurmond and Wambach (2004) complement this last aspect with a discussion about an appealing arrangement of the interaction between learners, tutors, content, and the learning system. Obviously, the quality of the learning content in eLearning applications is of utmost importance (Papp, 2000). Shee and Wang (2008) showed that learners attach particular importance to content that is well organized, presented effectively and interactively, and conveyed clearly. In addition, the content should be of appropriate extent (time and depth), as well as useful and customizable (Ozkan & Koseler, 2009).

Learning and memory experts define a successful learning process as the encoding of learning content in the memory – the transmission from working to long-term memory. This can be achieved through an appropriate processing (Köhler, Moscovitch, Winocur, & McIntosh, 2000; Morris, C. Donald, Bransford, & Franks, 1977) and processing depth (Bransford & Johnson, 1972; Craik, Fergus I. M. & Tulving, 1975; Davachi, Mitchell, & Wagner, 2003). Learning contents can for example be presented not only visually, but in addition audibly. However, learning style research emphasizes that the usefulness of such approaches cannot be generally implied on all learners. It has been shown that there are individual preferences for specific types of reception, processing, and reproduction of novel information (Felder, 1993; Kolb & Hay, 1999; van Zwanenberg, Wilkinson, & Anderson, 2000). However, preferences for certain learning

types can change over the course of life, and can be influenced by acquired knowledge, experiences, and situations. This is in line with research showing differences in learning between the young and the elderly (Piolino, Desgranges, Benali, & Eustache, 2002), between genders (Barnfield, Anne M. C., 1999), and in different environments (Hebb, 1947; Peisner-Feinberg et al., 2001). These data support a possible socio-cultural influence on learning and eLearning.

2.2 Culture

The term culture is used in literature in different ways and in different contexts. Herbig (1998) identified 450 different definitions of culture. Nevertheless, a common feature of many definitions is the entirety of shared values and norms. The present work takes this as basis for research. Culture research deals with diversities and commonalities of humans from different cultural backgrounds (Straub et al., 2002). Its goal is to understand influences of culture on social, political, and economic activity spheres. Three approaches dominate the field, focusing on the national, organizational, or group-focused levels. Group-focused approaches strongly refer to models of social identity and deal with questions of consequences of group adherence. On the organizational level, one or several enterprises often serve as reference objects for the investigation of individual and organizational behavior in different cultural contexts (Kummer, Leimeister, & Bick, 2012). A wealth of studies (e.g., Sackmann, 1992; Schein, 1990) investigates the anchoring of values and norms in business context. The present work focuses on the investigation of cultural differences on a national level since it is intended to compare countries. National culture research primarily identifies dimensions that can be used to classify and compare cultures of individual countries (Kummer et al., 2012). One of the most popular contributions in the area of national culture research is the one by Geert Hofstede, who identified in the first instance four cultural dimensions in a large empiric study comprising 53 countries (Hofstede, 2001). These dimensions are: power distance, uncertainty avoidance, individualism versus collectivism, and masculinity versus femininity. In 1991, he added long-term orientation as a fifth factor and in 2010 a sixth factor, called indulgence versus restraint. Besides Hofstede, also other researchers are focusing on national cultures having discovered highly similar value dimensions (e.g., House, Hanges, Javidan, Dorfman, & Gupta, 2004; Lytle, Brett, Barsness, Tinsley, & Janssens, 1995).

2.3 Culture-sensitive eLearning

In order to elucidate whether or not eLearning applications must meet culture-specific requirements, the learning behavior of individuals from different cultural backgrounds has to be investigated and compared. In keeping with Hofstede, cultural differences in learning practices, methods, and strategies – also referred to as didactic socialization (Haller, 1997) - can be explained in the light of the above mentioned six dimensions (Hofstede, 1986; Hofstede et al., 2010). Hence, an evolution of similar cognitive learning behaviors within a cultural area can be hypothesized. This notion is supported inter alia by cultural differences in the evaluation and understanding of the role of teachers, necessity of learning, and application of learning material. However, is it

obvious that a consideration of cultural learning preferences in the design and application of eLearning results in optimized performance?

Several studies (Choi, Lee, Kim, & Jeon, 2005; Ishii, 2004; Singh & Pereira, 2005) showed that design preferences of websites and knowledge platforms are different in Asia, compared to the western world. The consideration of culture-specific preferences regarding color schemes, choice of pictures, aesthetics, symbols, site partitioning, and navigation positively affects click and ecommerce behavior. Inspired by Hofstede's dimensions, this led to the development of a guideline for the design of culture-specific websites (Singh & Pereira, 2005). Results of other studies help defining guidelines for achieving a successful eLearning adoption in different cultures (Anakwe, Kessler, & Christensen, 1999; Chen, Mashhadi, Ang, & Harkrider, 1999; Harfoushi, Obiedat, & Khasawneh, 2010). Those studies focus on the introduction process of eLearning, and have identified the readiness and possible resistance of an innovative technology, the preference for a specific kind of distance learning or communication techniques, and the motivation for use of eLearning, as culture-dependent factors. Studies on culture-dependent user preferences of eLearning application demonstrated that the design of graphical user interfaces should be informed by culture-specific values (Hall, 2010; Mushtaha & Troyer, 2007; Swierczek & Bechter, 2010). The respective education system contributes to individual learning styles and thus also influences acceptance and effectiveness of the learning software. For example, an eLearning application for the East Asian culture area would differ strongly from a European one with respect to the presentation of academic references, formalities of interaction with the learner, formulation of instructions and assessment of exercise solutions, as well as patterns of reasoning (Kamentz & Mandl, 2003).

Taking all this into consideration, the results are wide-ranging, and the models used are discussed at various abstraction levels. It is likely that success factors of eLearning, in this context hitherto not investigated, such as learner, instructor, course, technology, design, and environment also underlie the culture effect (Gallivan & Srite, 2005; Leidner & Kayworth, 2006).

3 Research framework and methods

Lenartowicz and Roth (1999) described four ways of identifying valid cultural effects: Ethnological description; Use of Proxies-Regional Affiliation; Direct Values for Inference and Indirect Values Inference. In the present work cultural effects are analyzed by the use of nationality proxies (Hofstede, 1991; Steenkamp, 2001). It is not intended to explain the roots of cultural differences but merely to identify and contrast them for practical usage (culture-sensitive eLearning applications).

To identify the culture-specific requirements for eLearning, a qualitative and comparative study was performed in the form of interviews. These were conducted orally, and based on the model of (Sun et al., 2008), which was chosen due to its superior explanatory power (67% of the variance). In addition, this model provides a more detailed characterization of dimensions in comparison to other success factor models of eLearning using six dimensions and in total 13 factors (Sun et al., 2008).

3.1 Data collection

Interview questions targeted the factors that are essential for successful eLearning according to the interviewees. Data collection and analysis techniques were informed by the principle of Appreciative-Inquiry (AI) (Schultze & Avital, 2011). In a first step, design proposals for culture-sensitive eLearning were derived from interviewees' statements and collected in the form of a requirement catalog. During the course of the interviews, currently used and successfully implemented qualification approaches in the Chinese culture area were explored. Together with the interviewees, a picture of the future of eLearning applications was then outlined.

4 Results

Out of 97 contacted personnel development, eLearning, and East Asia experts, 32 participated in the interviews, each lasting for one to two hours (table 2).

Measure and items	Frequency	Percentage (%)
Gender		
Male	24	75
Female	8	25
Age		
30-40	6	19
41-50	14	43
>51	12	38
Nationality		
German	24	75
Chinese	5	16
Other	3	9
Chinese experiences (years)		
0	2	6
1-2	8	25
3-4	8	25
5-6	0	0
>6	14	44
Experiences in Chinese personnel development processes (years)		
0	4	12,5
1-2	8	25
3-4	8	25
5-6	4	12,5
>6	8	25
Experiences in eLearning (years)		
0	2	6
1-2	15	47
3-4	4	12,5
5-6	5	15,5
>6	6	19

Table 2: Subject demographics (n=32)

4.1 Learner dimension

The ability of the learner to efficiently use eLearning for the acquisition of knowledge strongly depends on his familiarity with computers, the penetration of technology into his private and professional world, and if the learner feels confident about computers' potential to assist in the development of competencies. Interview questions covered the following aspects:

- What are the main differences between a German and a Chinese eLearning participant?
- Which observations did you make regarding the handling and use of computers in Germany versus China?
- Which positive aspects of computers, tablets, or smartphones do Germans and Chinese take most pleasure in?

According to the interviewees, Chinese show a pronounced play instinct, satisfied in competitions, and paired with a high affinity towards technology.

*A smartphone is a prestigious object and a 'must have' – no matter the cost.
[Program Manager of eLearning]*

More than 80% of the interviewees reported that accompanying measures for the introduction of eLearning are rarely utilized due to the strong experience in the handling of computers. One third even suggest that support offers such as manuals are not necessary.

4.2 Instructor dimension

eLearning applications are usually completed by oneself, and learning place as well as time can be chosen freely. The question arises whether or not a tutor should be available in case of queries concerning contents. In theory, this offer can strongly contribute to learning success and satisfaction. 28 of 32 interviewees agree that this is more important for Chinese than for Germans. They take the view that whereas in Germany it is not mandatory, it is of utmost importance to implement it in the Chinese culture area. Two aspects were emphasized: a fear of 'losing face', and a strong focus on the teacher. In contrast to Germany, where queries during class are welcome and promoted, Chinese often fear being suspected of not knowing something, which might be considered embarrassing. In addition, they worry that the question might disgrace the teacher if he or she does not know the answer. The anonymity of eLearning could increase the willingness to ask questions, at best even anonymously, and at the same time improve learning success.

50% of the interviewees reported that learning in China mainly happens under the guidance of a teacher.

Group work, open interactions between learners and teachers, open treatment of criticism, and exchange of experiences in small groups are only fringe phenomena. [Exchange teacher at Chinese vocational training college]

Interviewees also phrased a request to complement the online tutor with a virtual coach guiding students through the learning course. For the German culture area, they support the idea of a strongly self-directed learning approach with the completion of goals in a self-defined order.

4.3 eLearning course dimension

With regard to the assessment of flexibility of eLearning applications, no culture-specific tendencies could be identified in the framework of the interviews. However, a

large diversity of perspectives was obtained. 15 of 32 interviewees stated that a demand for ‘boundlessness’ is a typical German phenomenon, and that structural rigidities might result in a perception of external control and negatively affect learning motivation and satisfaction in German students. 11 of the 32 interviewees suggested that in a time of great change, as currently happening in China, knowledge inventories are altered and require a rapid and self-directed acquisition of this knowledge, not least to decrease dissatisfaction due to ignorance. Six of the interview group agreed that general statements cannot be made.

eLearning and the associated flexibility are only applicable to target groups that are able to learn self-motivated and self-directed. [Trainer working in China]

Course quality is dependent on how eLearning is applied to develop and improve competences. The interviewees’ statements (more than 70%) led to the conclusion that interactive, clickable, and multimedia elements are important success factors in Germany as well as in China.

4.4 Technology and support dimension

As a consequence that eLearning should contain multimedia and interactive elements, specific technological requirements need to be considered. Long loading times or interruptions due to connection or compatibility issues can result in frustration. This is considered merely a hygiene factor for Germany according to 60% of the interviewees, relevant only in case of very poor quality, and considering the currently high standards with respect to Internet connection and browser availability.

In China, however, the availability and quality of Internet and Intranet connections at work or in school are considered a central success criterion. [East Asia expert]

4.5 Design dimension

Besides a graphical processing of learning content, design considerations also include the perceived user friendliness and added value for the learner overall. Analysis of the interviews revealed three important factors for the Chinese culture area: aesthetics, the world of images and symbols, and navigation. Bright and striking colors, a centered alignment of text and graphics, emotional charging of learning contents with nice scenarios, nature-related pictures, as well as a guided navigation with big buttons were considered important design aspects in order to increase user friendliness by the majority (> 60%) of interviewees.

For Germany, you need a cleaned up, clearly structured design with simple pastel colors. [eLearning Designer of a German eLearning company]

No culture-specific particularities could be identified regarding perceived usefulness.

4.6 Environmental and collaborative dimension

*Tests for determination of the current learning status and offers of communicative exchange can optimize learning processes and increase success and satisfaction.
[Chinese vocational teacher]*

Status controls, anonymously compared with the results of fellow students, were considered important especially for China. According to the East Asia experts, competition and measuring oneself against others enjoy great popularity. The offer to interact with other students, however, was estimated to be more relevant for Germany, where a collective understanding and passing of exams is paramount. Despite a collectivist social image, learners in China rely mainly on themselves, pursuing the goal of scoring better than competitors and standing out from the masses.

5 Discussion

In this section, we want to discuss the findings we derived through our qualitative approach and point out theoretical as well as practical implications for the transfer of standardized eLearning concepts to foreign culture areas, as defined in research question one. We have shown that today there are major cultural requirement differences in the eLearning application and design in Europe versus East Asian areas. As addressed in the second research question, we will discuss the requirements in accordance with the previously used eLearning success dimensions.

Success of eLearning is defined as interplay of satisfaction with the application and knowledge growth by both German and East Asian experts (cf. Bitzer & Janson, 2014 for an extensive review of learning success and satisfaction of eLearning). This is consistent with existing study results (Benson Soong et al., 2001; Ozkan & Koseler, 2009; Shee & Wang, 2008; Sun et al., 2008; Volery & Lord, 2000). However, from this it cannot be stated that a one-fits-all eLearning application is in general not expedient because influencing variables for successful eLearning are differentially prioritized and characterized. With the exception of the eLearning course dimension, the dimensions were described differently depending on the cultural area, which is due to the context of the learner dimension. If an eLearning application is targeting an East Asian audience, the context of the action situation does not only encompass individual prior knowledge or learners' interests and preferences, but also the different aspects of cultural background, which influence the learning process (Kamentz & Mandl, 2003). The roles of trainers and learners as well as the use of learning material are differently assessed and understood due to didactic socialization. This confirms results on culture-dependent learning methods by Fischer and Kopp (2007) as well as Hofstede et al. (2010). To allow conclusive and final statements regarding mechanisms of action, further analyses are required.

Requirements of culture-specific eLearning could be specified in the present study on the basis of the dimensions defined by Sun et al. (2008). Based on the interview results, practical implications for the design and use of eLearning in the cultural context of Germany and China are identified (table 3).

Regarding learner dimensions, the results are surprising. Previous research considering dimensions of national culture and IS research suggests that countries displaying high

uncertainty avoidance usually need guidance with respect to the user interface (Kamentz & Mandl, 2003). In contrast, our results, based on expert interviews, suggest eLearning solutions for China that do not provide extensive support and guidance. Vice versa, this is considered more necessary for Germany.

Dimension	Germany	China
Learner dimension	<ul style="list-style-type: none"> - Support for take-up measures and pilot actions in order to increase the acceptance of the eLearning application among learner - Motivational elements (e.g. praise upon successful completion of a chapter) - Help button, invoking context-sensitive support in case of handling errors - Telephone support and optional remote support 	<ul style="list-style-type: none"> - Device-independent user-interface - Statistics of processed topics and chapters - No need of support or instruction manual, at most short video-based instruction tutorials
Instructor dimension	<ul style="list-style-type: none"> - Forum for open discussion of questions from the lectures - User-controlled processing of the eLearning contents 	<ul style="list-style-type: none"> - questions anonymously directed to online tutor - Virtual coach, guiding the learners through the eLearning application
eLearning course dimension	<ul style="list-style-type: none"> - Temporal and spatial flexibility for processing of the learning content - Short units of learning (learning time maximum of 10 minutes) - Interactive, multimedia components 	
Technology and support dimension	<ul style="list-style-type: none"> - browser-independent 	<ul style="list-style-type: none"> - Offline availability of the eLearning application (download option or CD-ROM/DVD version) - Particular attention to data protection and data security
Design dimension	<ul style="list-style-type: none"> - Clear structure of user-interface - Non-linear, free navigation through the application - Simple pastel colors 	<ul style="list-style-type: none"> - Bright and striking colors - Centered alignment of text and graphics - Emotional charging of learning contents with nice scenarios, nature-related pictures - Guided navigation with big buttons and pictures - Linear navigation with ramifications to basic learning topics and further information (instant access to the next chapter is only possible after completion of the prior chapter)
Environmental and collaborative dimension	<ul style="list-style-type: none"> - Saving of individual learning pathways - Exchange of information and lecture materials among learners (e.g. alongside lecture forums and chats) - Individual 'lessons learned' exercises (repetition of the exercise or guided solution in case of failing) 	<ul style="list-style-type: none"> - Charts for orientation between the chapters - Game-based 'lessons learned' exercises (anonymously and in comparison to other learners) - Button providing the solution in case of failure

Table 3: Requirements of an eLearning application in Germany and China

A possible explanation is that cultural development considering IT and eLearning in China has outpaced western countries such as Germany. As a consequence, device-independent eLearning solutions might be helpful in China in order to support ubiquitous learning possibilities that might not be feasible in western countries at this time (Fischer & Kopp, 2007). Previously reported propositions were confirmed by our experts for the instructor dimension. China still has a teacher-centric learning culture,

whereas Germany displays a low power distance and a high degree of self-regulated learning (Fischer & Kopp, 2007; Swierczek & Bechter, 2010). Thus, a culture-sensitive eLearning application should take these differences into account. Possible design implications include an avatar-based guidance for the eLearning application as well as guidance through the learning process. Sun et al. (2008) emphasize the possibility of contacting an online tutor as a major contributor to learning satisfaction and success. One reason for such guidance is that learning does not need to be interrupted, thus improving the 'handling' of eLearning (Arbaugh, 2002). A formative assessment of learning success would be appropriate to demonstrate progress to the learner and also the target-oriented appropriation of the eLearning application (Gupta & Bostrom, 2013). Anonymous requests to the teacher in order to prevent a possible loss of face of both teacher and student should also be allowed (Lehmann & Söllner, 2014).

Considering the course dimension of eLearning, there are requirements that are suitable for both cultural backgrounds, including the general potentials of eLearning such as independence of place and time to learn, the possibility of short learning units and new interactive multimedia elements that convey complex learning content and a strong individual adaptation (Ozkan & Koseler, 2009), which is also in common with study results of learning styles (Felder, 1993; van Zwanenberg et al., 2000). Whereas Sun et al. (2008) show a strongly significant effect of this dimension, more recent replication studies assigned this effect to the organizational context, differing in relation to the organizational structure. In the context of companies, flexibility of eLearning is more important than in the context of higher education (Wegener, Krause, Flohr, & Leimeister, 2012). The technology dimension did not reveal any major differences between both countries. However, since many vocational education centers do not provide Internet access in China, a major requirement is that the eLearning applications are also available offline. Hence, software-as-a-service solutions and connected business models are not implementable, or it is at least more difficult to do so. Our results regarding the design dimension strongly confirm results from IS research, especially in the area of user interface research (Hall, 2010; Mushtaha & Troyer, 2007; Swierczek & Bechter, 2010). Germans typically prefer a plain and simple user interface with a clear navigational structure. In contrast, Chinese prefer the traditional colors, a high image to text ratio and a clear-guided navigation with a lot of signals to indicate proper use of the eLearning application. At first glance, these results are not surprising. However, we reviewed several eLearning tools in China in the course of our analysis that did not fulfill these criteria. They were often very similar to western tools regarding design, possibly due to an acculturation process and cultural imperialism (Leidner, 2010). Hence, it might be interesting for research and practice to actually employ such culturally adapted eLearning applications for distance learning purposes, and to assess how the learning outcomes are actually influenced by such user interface design decisions. Finally, it is worth discussing the environmental dimension. Contradictory to cultural theory, Germans display a collectivistic learning culture including the possibility to share learning materials and to strongly interact with other learners, for example using discussion forums or chats (Anakwe et al., 1999). In contrast, our interview results suggest that China needs more anonymous eLearning tools that take this collaboration of work into consideration. Nevertheless, considering China as a performance and long-term oriented country, students seek the challenge with other

learners. Therefore, a possible design implication is the use of pseudonyms and the opportunity to compare learning success, for example with game-based solutions.

6 Limitations and Future Research

Our study of course has limitations but it nevertheless offer opportunities for further research in the learning culture context. To investigate whether success factors of eLearning differ between cultures, we chose a comparative qualitative approach. 32 experts from Germany and China participated in the interviews. Broader quantitative analyses are now required to provide empirical support for our results, including a bigger sample and further countries. As has been shown before, cultural theory requires deep insight, especially when investigating complex cultures like the Chinese (Lenartowicz & Roth, 1999; Steenkamp, 2001). Nationality proxies are suitable for first analysis but this approach is a mere classification method that lacks measures to test hypothesized relationships regarding the influence of culture on dependent variables. Therefore, they should be enriched with mixed methods like ethnological description, direct values for inference, or indirect values for inference, to provide explanatory power.

In addition, our research paper comes with several threats to validity. First of all, characteristics of our sample could threaten the external validity, since we did not randomly choose the interviewees in the study. Also, we do not claim that our results can be universally generalized, because we only focused on our specific example of Germany and China. However, future research should acknowledge this gap by investigating how our insights can be transferred to other contexts and thus foster an implementation of a cultural sensitive eLearning.

7 Conclusion

The present study highlights that there are practical implications for eLearning due to cultural differences on the learner, instructor, technology, design, and environment levels. Taking all this into consideration can improve learning success and satisfaction with the eLearning application. While an operationalization of culture remains challenging, our nationality proxy approach constitutes a contribution towards capturing this difficult and hard-to-define concept. The implications of this paper for further research relate to culture-sensitive success factors of eLearning measures regarding overall satisfaction and learning success. Beyond culture-specific requirements of eLearning success (Gallivan & Srite, 2005; Leidner & Kayworth, 2006), they also provide a correlation between learning context and eLearning usefulness as evidenced by the comparison of European versus East Asian learning context. Further research should examine this correlation by including additional countries and research contexts beyond the studies by Swierczek and Bechter (2010), Fischer and Kopp (2007) and Zhang (2004), and progress to a quantitative approach. Finally, our results strongly support the need for increased localization instead of standardization. The overlap between culture-specific and purely individual characteristics of the learner is still an open question. The developments of methods which enable a differentiation of such

characteristics constitute a suitable starting point for sustained investigations (Janson, Peters, & Leimeister, 2014; Kamenz & Mandl, 2003; Leimeister, 2012).

8 Acknowledgements

Our thanks go to all participating experts, employees and students of the Kassel University without whose support the study would not have been possible. We would like to thank our colleagues, the associate editor and the reviewers for their great and very helpful feedback, which was extremely valuable for the present work and for future research. The study was developed within the framework of the project kuLtig (www.projekt-kuLtig.de), funded by the German Federal Ministry of Education and Research (FKZ: 01BEX05A13).

9 References

- Alavi, M., & Leidner, D. E. (2001). Research Commentary: Technology-Mediated Learning--A Call for Greater Depth and Breadth of Research. *Information Systems Research*, 12(1), 1–10. doi:10.1287/isre.12.1.1.9720
- Anakwe, U. P., Kessler, E. H., & Christensen, E. W. (1999). Distance Learning and Cultural Diversity: Potential Users' Perspective. *International Journal of Organizational Analysis*, 7(3), 224–243. doi:10.1108/eb028901
- Arbaugh, J. (2002). Managing the On-Line Classroom. *The Journal of High Technology Management Research*, 13(2), 203–223. doi:10.1016/S1047-8310(02)00049-4
- Barnfield, Anne M. C. (1999). Development of sex differences in spatial memory. *Perceptual and Motor Skills*, 89(1), 339–350. doi:10.2466/pms.1999.89.1.339
- Benson Soong, M., Chuan Chan, H., Chai Chua, B., & Fong Loh, K. (2001). Critical success factors for on-line course resources. *Computers & Education*, 36(2), 101–120. doi:10.1016/S0360-1315(00)00044-0
- Bitzer, P., & Janson, A. (2014). Towards a Holistic Understanding of Technology-Mediated Learning Services - a State-of-the-Art Analysis (Accepted for Publication). *ECIS 2014 Proceedings (forthcoming)*,
- Borchert, M. (Ed.). (2009). *Handwerk & Dienstleistung. Systematische Gestaltung von Leistungen und Prozessen in KMU: Voraussetzung für erfolgreiche Internationalisierung von Dienstleistungen*. Ingolstadt: Heizmann.
- Bransford, J. D., & Johnson, M. K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, 11(6), 717–726. doi:10.1016/S0022-5371(72)80006-9
- Chen, A.-Y., Mashhadi, A., Ang, D., & Harkrider, N. (1999). Cultural Issues in the Design of Technology-Enhanced Learning Systems. *British Journal of Educational Technology*, 30(3), 217–230. doi:10.1111/1467-8535.00111

- Choi, B., Lee, I., Kim, J., & Jeon, Y. (2005). A qualitative cross-national study of cultural influences on mobile data service design. In *CHI '05 - Proceedings of the SIGCHI Conference on Human Factors in Computing Systems 2005* (p. 661).
- Craik, Fergus I. M., & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology: General*, *104*(3), 268–294. doi:10.1037/0096-3445.104.3.268
- Davachi, L., Mitchell, J. P., & Wagner, A. D. (2003). Multiple routes to memory: distinct medial temporal lobe processes build item and source memories. *Proceedings of the National Academy of Sciences of the United States of America*, *100*(4), 2157–2162. doi:10.1073/pnas.0337195100
- Felder, R. M. (1993). Reaching the tier: Learning and teaching styles in college science education. Retrieved from <http://cfcc.edu/SACS/QEP/documents/ReachingthesecondtierR.Felder1993.pdf>
- Fischer, B., & Kopp, B. (2007). Evaluation of a western training concept for further education in China. *interculture journal*, *6*(4), 57–76. Retrieved from <http://www.interculture-journal.com/index.php/icj/article/view/61>
- Fraunhofer MOEZ. (2012). *Treibende und hemmende Faktoren im Berufsbildungsexport aus Sicht deutscher Anbieter*. Retrieved from http://berufsbildungsexport-meta.de/system/publications/documents/000/000/001/original/FraunhoferMOEZ_Studie_Treiber_Hemmnisse_final.pdf?1371046861
- Gallivan, M., & Srite, M. (2005). Information technology and culture: Identifying fragmentary and holistic perspectives of culture. *Information and Organization*, *15*(4), 295–338. doi:10.1016/j.infoandorg.2005.02.005
- Gupta, S., & Bostrom, R. (2013). An Investigation of the Appropriation of Technology-Mediated Training Methods Incorporating Enactive and Collaborative Learning. *Information Systems Research*, *24*(2), 454–469. doi:10.1287/isre.1120.0433
- Hall, A. (2010). Accounting for Cultural Preferences in the Design of Online Learning in the Arab World. *Educational Technology*, *50*(3), 18–21. Retrieved from <http://asianvu.com/bookstoread/etp/>
- Hall, E. T., & Hall, M. R. (1990). *Understanding cultural differences*: Intercultural press Yarmouth, ME.
- Haller, H. D. (1997). Zur Frage der kulturellen Dimension von Identität in der Lernstilforschung—Untersuchung über Kultureinstellungen unter didaktischer Perspektive. *Auf der Suche nach Identität—pädagogische und politische Erörterungen eines gegenwärtigen Problems*. Weinheim: Deutsche Studien Verlag, 153–166.
- Harfoushi, O. K., Obiedat, R. F., & Khasawneh, S. S. (2010). E-Learning Adoption inside Jordanian Organizations from Change Management Perspective. *International Journal of Emerging Technologies in Learning*, *5*(2).

- Hebb, D. O. (1947). The effects of early experience on problem solving at maturity. *Am Psychol*, 2, 306–307.
- Hofmann, J., & Jarosch, J. (2011). IT-gestütztes Lernen und Wissensmanagement. *HMD Praxis der Wirtschaftsinformatik*, 48(1), 6–17. doi:10.1007/BF03340545
- Hofstede, G. (1986). Cultural differences in teaching and learning. *International Journal of Intercultural Relations*, 10(3), 301–320. doi:10.1016/0147-1767(86)90015-5
- Hofstede, G. (1991). *Culture and Organizations: Software of the Mind*.: McGraw-Hill.
- Hofstede, G. H., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind: intercultural cooperation and its importance for survival* (3rd ed). New York: McGraw-Hill.
- iMOVE. (2013). *Trendbarometer: Exportbranche Aus- und Weiterbildung*. Retrieved from https://www.imove-germany.de/cps/rde/xbcr/imove_projekt_de/p_iMOVE_Trendbarometer_2013_sicher.pdf
- Ishii, K. (2004). Internet use via mobile phone in Japan. *Telecommunications Policy*, 28(1), 43–58.
- Janson, A., Peters, C., & Leimeister, J. M. (2014). Der Weg zur effizienten Bereitstellung kultursensitiver Dienstleistungen - erste Schritte mittels systematischer Modularisierung. In O. Thomas & M. Nüttgens (Eds.), *Dienstleistungsmodellierung 2014* .
- Kamentz, E., & Mandl, T. (2003). Culture and E-Learning: Automatic Detection of a Users' Culture from Survey Data. In Vanessa Evers, Kerstin Röse, Pia Honold, José Coronado, & Donald L. Day (Eds.), *Designing for Global Markets 5, IWIPS 2003, Fifth International Workshop on Internationalisation of Products and Systems, Where East meets West, Berlin, Germany, 17-19 July 2003* (pp. 227–240). Product & Systems Internationalisation, Inc.
- Köhler, S., Moscovitch, M., Winocur, G., & McIntosh, A. R. (2000). Episodic encoding and recognition of pictures and words: role of the human medial temporal lobes. *Brain activity and cognitive processes*, 105(2–3), 159–179. doi:10.1016/S0001-6918(00)00059-7
- Kolb, D. A., & Hay, T. R. (1999). *Learning style inventory: version 3*: Hay/McBer Training Resources Group.
- Krcmar, H., Böhmann, T., & Sarkar, R. (Eds.). (2010). *Export und Internationalisierung wissensintensiver Dienstleistungen* (1. Aufl). Lohmar, Köln: Eul.
- Lehmann, K., & Söllner, M. (2014). Theory-driven design of a mobile-learning application to support different interaction types in large-scale lectures (Conditionally Accepted for Publication). *ECIS 2014 Proceedings (forthcoming)*,
- Leidner, D. E. (2010). Globalization, culture, and information: Towards global knowledge transparency. *The Journal of Strategic Information Systems*, 19(2), 69–77. doi:10.1016/j.jsis.2010.02.006
- Leidner, D. E., & Kayworth, T. (2006). Review: A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict. *MIS Quarterly*, 30(2), 357–399. doi:10.2307/25148735

- Leimeister, J. M. (2012). *Dienstleistungsengineering und -management*. Berlin, Heidelberg: Springer Berlin Heidelberg.
- Lenartowicz, T., & Roth, K. (1999). A Framework for Culture Assessment. *Journal of International Business Studies*, 30(4), 781–798. doi:10.2307/155345
- Morris, C. Donald, Bransford, J. D., & Franks, J. J. (1977). Levels of processing versus transfer appropriate processing. *Journal of Verbal Learning and Verbal Behavior*, 16(5), 519–533. doi:10.1016/S0022-5371(77)80016-9
- Mushtaha, A., & Troyer, O. (2007). Cross-Cultural Understanding of Content and Interface in the Context of E-Learning Systems. In N. Aykin (Ed.), *Usability and Internationalization. Global and Local User Interfaces. Second International Conference on Usability and Internationalization, UI-HCII 2007, Held as Part of HCI International 2007, Beijing, China, July 22-27, 2007, Proceedings* (Vol. 4560, pp. 164–173). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education*, 53(4), 1285–1296. doi:10.1016/j.compedu.2009.06.011
- Papp, R. (2000). Critical Success Factors for Distance Learning. *AMCIS 2000 Proceedings*. Retrieved from <http://aisel.aisnet.org/amcis2000/104>
- Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., & Yazejian, N. (2001). The Relation of Preschool Child-Care Quality to Children's Cognitive and Social Developmental Trajectories through Second Grade. *Child Development*, 72(5), 1534–1553. doi:10.1111/1467-8624.00364
- Piolino, P., Desgranges, B., Benali, K., & Eustache, F. (2002). Episodic and semantic remote autobiographical memory in ageing. *Memory (Hove, England)*, 10(4), 239–257. doi:10.1080/09658210143000353
- Schultze, U., & Avital, M. (2011). Designing interviews to generate rich data for information systems research. *Information and Organization*, 21(1), 1–16. doi:10.1016/j.infoandorg.2010.11.001
- Seel, N. M., & Ifenthaler, D. (2009). Online lernen und lehren. Retrieved from <http://www.reinhardt-verlag.de/de/katalog/titel/pdf/inhalt32887.pdf>
- Selim, H. M. (2007). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & Education*, 49(2), 396–413. doi:10.1016/j.compedu.2005.09.004
- Shee, D. Y., & Wang, Y.-S. (2008). Multi-criteria evaluation of the web-based e-learning system: A methodology based on learner satisfaction and its applications. *Computers & Education*, 50(3), 894–905. doi:10.1016/j.compedu.2006.09.005
- Singh, N., & Pereira, A. (2005). *The culturally customized Web site: Customizing web sites for the global marketplace*. Burlington, MA: Elsevier Butterworth-Heinemann.
- Steenkamp, J.-B. E. M. (2001). The role of national culture in international marketing research. *International Marketing Review*, 18(1), 30–44.

- Straub, D., Loch, K., Evaristo, R., Karahanna, E., & Srite, M. (2002). Toward a Theory-Based Measurement of Culture. *Journal of Global Information Management*, 10(1), 13–23.
- Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50(4), 1183–1202. doi:10.1016/j.compedu.2006.11.007
- Swierczek, F. W., & Bechter, C. (2010). Cultural Features of e-Learning. In J. M. Spector, D. Ifenthaler, P. Isaias, Kinshuk, & D. Sampson (Eds.), *Learning and Instruction in the Digital Age* (pp. 291–308). Boston, MA: Springer US.
- Thurmond, V., & Wambach, K. (2004). Understanding interactions in distance education: A review of the literature. *International Journal of Instructional Technology and Distance Learning*, 1(1).
- van Zwanenberg, N., Wilkinson, L. J., & Anderson, A. (2000). Felder and Silverman's Index of Learning Styles and Honey and Mumford's Learning Styles Questionnaire: How do they compare and do they predict academic performance? *Educational Psychology*, 20(3), 365–380. doi:10.1080/713663743
- Volery, T., & Lord, D. (2000). Critical success factors in online education. *International Journal of Educational Management*, 14(5), 216–223. doi:10.1108/09513540010344731
- Wegener, R., Krause, N., Flohr, P., & Leimeister, J. M. (2012). Determinanten der Lernerzufriedenheit IT-gestützter Lerndienstleistungen in Betrieb und Hochschule. In 2012, Multikonferenz Wirtschaftsinformatik (MKWI) (Ed.), *Tagungsband der Multikonferenz Wirtschaftsinformatik (MKWI) 2012*. Braunschweig, Germany.
- Zhang, Y. (2004). *Unavoidable Challenge: Investigation of and Thoughts on Distance Higher Education in China: Nov. 15, Education Newspaper of China*.