
ACCEPTANCE OF DIGITAL LEARNING TOOLS IN THE CONTEXT OF NON-TRADITIONAL STUDENTS

Joachim Stöter, Carl von Ossietzky University Oldenburg, Germany

Adult students in higher education

The characteristics and needs of adult students are the vital starting point in the instructional design process (Morrison et al., 2011; Zumbach, 2010). In selecting appropriate media, the acceptance of e-learning tools and services by the student target population should be taken into account. Adult education requires different approaches compared to teaching children or undergraduate students. Adults accumulate knowledge and experience during their lifetime and due to the influence of experience, adult learning is more practical, life orientated and problem based (Włodkowski, 2008). According to Ke (2010) high-quality online learning for adults is characterized by: “1) social interaction and collaboration with peers, 2) connecting new knowledge to past experience, 3) immediacy in application, 4) a climate of self-reflection, and 5) self-regulated learning” (p.808). Such an approach to adult learning is characterized by deep learning (Fink, 2003).

For the instructional design process for programs for adult learners, it is worth looking on the experiences made in the field of university programs, because the distinction between traditional, distance and so-called non-traditional students (NTS) is becoming blurred (Thompson, 1998; Teichler & Wolter, 2004; Kerres & Lahne, 2009). Although “non-traditional student” is now a frequently used term, a widely accepted definition does not exist. Ely described non-traditional students in just a few sentences: “I am your adult student, age 25 or older, who has returned to school either full-time or part-time. While attending school I also maintain additional adult life responsibilities such as employment, family, and financial commitments. [...] I am your non-traditional student” (Ely, 1997, p.1). These are the basic characteristics typical for adult students. In order to address the needs of this student group – and NTS and adults are one rapidly growing group within university students – their distinctive characteristics need to be taken into account. Thompson (1998) records that demographic and situational variables like gender, age, location, life roles, ethnic background and disabilities emerged as key aspects in various studies. Research often focuses on some of these aspects and reveals these elements are linked to the concept of open and distance learning (Chao & Good, 2004), because open learning demands more intrinsically motivated students and removes barriers to learning opportunities for adults. But a specific digital learning offering will only be viewed as important if adults perceive a clear benefit in using

these online learning tools (Kreidl, 2011). In the context of using e-learning tools, the question of acceptance has turned out to be essential (Küpper, 2005; Kreidl, 2011). Therefore this paper will have a look on the acceptance of e-learning tools by adult students.

Acceptance of eLearning formats for adult students

The major reason, why an online learning scenario is especial useful for adult students, is the argument of learning “anytime and anywhere”. While this may indeed look like a very strong reason for the implementation of new media in learning contexts (cf. Horton, 2000), little is known whether students do understand or need the benefits of new media for time- and space-flexible learning. Various studies can be found regarding the media use of students in informal settings (cf. Kvavik & Caruso, 2005; Salaway et al., 2006; Brandtzaeg, 2010), but only one study (Johnson & Kulpa, 2007) especially analyzed students’ use of new media for their studies. In order to reveal the acceptance of these tools, a theoretical framework is needed to analyze various aspects, which may seem important in judging a tool as relevant.

Küpper (2005) developed a model of acceptance based on an analysis of existing models regarding the use of e-learning offerings and programmes in business-related contexts. She confirms her empirical findings as follows: “In nearly all models, three groups of impact variables can be distinguished: individual-related, business-related and technical/innovation-related input variables” (Küpper, 2005, p.144). The model is particularly appropriate for investigating the use of electronic learning opportunities by students, because – understanding higher education institutions as businesses – Küpper’s dimensions can be interpreted in the higher and adult education context as well as in the business context. The acceptance of digital learning formats is therefore significantly influenced by these three dimensions as shown in Figure 1.

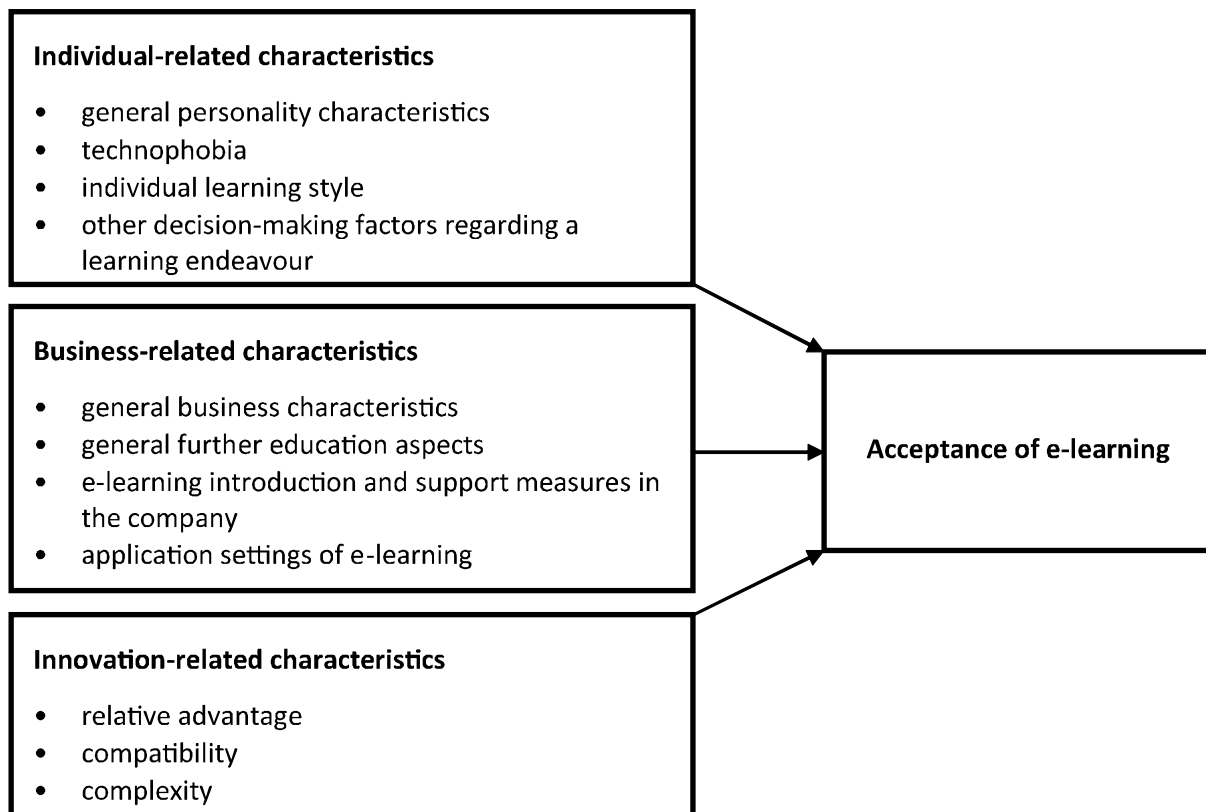


Figure 1. Küpper's acceptance model (Küpper, 2005)

Within these dimensions, Küpper outlines concrete sub-dimensions of superordinate impact variables (e.g. 'time saving' as a sub-dimension of the innovation-related impact variable 'relative advantage' (Küpper, 2005, p.150). Küpper's (2005) model was designed based on the premise of deriving concrete hypotheses which can then be analysed empirically. The presented study focused on all three dimensions of this model, in this paper only the last dimension – innovation-related characteristics – will be discussed on the premise of analyzing the perceived relevance of e-learning tools through students.

An important aspect with regard to Küpper's innovation-related characteristics (2005) is the relative advantage that the user sees in his or her use of digital learning formats. In the ongoing debate about the benefits of e-learning, the opportunity for learning independent of time and space is always emphasised (Horton, 2000; Dreer, 2008). This benefit makes it possible for students to individually regulate their learning time. For example, adult students who are under a lot of work or social time constraints (e.g. childcare), tend to value the use of digital learning formats as being important (Zawacki-Richter & Müskens, 2013). Two hypotheses were developed:

H1a: Students with family obligations (childcare, care of a relative) assess the use of digital learning formats as being more important than their fellow students do.

Furthermore, one can expect that students who generally have a high desire for flexible learning opportunities that are more compatible with an individual life style (e.g. summer

schools, tuition per module, unusual course times, longer self-study phases, more flexible exam system), value digital learning formats as being important:

H1b: Students with a need for flexible learning opportunities value the use of digital learning formats as being more important than their fellow students do.

Results

The data for this paper was collected during a project (Stu+Be) funded by the German Federal Ministry of Education and Research (Kerres et al., 2012). A total of 3,801 students from three universities (Carl von Ossietzky University Oldenburg, University of Duisburg-Essen, Technical University of Dortmund) took part survey during the winter semester 2009/10. The students were asked during their lectures to fill in the survey. The sample consists of 3,687 undergraduate students and a small subgroup of 114 students enrolled in continuing education programmes. Participating students were enrolled in the departments of engineering (34.7%), economics (35.2%) and social science (30.1%); they completed a paper-pencil based questionnaire. The opening part of the questionnaire contained general study-related questions. The second part collected details about the students' professional experience and present occupational situation (including part-time jobs, etc.). In the next step, student expectations regarding the organisation of their study programme and the instructional design of learning environments were collected. This part included a list of different digital learning formats (see below). The next part of the questionnaire asked about study motivation and orientation patterns (practical and academic). The questionnaire concluded with questions to collect personal data.

The influence of innovation-based characteristics on the importance assessment of digital learning formats in higher education was tested. Referring to the theoretical background developed by Küpper (2005), particular predictors can be identified that focus on the aspect of personal, relative advantage through the use of digital learning formats.

A multivariate regression analysis provides a descriptive overview of (selected) possible factors that have an impact on the importance assessment of digital learning formats. Multivariate analysis can illustrate relationships in detail and minimise the distortion of possible overlapping effects between variables. As part of the multivariate regression analysis, predictors of the importance assessment of digital learning formats were identified (see Table 1). Table 1 presents the regression coefficients (b), the standard errors (SE) and the standardised regression coefficients (β), allowing a comparison of the impact of the different predictors. The model explains 25% of the variance.

Table 1: Determinants of the importance assessment of digital learning formats for the dimension Innovation-related characteristics

Importance assessment of the digital learning formats	OLS-Regression		
<i>Innovation-related characteristics</i>	b	SE	β
Number of working hours (besides university) per week	0.00	(0.00)	0.00
Family commitments	0.10+	(0.06)	0.03
Summer schools	0.10**	(0.01)	0.15
Tuition fees per study-module	0.06**	(0.01)	0.10
Unusual course times	0.06**	(0.01)	0.08
Longer periods of self-study	0.11**	(0.01)	0.14
Flexible examination system	0.10**	(0.02)	0.10
N/ R2	2424/ 0.25		

**p<.01, *p<.05, +p<.10

Hypothesis 1a states that students who are under time constraints due to their employment, value digital learning formats as being beneficial and therefore more important. However, there is no evidence to confirm this hypothesis. There is a marginal effect for students with family obligations; thus hypothesis 1b can be partly confirmed. There is a tendency for students with family duties to value the flexibility regarding time and space as being beneficial and important; and such flexibility is supported by means of digital learning formats. However, this effect is vague and its significance is considerably weak. Hypothesis 1b can be confirmed: students expressing a need for innovative and flexible learning formats at university and rated digital learning formats higher. The effect is confirmed for all innovative and flexible learning formats covered in the questionnaire.

Considering the innovation-related characteristics, it can be seen that demands due to employment while studying do not increase the importance assessment of digital learning formats. Students with additional family commitments show a slight tendency towards a higher importance assessment; however the effect is only marginally significant ($p < .10$). Students with a stronger demand for various flexible and innovative ways to learn (summer schools, longer periods of self-study, etc.) assess the importance of digital learning formats consistently higher than students who have no need for flexible ways of learning.

Conclusion

With regard to innovation-based predictors, the results show that the impact of external criteria (number of working hours, family obligations) is smaller than expected and often discussed the theoretical articles regarding the needs of adult students for flexible learning opportunities. Students who are open-minded and have a high interest in innovative and flexible forms of teaching and learning, also value digital learning formats as being more important. A subsequent analysis would be required to examine which factors particularly increase the demand for flexible (and therefore also digital) learning formats. In further studies, it would be useful to examine to what extent certain study structures (e.g. mass lectures) in particular fields raise the importance assessment, or if personal preferences of certain student groups (e.g. positive attitude towards technology) play an important role.

Most of the studies in the field of needs of adult students deal with the effectiveness of mobile-learning, e-learning or online-learning in contrast to classical synchronous learning situations in face-to-face classes (cf. Spencer & Hiltz, 2001) and don't question the logic behind the argument of learning anytime and anywhere. Rao Hill and Troshani (2010) e.g. found in a quantitative study, that perceived enjoyment and usefulness were the most important factors in predicting the adoption of mobile learning tools among young Australians, flexibility was not. Regarding the often discussed, rarely proven potential of anytime/anywhere access, Vallance and Numata (2011) asked for explicit empirical evidence. Few authors even claim that users benefit from omnipresent, "anywhere anytime" access, is a myth (Friesen, 2008).

Access to education and flexible learning opportunities are the key to lifelong learning. Distance education and educational technologies provide powerful tools for fostering participation in formal, informal and non-formal educational settings. The traditional adult (distance) student who needs to juggle various jobs and family commitments is moving from "the back door" into the mainstream. Therefore it is a political goal to further increase participation of so-called non-traditional adult students in order to serve the needs of – in classical higher education – disadvantaged groups. This is a matter of social justice, equity and ethics. Committed to this goal, educational institutions must respond to the needs of an increasingly diverse student body. A prerequisite for being able to design appropriate student support systems is to be well informed about the multiple profiles, characteristics and needs of this diverse student body. Since the target groups will become more and more heterogeneous, a widespread research approach is needed to embrace their diverse needs. Especially the sometimes most obvious strengths of online learning tools, like flexibility in time and space, must be examined more closely to develop the right instructional design for a specific target group, not only for the right selection of media, but also to meet the expectations of adult learners. Finally it is not only about new student groups like the mentioned non-traditional students, but also about how to implement lifelong learning in higher education and society itself.

References

1. Brandtzaeg, P. (2010). Towards a unified Media-User Typology (MUT): A meta-analysis and review of the research literature on media-user typologies. In *Computers in Human Behaviour*, 26(5), (pp. 940–956).
2. Chao, R. and Good, G.E. (2004). Nontraditional Students' Perspectives on College Education: A Qualitative Study. In *Journal of College Counseling*, 7(1), (p. 5).
3. Dreer, S. (2008). E-Learning als Möglichkeit zur Unterstützung des selbstgesteuerten Lernens an Berufsschulen. In *MedienPädagogik: Zeitschrift für Theorie und Praxis der Medienbildung / Einzelbeiträge*, (pp. 1–25).
4. Ely, Eileen E. (1997). *The Non-Traditional Student*. Held on the 77th American Association of Community Colleges Annual Conference, Anaheim, CF.
5. Fink, L.D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco: Jossey-Bass.
6. Friesen, N. (2008). Critical Theory: Ideology Critique and the Myths of E-Learning. In *Ubiquity*, 2008(June). doi:10.1145/1386858.1386860
7. Horton, W. (2000). *Designing Web-based Training*. New York: John Wiley and Sons
8. Johnson, G. M. and Kulpa, A. (2007). Dimensions of online behavior: toward a user typology. In *CyberPsychology*, 10(6), (pp. 773–779).
9. Ke, F. (2010). Examining online teaching, cognitive, and social presence for adult students. In *Computers & Education*, 55(2), (pp. 808-820).
10. Kerres, M., Hanft, A., Wilkesmann, U., & Wolff-Bendik, K. (2012) *Studium 2020 - Positionen und Perspektiven zum lebenslangen Lernen an Hochschulen*, Waxmann, Münster.
11. Kerres, M. and Lahne, M. (2009). Chancen von E-Learning als Beitrag zur Umsetzung einer Lifelong-Learning-Perspektive an Hochschulen. In N. Apostolopoulos, H. Hoffmann, V. Mansmann, & A. Schwill (eds.), *E-Learning 2009. Lernen im digitalen Zeitalter*, (p. 347-357). Münster u.a.: Waxmann.
12. Kreidl, C. (2011). *Akzeptanz und Nutzung von E-Learning-Elementen an Hochschulen: Gründe für die Einführung und Kriterien der Anwendung von E-Learning*. Waxmann Verlag.
13. Küpper, C. (2005). *Verbreitung und Akzeptanz von E-Learning: eine theoretische und empirische Untersuchung*. Duncker & Humblot, Berlin
14. Kvavik, R. and Caruso, J.B. (2005). *ECAR Study of Students and Information Technology, 2005: Convenience, Connection, Control, and Learning*. Available at: <http://www.educause.edu/ers0506>
15. Morrison, G.R.; Ross, S.M.; Kalman, H.K. and Kemp, J.E. (2011). *Designing effective instruction*. 6th ed. Hoboken (NJ), Wiley.

16. Rao Hill, S. and Troshani, I. (2010). Factors influencing the adoption of personalisation mobile services: empirical evidence from young Australians. In *International Journal of Mobile Communications*, 8(2), (pp. 150–168). doi:10.1504/IJMC.2010.031445
17. Salaway, G.; Katz, R.N. and Caruso, J.B. (2006). *The ECAR Study of Undergraduate Students and Information Technology*, 2006. Available at: <http://www.educause.edu/ECAR/TheECARStudyofUndergraduateStu/158599>
18. Spencer, D. and Hiltz, S.R. (2001). Studies of ALN: an empirical assessment. In *Proceedings of the 34th Annual Hawaii International Conference on System Sciences*, 2001, (S. 9 pp.). Presented at the 34th Annual Hawaii International Conference on System Sciences, 2001. doi: 10.1109/HICSS.2001.926187
19. Teichler, U. and Wolter, A. (2004). Studierchancen und Studienangebote für Studierende außerhalb des Mainstreams in Deutschland: Eine Bestandsaufnahme anlässlich der Diskussion über die Zukunft der HWP. (Vizepräsident für Lehre, Studium, Prüfungen und Weiterbildung, Ed.). In *HWP – Hamburger Universität für Wirtschaft und Politik*, 2(04). http://www.wiso.uni-hamburg.de/fileadmin/sozialoekonomie/fachbereich/Forschung/GutachtenWolterTeichler_01.pdf
20. Thompson, M.M. (1998). Distance learners in higher education. In C. C. Gibson (ed.), *Distance learners in higher education*, (p. 9-24). Madison, WI: Atwood Publishing.
21. Vallance, M. and Numata, H. (2011). Beyond potential: a two-year study of iPod use in a Japanese university. In *International Journal of Learning Technology*, 6(4), (pp. 324–340). doi:10.1504/IJLT.2011.044627
22. Wlodkowski, R.J. (2008). *Enhancing adult motivation to learn: a comprehensive guide for teaching all adults*. John Wiley & Sons.
23. Zawacki-Richter, O. and Müskens, W. (2013). *Student media usage patterns and non-traditional learning in higher education – implications for instructional design*. Presented at the EAIR 35th Annual Forum, EAIR – The European Higher Education Society, Rotterdam.
24. Zumbach, J. (2010). *Lernen mit neuen Medien – Instruktionspsychologische Grundlagen*. Kohlhammer, Stuttgart.