

## 12. Jahrestagung der GfHf

### „Digitalisierung der Hochschulen: Forschung, Lehre, Administration“

Themenbereich: Studium und Lehre

#### **ABSTRACT**

#### **Making use of digital learning technologies in Higher Education:**

#### **What universities provide and what learners use**

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Empirical evidence suggests that deliberate, well-designed integration of Web 2.0 tools in higher education can encourage active learning, promote collaboration, increase student-faculty interaction and enrich the educational experience (i.e. Adria & Rose 2004; Lee et al. 2014; Huang et al. 2015, Rashid & Asghar 2016). Digital technologies can also support the education of increasingly diverse and heterogeneous student populations (i.e. Hochschulforum Digitalisierung 2015). However, the desired outcomes can exclusively be achieved through well-developed content, access to digital tools or resources and pedagogical strategies, as well as students' adoption of said technology.

Ubiquitous computing on the other hand has also provided students with a wide array of choices and opportunities beyond their university. They can seek out digital resources independently as a means to foster collaboration or promote learning that are on offer from various sources (i.e. commercial platforms, open educational resources).

In the context of Higher Education in Germany, there is evidence that digital technologies are not yet integral part of the curriculum. They are put to use rather haphazardly to enrich or supplement traditional teaching (Bachmann et al. 2002; Persike & Friedrich 2016). Moreover, only a few students use a broad range of technologies' and services – with marked differences between disciplines and individual universities (Persike & Friedrich 2016).

So far however, use patterns and their effects in Higher Education have been studied for selected disciplines or universities. Moreover, the relationship between what universities provide and how students use it has not been conceptualized or widely studied, and the use of external services often has not been included in analyses. In this paper, we examine the differences in implementation and use for a large and representative sample of institutions and persons, and discuss learning vis-à-vis two dominant theoretical frameworks: the unified theory of acceptance and use of technology (UTAUT, Venkatesh et al. 2012) and activity theory (AT, Engeström 2007).

UTAUT aims at predicting the intention and actual usage behaviors of technology by factors from four domains: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. It also assumes moderating factors such as gender, age, experience, and voluntariness of use that intervene between the factors on the one and usage intention and behavior on the other hand.

AT was originally developed to understand learning and cognitive development of individuals in their social and technological context, but has since been applied to many areas, including the way Humans react to the introduction of technology in the workplace. It moves individual's motivations, creativity and conscious actions in to the focus and how these processes influence their learning activities.

In order to examine empirically how E-Learning technology is provided and used, we match two data sets, one on individual, the second on an institutional level:

- representative reports from more than 15.000 graduates of 26 Bavarian universities and universities of applied sciences covering all degrees and disciplines, about their E-Learning-Behaviour inside and outside their university.
- reports by the same 26 universities on the kind of digital services and resources they provide to students to enhance their learning.

We address four research questions:

a) Descriptive: What use patterns and patterns of use intensity can we identify, and how do they vary by discipline, university and degree?

b) Effect of technology use: Does use of university or external digital technology enhance satisfaction with studies and allow for more compatibility with other areas of life (work, internships, family and so forth)?

c) Association between provision and use of technology: Are patterns of use predominantly dependent on resources provided by universities, or is there only a weak association?

d) Relationship of internal and external resources: To what extent do students supplement their university's educational services by "shopping" for other educational resources? What kinds of students of what kind of university are more likely to do so? Is there a kind of "Matthew Effect", in the sense that those who do a lot of digital learning anyway, and also are provided by their universities with ample opportunities, also are more inclined to employ such opportunities?

Preliminary results indicate that Learning Management Systems, Blended Learning and Virtual Learning Environments are the usual e-learning platforms provided across the disciplines. Nearly two-thirds (64%) of survey respondents from universities and technical institutes used online communication platforms, Online-collaboration tools, i.e., software or apps that support self-directed learning, and learning-management systems are among the widely used information and communications technologies among students and are also provided by the universities. Further, Chi-Square Tests of association reveal significant differences between both universities and disciplines with regard to the use of technology. Technology use also is associated with better evaluations: A vast majority of respondents (84 %) indicated that technology helped them in their studies and their personal lives.

Results will be discussed with respect to the theoretical frameworks and avenues for future research will be highlighted. Also, recommendations are provided for didactic changes in Higher Education.

## REFERENCES:

Adria, Marco & Rose, Teresa. (2004). Technology, Preprocessing, and Resistance - A Comparative Case Study of Intensive Classroom Teaching. *Journal of Education for Business*, 80(1), 53-60.

Aparicio, Manuela; Bacao, Fernando & Oliveira, Tiago (2016): An e-Learning Theoretical Framework. *Educational Technology & Society*, 19 (1), 292–307.

Bachmann, Gudrun; Dittler, Martina; Lehmann, Thomas; Glatz, Dieter & Rösler, Fritz (2002): Das Internetportal „LearnTechNet“ der Universität Basel. In: Gudrun Bachmann, Odette Haefeli & Michael Kindt (Hrsg.): *Campus 2002 – die virtuelle Hochschule in der Konsolidierungsphase*. Münster: Waxmann, S. 87-97

Engeström, Yrjö (1987): *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit

Hochschulforum Digitalisierung (2015): 20 Thesen zur Digitalisierung der Hochschulbildung. Arbeitspapier NR. 4, Gütersloh: CHE

Lee, K., Tsai, P.-S., Chai, C.S. and Koh, J.H.L. (2014): Students' perceptions of self-directed learning and collaborative learning with and without technology. *Journal of Computer Assisted Learning*, 30: 425–437

Liao, Yi-Wen; Huang, Yueh-Min; Chen, Hsin-Chin; Huang, Shu-Hsien (2015): Exploring the antecedents of collaborative learning performance over social networking sites in a ubiquitous learning context. *Computers in Human Behavior*, 43, 313–323

Persike, Malte; Friedrich, Julius-David (2016): *Lernen mit digitalen Medien aus Studierendenperspektive*. Arbeitspapier NR. 17, Gütersloh: CH

Rashid, Tabassum; Asghar, Hanan Muhammad (2016): Technology Use, Self-Directed Learning, Student Engagement and Academic Performance: Examining the Interrelations. *Computers in Human Behavior*

Venkatesh, Viswanath; Thong, James Y.L.; Xu, Xin (2012): Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology, *MIS Quarterly*, (36: 1) pp.157-178.