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"ARE THEY READY?" EXPLORING (NON-TRADITIONAL) STUDENTS' SELF-DIRECTED LEARNING READINESS AND THEIR ACCEPTANCE OF E-LEARNING TOOLS

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Introduction

The profile of students attending traditional brick and mortar universities is increasingly diverse, which constitutes a challenge for the institutions that need to adapt their teaching practices, contents and learner support structures to accommodate these so called "non-traditional" students' (NTS) needs (Kerres, 2012). Albeit this challenge, taking this diversity and its changes that shape today's student profile into account to offer a successful learning experience to the students. Subsequently, Morrison, Ross and Kemp (2007) state: "As designers, we need to understand the relevant characteristics of our learners and how those characteristics provide either opportunities or constraints on our designs" (p.52). This also applies to teaching and learning in the online distance education context, for which the investigation of "the socio-economic background of distance education students, their different learning styles, critical thinking dispositions, and special needs" (Zawacki-Richter, 2009, p.9) was identified as a central research area. Successful and productive distance education depends on and demands learners – among other factors – to be intrinsically motivated and be capable of self-directed or self-regulated learning: "As the online learning environment is characterized with autonomy, self-regulation becomes a critical factor for success in online learning" (Barnard et al., 2009, p.1). This paper investigates the differences in self-directed learning readiness of non-traditional and traditional students in German higher education as well as the acceptance of digital teaching and learning approaches with respect to their self-directed learning readiness.

Theoretical Background

"Self-directed learning" and "self-directed learning readiness" are complex constructs and there are many different definitions. A well-known definition by Knowles (1975) describes self-directed learning as "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies and evaluating learning outcomes" (p.18). Consequently, self-directed learning

readiness refers to the "attitudes, abilities and personality characteristics" (Wiley, 1983, p.182 as cited in Fisher et al., 2001, p.517) that the learner needs to apply to his or her learning process. Self-directed learning has been identified to be one of the central components in the theory of adult education (Merriam, 2001). In literature, several similar terms, e.g. self-regulated or self-organised learning, exist and are sometimes used synonymously for self-directed learning. This subsequent vagueness is addressed by e.g. Bucholc (2010), who attempts to distinguish more strongly between the terms and their different meanings. As early as 1978, Guglielmino developed a scale to measure this self-directed learning readiness, her scale being later subject of methodological criticism (Bonham, 1991; Field, 1989).

Studies have reiterated the importance of self-directed learning in higher education settings (e.g. Smedley, 2007) and beyond (e.g. Robertson & Merriam, 2005). However, a critical stance towards this topic can be observed as well (Kraft, 1999): "Theories on self-directed learning are not consistent, there is a lack of clear and precise theoretical definitions of terms and delineation, the arguments for this form of learning are of varying quality and plausibility, the empirical findings are diverse and the situation regarding data is diffuse and unclear" (translation by the authors) (p.834). This challenge cannot be addressed further in this study, but nonetheless has to be taken into consideration.

Transferring self-directed learning readiness to online distance education means to directly addressing the fact that "studying at a distance requires maturity, a high level of motivation, capacity to multi-task, goal-directedness, and the ability to work independently and cooperatively" (Brindley, 2014, p.287). Thus, self-directed learning plays an important role (Song & Hill, 2007). As a general fact, knowing learners' characteristics and abilities proves to be important in online learning when designing and offering web-based courses meeting these needs (Morrison et al., 2007; Zumbach, 2010); even more so given the fact that today's student population is increasingly diverse regarding age, professional and personal background, and prior education experience (Thompson, 1998; Guri-Rosenblit, 2012; Stöter et al., 2014).

Nevertheless a clear definition of the so called "non-traditional student", does not exist. A range of understandings, however, share some common points as the following exemplary definitions show but also differ in focus. Ely (1997) delineates non-traditional students through the following characteristics: "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" (p.1). More characteristics are included in the definition by the National Center for Education Statistics (NCES) in the United States: "delayed enrolment into post-secondary education, attended part time, financially independent, worked full time while enrolled, had dependents other than a spouse, was a single parent, did not obtain a standard high school diploma" (Horn & Carroll, NCES, 1996, p.2). Having at least one of these characteristics classifies students as non-traditional students in US statistics. For this study the classification by Zawacki-Richter, Hohlfeld and Müskens (2014) was used.

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Research Questions

The aim of this study is to analyse whether there exists a difference between the self-directed learning readiness of non-traditional and traditional students. Following the assumption outlined above, the diversity of today's students along the differentiation of being traditional or non-traditional possibly shows in their self-directed learning readiness.

Thus, the central research questions of this investigation are:

- Do traditional and non-traditional students show different levels of self-directed learning readiness?
- Does a relationship exist between the self-directed learning readiness of these two groups and their acceptance of e-learning tools?

If this is the case, then

- How can this difference be described and what consequences arise for the development of educational settings that rely on the extensive use of e-learning tools?

Method

Sample and Data Collection

Data in this analysis is taken from a large quantitative study on students' use of media, which was conducted in 2012 in the framework of "Aufstieg durch Bildung – offene Hochschulen", a large-scale program funded by the German Federal Ministry of Education and Research and the European Social Fund (Zawacki-Richter, Hohlfeld & Müskens, 2014). The study aimed at identifying university students' usage patterns when deciding on which (digital) media, tools, and services to use in the context of their studies. In total, 2,339 students from over eleven German higher education institutions answered the online questionnaire, providing information on diverse aspects of their media use in the context of their university studies, their learning styles as well as central socio-demographic characteristics[1]. With a gender distribution of 61% female and 39% male participants, aged 25 on average, one of the central characteristics of the participant group is their differentiation along the line of being considered a non-traditional student or not. Non-traditional students were defined in this study as such when meeting at least one of the criteria of enrolment in an (online) distance education programme, studying part-time, being employed for at least 19 hours per week, or being 30 years and older (Zawacki-Richter et al., 2014).

One central result of the study emerged to be the classification of four media user types, described by Zawacki-Richter & Müskens (2013, p.11) entertainment user (51.6%), peripheral user (20.1%), advanced user (20.4%), and instrumental user (7.6%) (N=1715). Here, Zawacki-Richter & Müskens (2013) show that: "NTS had a much greater mean class probability for the

[1] For an extensive description of the questionnaire used and participating students' profile, see Zawacki-Richter, Hohlfeld & Müskens (2014) or Zawacki-Richter & Müskens (2013).

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'instrumental users' class than TS. For the 'peripherals' class the mean class probability of the NTS was significant higher, too. However, the NTS had significantly smaller mean class probabilities than TS with regard to the classes 'entertainment users' and 'advanced users'" (pp.12). So far, the survey's data on self-directed learning readiness of the participating students has not been analysed further.

Attention needs to be paid to the fact that the study participants are enrolled in higher education institutions in Germany, the structure and environment of which is distinctly different from that of other countries. Thus, this context is to be taken into consideration when analysing the data.

Instrument

In the media usage study, questions concerning the participants' self-directed learning readiness were taken from Fisher's et al. (2001) self-directed learning readiness scale and were translated from English to German by the researchers. Fisher et al. developed their own self-directed learning readiness scale in response to the critique on the validity of Guglielmino's scale (Field, 1989) and Bonham's (1991) doubt on whether the scale measures readiness for self-directed learning or rather for learning itself (reliability of the scale). Primarily developing the scale for the field of nursing, they reviewed the existing literature and employed the Delphi technique to define and validate the scale's items. It was intended, however, that their scale be used in other contexts as well. The final scale comprises three subscales, "self-management", "desire for learning", and "self-control" and consists of 40 items related to these topics. Students can rate their perceived self-directed learning readiness on a five point Likert scale (ranging from 1=strongly agree to 5=strongly disagree).

Preliminary Findings

The three subscales "self-management", "desire for learning", and "self-control" were summarized as one and labelled as "self-directed learning readiness total". The mean of this new variable was calculated for both non-traditional and traditional students. Non-traditional students were operationalized as such when fulfilling at least one of the criteria that were listed and already used by Zawacki-Richter et al. (2014); traditional students are students who did not fulfil any of these criteria.

Table 1: SDLR_Total for non-traditional and traditional students (1=strongly agree, 5= strongly disagree)

Student Type	N	mean	standard deviation
Traditional	1,531	2.120	0.420
NTS	789	1.975	0.424
total	2,320	2.071	0.427

The results show that with a mean of 2.071, the level of total self-directed learning readiness is high for both groups. However, participants identified as non-traditional students perceived

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their self-directed learning readiness slightly higher (1.975) than the traditional students (2.120).

The group of non-traditional students was then more narrowly defined, operationalizing them through the fulfilment of the criteria of being 30 years and older *and* enrolled in an education program offered fully online in order to take into consideration that the various criteria of NTS may have a very different impact on students needs and learning styles.

Table 2: SDLR_total with 40 Items for NTS_narrow and TS+NTS_rest (1=strongly agree, 5=strongly disagree)

Student Type_NTS_narrow	N	mean	standard deviation
NTS_narrow	38	1.845	0.382
Traditonal+NTS_Rest	2282	2.074	0.427
total	2320	2.071	0.427

Using a definition of NTS, which includes more than one criterion, the difference to TS regarding the self-directed learning readiness is still very small, although the narrow definition results in even higher SDRL ratings for NTS. In order to investigate if there could be a relevant implication the effect sizes were calculated.

Effect sizes are a quantitative measurement tool to give an idea of the practical relevance of differences in means, therefore the results can be compared in a more differentiated way (Bortz & Döring, 2006). According to Cohen (1988), as a first orientation, effect sizes of under d = 0.20 can be neglected, from 0.50 on they are considered as medium and from 0.80 on as high. The effect size for NTS_narrow is calculated to be d= 0.565. Applying the broad definition of NTS, the effect size of 0.34 indicates an effect, even though a small one. When specifying this definition ("narrow" definition of NTS: only online students and those older than 29 years old), the effect size increases: The value is within the medium range, however, it needs to be taken into consideration that only 38 cases were included.

Interpretation

The results clearly indicate that differences in the self-reported estimate of self-directed learning readiness between the groups of NTS and TS exist, although they are rather small. In this case, this could be due to the fact that the criteria age and study format were used. Most likely, the fact of studying online accounts for this effect size. At the same time, the broad and initial definition of non-traditional students diminishes the difference between this group and the traditional students. It is possible that the definition of NTS used here is too broad to allow for discovering substantial differences to the TS group. This is supported by the result that, when using the narrower definition, a medium effect size (according to Cohen) can be found, i.e. a bigger difference concerning the self-directed learning readiness. It has to be recognized, that the criteria in the given definition of NTS do have different impacts: an age of more than 29 and being enrolled in an online-only-program is not the same and may indicate that inside the group of NTS a more differentiated approach is needed. Another explanation for these

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results could be that students in general show a rather high self-directed learning readiness. However, analyzing students' self-directed learning readiness is only the first step. An investigation of the domains in which this readiness plays a role when designing the actual educational settings and technology, is necessary.

Analysis of acceptance of digital learning tools

Thus, in the following the acceptance of digital learning approaches will be analyzed. The study by Zawacki-Richter et al. (2014, p.20) used the differentiation for media and tools provided by Grosch and Gidion (2011) according to which digital learning approaches are summarized as follows: "1) course-complementing materials, 2) interactive, multimedia learning materials, 3) virtual seminars and tutorials with tele-cooperation, 4) lectures in the form of pod- or vodcast, 5) virtual practice and laboratories, 6) online tests and tutorials (e-assessment), 7) web-based trainings / trainings in the intranet or internet, 8) e-portfolios / learning diaries in the intranet or internet."

A 2-factor variance analysis with SDLR-scale (full) as independent variable and the factors „student type" and „acceptance digital learning approaches" (categorized) was conducted.

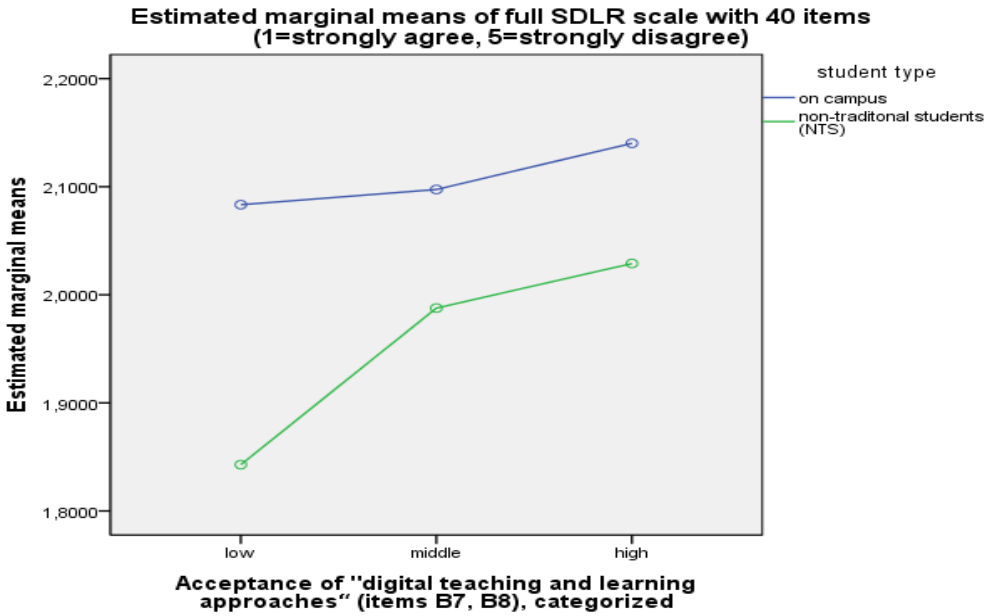

Figure 1. SDLR-scale as independent variable and the factors „student type" and „acceptance digital learning approaches"

The results show that there is a small difference, which is however not significant but does show some tendencies. NTS show more self-directed learning readiness whether the acceptance of digital teaching and learning approaches is low, middle, or high. Students with the lowest acceptance of digital teaching and learning approaches show the highest self-directed learning readiness. The higher the self-directed learning readiness, the lower the acceptance.

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Interpretation

According to the acceptance of digital learning approaches of non-traditional students, it can be found that especially the students with very high SDRL rates have a lower acceptance for online learning tools and formats. The small differences in the SDRL ratings between the two groups are not influenced by the acceptance of digital learning formats and the degree of acceptance is not an appropriate criterion to show differences of SDRL ratings within the groups. The statistical insignificance could be due to the broad definition of non-traditional students.

Furthermore, the results are obtained by analyzing data from students enrolled in German higher education; thus, an internationally applicable generalization is not possible.

Conclusion

The results of this study allow different conclusions and leads to further hypotheses: it is possible that the group of university students as such has (generally) a higher willingness to learn in a self-directed manner. Regarding the construct of self-directed learning, it would thus be interesting to compare the values/indexes of the students to those of other societal groups or learners in other educational settings (e.g. secondary schools, vocational education).

Considering the design of teaching and learning in higher education, this would mean that non-traditional and traditional students are or will be rather similar in some characteristics relevant for the instructional design and share a lot of the same needs regarding study modes. Increasing the flexibility of educational offerings in higher education will therefore be an advantage for all groups of students. The results of the study "STUBE" (http://mediendidaktik.uni-due.de/stube) support this interpretation by showing that traditional students, in addition to non-traditionals, would like to have more flexible learning opportunities in terms of time and tools (e.g. Stöter, 2013).

To what extent the construction of the scale might have influenced the results needs also to be taken into consideration. All items are positively phrased. (e.g. „I enjoy studying", „I learn from my mistakes", "I am able to focus on a problem" etc.), making a bias (in positive direction) predictable when rating the statements. A tendency to rate items according to social desirability is likely as well. Criticism that was already directed at Guglielmino's (1978) scale (e.g. Bonham, 1991) also leads to the question of what exactly is measured by the scale provided by Fisher et al.: is it self-directed learning or rather e.g. the attitude towards learning itself? A subsequent review of this scale in terms of its validity and reliability should be considered, and if necessary, it should be adapted or modified accordingly.

Finally, future research could possibly include comparative studies on students' self-directed learning readiness who are enrolled in higher education systems other than the German one. Taking into consideration different learning styles, cultural aspects could here be a fruitful addition to investigate this important construct.

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