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Needs of Students in Further Education - A Mixed Methods Study

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1 Introduction

Technological progress and volatile working environments inevitably lead to the need for lifelong learning. Learners in continuing education pursuing a professional career are therefore increasingly turning to accompanying continuing education formats (OECD, 2021). In this context, the terms "further or continuing education" describe the deepening, broadening, or update of existing vocational education and training from a previous phase of education. Less time available for studying due to having a job and possibly a family leads to either lower grades or longer completion times (Hall, 2010) or even higher dropout rates (Hoffmann, Thalhammer, von Hippel, & Schmidt-Hertha, 2020). Furthermore, secondary education might date back long ago (Hanft, Maschwitz, & Hartmann-Bischoff, 2013). Digital transformation drives the expectation for digital, scalable, and affordable solutions that are adaptive to this target group's heterogeneous needs and challenges independent of time and location (Marković, 2014). However, before user-oriented solutions can be developed, their underlying needs must be uncovered.

Our goal is therefore to identify the core challenges for learning in continuing education programs and to interpret potential differences between three educational institutions with fundamentally differentiating study models in terms of e.g., flexibility or digitalization by surveying 266 of their further education students. The

three institutions are AKAD University (hereinafter refered to as A), Technische Universität Braunschweig (hereinafter B) and Oskar-Kämmer-Schule (hereinafter C). Starting continuing education courses in Germany generally requires at least a secondary or high school diploma plus baccalaureate, professional training, bachelor's or/and master's degree, complemented by professional experience dependent on the program. The following illustration (fig. 1) visualizes the differences between the institutions most relevant to our mixed methods online study.

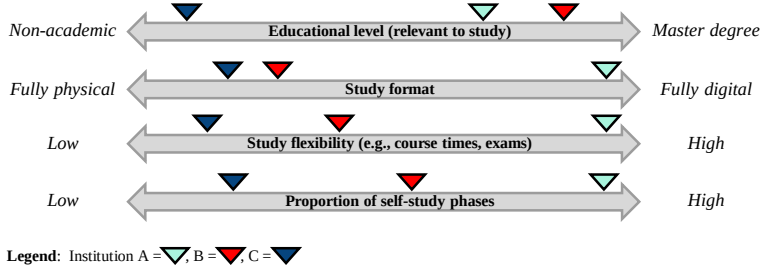

Figure 1: Institutional differences relevant to the study

Our paper is structured as follows: In the next chapter, we explain the methodological design of our study before analyzing the data and presenting and discussing the results in the third chapter. The last chapter summarizes our findings and gives a brief outlook for future research.

2 Methodology

We conducted a mixed methods study to gain both quantitative and qualitative insights about students' preferences and challenges in further education (Ivankova, Creswell, & Stick, 2006), by recruiting students from the three institutions for our survey online. Our questionnaire builds upon constructs on learning challenges and preferences on a 7-point Likert scale (1 = strongly disagree; ...; 7 = strongly agree)

for all items. First, we asked participants to assess the extent to which they experienced particular learning challenges, which we built upon the categorization of learning challenges established by Schräder-Naef (1993) and Lompscher & Artelt (1996). Hanft et al. (2013) diagnose performance deficits for students whose learning experience goes back a long way. Hall (2010) identified the need for a lower workload and more flexible deadlines. Therefore, we added the questions on difficulties in understanding due to a lack of prior knowledge and a non-matching learning pace. The constructs considered regarding learning preferences and environment refer to Alonso et al. (2017), Boerner et al. (2005), Isleib et al. (2019), and Heublein et al. (2017).

In addition, we surveyed whether the respondent prefers analog or digital learning or a combination of both. In seeking to comprehend the learners' challenges more profoundly, we added open questions about disruptive factors in learning, concrete situations of (de)motivation, and reasons for a potential dropout. Besides, we collected demographic data (age, gender, marital status, qualification & extent of employment) as well as further education characteristics (subject of further education, institute & progress). We created the questionnaire (duration: approx. 15 minutes) in German language with the software LimeSurvey and we collected data from mid-December 2021 to February 2022.

During our data analysis, we emphasized the quantitative evaluation of the students' preferences and challenges by also looking into potential significant differences between the three institutions with help of the statistical software Jamovi. To validate the items regarding success factors, we followed a two-step approach: After identifying the different dimensions by executing an exploratory factor analysis, which revealed four underlying factors, we excluded items with factor loadings < 0.4 in the first step. In a second step, the four factors were labeled, and their Cronbach's alpha was calculated with the following result: *social integration* (Cronbach's alpha 0.840), *time management* (Cronbach's alpha 0.862), *social environment* (Cronbach's alpha 0.754) and *academic integration* (Cronbach's alpha 0.627).

Additionally, we analyzed students' comments qualitatively by performing exploratory-inductive coding with MAXQDA according to Mayring (2015). Thereby, we ran multiple coding cycles following Kuckartz (2018) to finally evaluate the assigned codes in terms of frequencies and to interpret addressed challenges in learning.

3 Results

3.1 Quantitative study results

266 out of 337 participating students finished the study. We decided to only include the completed surveys in our analysis, because most dropouts happened during the first half of the questionnaire resulting in 164 completed surveys from A, 54 from B, and 48 from C. Approx. 49% of the respondents were male and 51% female. Around 4% reported being single with kids, 30% were single without kids, 20% are in a relationship with kids, and 46% are in a relationship without kids. The study areas are spread as follows: 46% IT & engineering, 37% business-related, 6% social-related, and 6% communication-related (5% others). Whereas there were no major differences (max. 10%) between the family status of male and female participants, singles with kids are 3 times male and 6 times female. The highest level of education is dominated by bachelor or equivalent (36%) followed by professional training with 34%, baccalaureate (17%), master or equivalent (11%), and secondary and high school diploma (1%), plus 1% others. Within the three institutions, however, we identified differences in terms of age (Fig. 2) and occupational structure (Fig. 3), as the visualization of the following two box plots including the medians reveals.

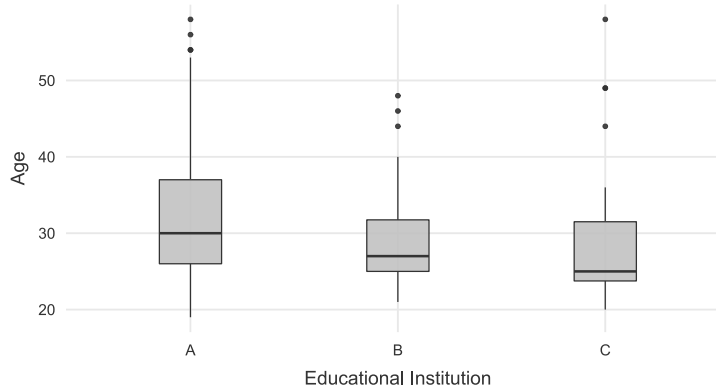

Figure 2: Age structure per institution

The average age (mean value or MV) is noticeably higher at A with 32.1 years than at the other two: B, 28.8 years, and C, 28.6 years.

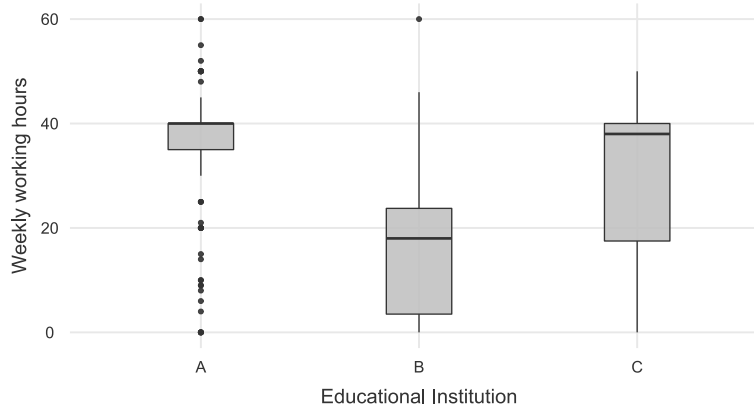

Figure 3: Occupational structure per institution

Most respondents from A have a full-time job (MV: 35.5h), at C, full-time occupation dominates (MV: 28.7h), but part-time is also common, contrasting B where part-time jobs are most common (MV: 17.4h).

We investigated the absence of success factors in further education and the extent of differences between the three educational institutions. First, we conducted descriptive analyses according to the MV and standard deviations (SD) on the 7-point Likert scale. On average, participants perceived the following three success factors as most challenging: *Time management* (MV: 4.06; SD: 1.56), *exam preparation* (MV: 4.02; SD: 1.59), and *concentration* (MV: 3.85; SD: 1.53). The three least applicable challenges are the *given purpose for continuing education* (MV: 2.57; SD: 1.76), the *linguistical expression* (MV: 2.76; SD: 1.68), and the *ability to follow lectures* (MV: 2.76; SD: 1.47). These main development areas do not contradict the results of the qualitative results below. The SD between 1.41 and 1.80 indicates individual differences regarding the perception of challenges. More details can be found in Appendix 1.

To examine whether these differences are rooted in the individual or the institution, we conducted a Fisher's factorial ANOVA (Navarro & Foxcroft, 2018) grouping by the variable *educational institution*. This analysis uncovered the significance of differences for only two (*inadequate learning pace*; *ability to follow lectures*) of the 16 challenges. We conclude that most of the challenges are independent of the institution and its study model and rooted in the individual. At A, there are significantly fewer challenges related to *inadequate learning pace* (MV_A: 2.47; SD_A: 1.25; MV_B: 3.44; SD_B: 1.68; MV_C: 3.33; SD_C: 1.21). Furthermore, *the ability to follow in lectures* is less challenging for students at A (MV_A: 2.31; SD_A: 1.39; MV_B: 3.57; SD_B: 1.28; MV_C: 3.35; SD_C: 1.31). The reason for both is assumed to be rooted in the flexible study model at A, with a high number of asynchronous E-Learning content and the fact that most synchronous lectures are voluntary.

Looking at the potential dropout rate, we could make out significant differences between the institutions. B stands out with 59% of the respondents (32 out of 54 individuals) having already considered dropping out, compared to a much lower 27% (44 out of 164 individuals) at A and 17% (8 out of 48 individuals) at C. The

reasons for the high dropout tendency at B are supposed to be the high academic level (master's degree mainly) and financial reasons because of lower occupation due to the lectures during office hours. No significant differences could be identified regarding the study phase (beginning, middle, and end of continuing education) of a potential dropout.

The factor analysis mentioned above uncovered four factors: *social integration* (6 items including the social contact of students with peers as well as teachers), *time management* (4 items), *social environment* (3 items), and *academic integration* (3 items). Comparing the average mean value of each factor reveals that there are two major problem areas (low means): *social integration* (MV: 3.00; SD: 1.68) and *time management* (MV: 3.69; SD: 1.74). *Academic integration* (MV: 5.02; SD: 1.31) and *social environment* (MV: 5.48; SD 1.34) score rather high, with a lower SD, and are therefore less to be considered for measures against dropout. For further details see Appendix 2.

The one-way (Fisher's) ANOVA indicates for 5 out of 6 items in the category of *social integration*, that A scores significantly lower than the other two, especially for the item *I maintain intensive contact with fellow students/ classmates*: A with MV 2.13 and SD 1.43 contrasting B with MV 3.70 and SD 1.71 and C with MV 4.35 and SD 1.56. This result can be explained by the study model based on distance learning and the absence of any kind of cohorts due to the flexible study start date. For further details see Appendix 3. For the dimension *time management*, there are 2 out of 4 items that show significant variances between the institutions, i. e., *I set the hours I spend studying per week by a schedule* (MV_A: 3.58, SD_A: 1.93; MV_B: 3.09, SD_B: 1.67; MV_C: 2.46, SD_C: 1.49) and *I set specific times when I study* (MV_A: 4.48, SD_A: 1.77; MV_B: 3.80, SD_B: 1.45; MV_C: 3.48, SD_C: 1.64). Both items score higher at A, and we conclude that students that choose a flexible study model have higher time management skills. Since A stands out in the two main areas identified, we calculated the mean values excluding A which also had the most respondents: *Social integration* with MV 3.87 and SD 1.54 and *time management* with MV 3.32 and SD 1.61. That means without A, *time management* ranks first and *social integration* ranks second. The lack of *social integration* at B and C could be primarily caused by the COVID-19 restrictions and therefore might

be of temporary nature. Interestingly A revealed no significant differences for the learning challenges question above for the item *time management* probably due to different understanding and underlying definitions.

Thus, in contrast to the study model, the variables *age* and *working hours* cannot explain the variances between the educational institutions in *time management* challenges. None of the items within *social environment* and *academic integration* indicated significant dissimilarities between the institutions.

In addition, we evaluated which motivators (both intrinsic and extrinsic) contributed to the start of continuing education. The main motivators were *competence acquisition* (MV 5.75; SD 1.24), *interest in the subject matter* (MV 5.74; SD 1.08), and *professional advancement* (MV 5.35; SD 1.58), which means that the first two are intrinsic motivators with a comparably low standard deviation. The remaining ones were *"fun learning"* (MV 4.47; SD 1.53) and *superiors' suggestions* (MV 2.55; SD 1.65). The motivational factors with significant differences in the educational institutions are represented by the items *interest in the subject matter* (MV_A: 5.93, SD_A: 0.97; MV_B: 5.69, SD_B: 1.03; MV_C: 5.17, SD_C: 1.28) and *fun learning* (MV_A: 4.72, SD_A: 1.49; MV_B: 4.39, SD_B: 1.46; MV_C: 3.73, SD_C: 1.51). For both items A scores higher for these intrinsic motivators, which might be explainable by the higher average age.

Learning hybrid (digital and analog) is the preferred method at all institutions, at A 69%, at B 57% and at C 60%. Analog learning ranks second for B and C (B: 20%; C: 29%) and digital for the digital study model of A with 18%.

The importance of time management and social integration is in line with earlier studies (e.g., Hall, 2010; Krings, Brodführer, & Landmann, 2018; Lojewski & Schäfer, 2018), but seems to be dependent on or influenced by the institution, which indicates the effectiveness of measures.

3.2 Qualitative study results

225 out of the 266 (= 85%) participants also added text to at least one of the four text boxes. 140 written answers from A, 47 from B, and 38 from C. We compared the rankings of the most frequently mentioned pain points in the following table, structured by question and institution.

Table 1: Qualitative results per institution

Institution A	Institution B	Institution C
What are the main reasons for students to think about a drop-out?		
1. Lack of time (17/56)	1. Financial reasons (6/32)	1. Lack of time (2/13)
2. Workload/ Work-Life-Balance (6/56 each)	2. Workload (5/32)	2. 8 different aspects (1/13 each)
3. Lack of self-confidence (4/56)	3. Lack of time (4/32)	3. ---
What are the main disruptive factors for learning?		
1. Workload (61/133)	1. Workload (13/36)	1. Social environment (9/35)
2. Social environment (43/133)	2. Social environment (9/36)	2. Workload/Social Media/Noise/ Lack of time (6/35 each)
3. Social Media (26/133)	3. Social media/Noise (6/36 each)	3. ---
4. Lack of time (21/133)	4. Covid19-restrictions (5/36)	4. ---
5. Noise (15/133)	5. ---	5. ---
What are the main demotivating factors for learning?		
1. Procastination (24/125)	1. Distraction/Procastination (5/36)	1. Lack of concentration (6/30)
2. Lack of concentration (20/125)	2. Uninteresting content/ Missing Purpose (4/36 each)	2. Workload (5/30)
3. Workload (19/125)	3.Workload/Lack of face to face sessions/concentration (3/36 each)	3. 5 different aspects (3/30 each)
4. Distraction (16/125)	4. ---	4. ---
5. Exhaustion/Lack of sleep/ Uninteresting content (9/125 each)	5. ---	5. ---
What are the main motivators for learning?		
1. Learning efficiency (23/126)	1. Flow/Interesting content (8/36 each)	1. Relevance to practice (7/28)
2. Interesting content (20/126)	2. Learning desire/ Comprehension (5/36 each)	2. Fun/Flow (4/28 each)
3. Learning desire/Flow (16/126 each)	3. 5 different aspects (3/36 each)	3. Learning desire/ Exam proximity (3/28 each)
4. Course progress (14/126)	4. ---	4. ---

While the quantitative results revealed general learning challenges and a lack of certain success factors, the qualitative results add a more specific view of the problems that arise due to the double burden of working and studying. A lack of time and work-life balance paired with a lack of concentration at the end of a working day leads to procrastination and a high risk to get distracted by social media. Although working hours are significantly lower at B, workload and lack of time is still a major issue. We conclude, in combination with quantitative results, that not the time available is the main problem, but managing it properly, fighting

procrastination, and avoiding distraction. The financial burden perceived at B is likely to result from the lower occupational level. The motivators are also similar at A and B: Learners are pleased when they see progress, efficiency, or have a flow experience. For students at C, the one that is more practice-oriented and less academic, relevance to practice is the main motivation. Intrinsic motivation dominated across institutions and is in line with quantitative results. The conclusion above that the lack of *social integration* at B and C is a temporary problem caused by COVID-19 restrictions are backed by the qualitative results.

4 Conclusion

Our study, including descriptive and multivariate analyses and an exploratory qualitative approach, aimed for uncovering challenges for students in further education in general but also dependent on their study format. Therefore, we surveyed 266 students in a mixed methods online questionnaire. Our findings reveal a high proportion of similar problems across institutions and some challenges that seem to relate to the study model: The quantitative results identify time management, exam preparation, and concentration as main challenges with further differences independent from the institution. The higher dropout tendency at institution B is related to the lower-income and the financial problems arising from that. Our study supports prior conclusions, that a study model that is more compatible with a qualified job could increase study performance (Sprietsma, 2015). A lack of success factors is discovered for social integration and time management. The lack of social integration is especially high at the distance learning institution A and might be only temporarily valid for B and C related to COVID-19. The qualitative results are complementary to the quantitative results by adding details and explanations. Managing time more efficiently by addressing procrastination and decreasing distraction by social media seems to be key for succeeding in continuing education and could be guided by a digital assistant. Adaptability and adaptivity of such solutions could address individual needs (Schlimbach, Rinn, Markgraf, & Robra-Bissantz, 2022). Non-academic institutions

should focus on practical relevance when developing content. Also, the compatibility of study, work, and family should be prioritized by all institutions. Limitations of this study are the rather small scale and the lack of defining the term time management within the questionnaire, the last one being mitigated by the more precise questions in the success factors section consisting of 4 items and the qualitative results. Furthermore, Cronbach's Alpha for the success factor *academic integration* with 0.627 is questionable, but the factor turned out to be of minor relevance for the study results. Despite these limitations, the study contributes to understanding the challenges that arise from the double burden of working and studying plus almost a quarter of the respondents having kids. This study might serve as a basement for future large-scale studies but also for taking target-oriented action to improve the study success of students in continuing education programs. These measures include didactical improvements, study model adaptions as well as scalable digital solutions, keeping a balance between analog and digital learning. Study model specific and individual differences must be considered and adapted to respectively. Measures for addiction prevention concerning social media must be considered.

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Appendix

Appendix 1

Table 2: Perceived challenges in the context of learning (N=266)

	Mean	Median	SD
Comprehension deficits due to prior knowledge gaps	3.11	3	1.43
Inadequate learning pace (too fast/too slow)	2.82	3	1.41
Learning aversion	3.67	4	1.57
Time allocation	4.06	4	1.56
Structuring the learning process	3.50	4	1.55
Concentration Issues	3.85	4	1.53
Reservations to show thoughts and knowledge	2.92	3	1.62
Weak student-teacher-relationship	2.78	2	1.55
Knowing how to learn economically	3.47	4	1.47
Cooperation with others	3.31	3	1.80
Overview of major subject areas	3.68	4	1.50
Lack of practical relevance	3.37	3	1.58
Choice of the subject combination	2.76	3	1.45
Ability to follow lectures	2.76	2	1.47
Linguistical expression	2.76	2	1.68
Exam preparation	4.02	4	1.59
Given the purpose of continuing education	2.57	2	1.76

Appendix 2

Table 3: The measured values of the factor "Social Integration" (n=266)

Social Integration (Cronbach's Alpha: 0.825)	Mean	Median	SD
The teachers motivate me strongly in my subject during my studies	3.09	3	1.52
I maintain intensive contact with fellow students/ classmates	2.85	2	1.78
I am also in contact with the lecturers between the courses	2.32	2	1.40
I easily find contact with fellow students/ classmates	3.64	4	1.81
For my further education, the exchange with fellow students/ classmates is a decisive help	3.78	4	1.93
I often work in a study group with fellow students/ classmates	2.32	2	1.62
Social Integration (6 items)	**3.00**		**1.68**

Table 4: The measured values of the factor "Time Management" (n=266)

Time Management (Cronbach's Alpha: 0.862)	Mean	Median	SD
I set the hours I spend studying per week by a schedule	3.28	3	1.85
When I study, I stick to my schedule	3.77	4	1.58
I make myself a concrete schedule for learning	3.54	3	1.80
I set specific times when I study	4.16	4	1.73
Time Management (4 items)	**3.69**		**1.74**

Table 5: The measured values of the factor "Social Environment" (n=266)

Social Environment (Cronbach's Alpha: 0.754)	Mean	Median	SD
My friends and family understand that I have to study often	5.39	6	1.40
My friends and family think it's good that I'm doing my studies	5.89	6	1.14
My friends and family support and motivate me in my studies	5.17	5	1.49
Social Environment (3 items)	**5.48**		**1.34**

Table 6: The measured values of the factor "Academic Integration" (n=266)

Academic Integration (Cronbach's Alpha: 0.627)	Mean	Median	SD
I am satisfied with my performance in my studies	4.83	5	1.42
I have already learned a lot in my studies	5.24	5	1.30
I can recall my knowledge in examination situations	4.99	5	1.21
Academic integration (3 items)	**5.02**		**1.31**

Appendix 3

Table 7: "Social integration" per institution (N_A = 164, N_B = 54, N_C = 48)

	Inst.	Mean	SD
The teachers motivate me strongly in my subject during my studies	A	2.66	1.52
	B	3.78	1.22
	C	3.75	1.30
I maintain intensive contact with fellow students/ classmates	A	2.13	1.43
	B	3.70	1.71
	C	4.35	1.56
I am also in contact with the lecturers between the courses	A	2.10	1.29
	B	2.56	1.46
	C	2.77	1.56
I easily find contact with fellow students/ classmates	A	3.05	1.70
	B	4.02	1.41
	C	5.23	1.52
For my further education, the exchange with fellow students/ classmates is a decisive help	A	3.13	1.83
	B	4.80	1.61
	C	4.85	1.64
I often work in a study group with fellow students/ classmates	A	1.70	1.18
	B	3.31	1.78
	C	3.29	1.71