

# EXPERIENCING LEARNING SPACES IN CONTINUING EDUCATION: THE LEARNER'S PERSPECTIVE

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## ABSTRACT

The number of students participating in academic continuing education programmes has steadily increased over recent years. However, currently, little is known about the experiences and learning conditions of adult students. This study examines students' experiences of physical learning environments on an academic continuing education university campus. To gain a comprehensive insight, an interdisciplinary approach combining the fields of architecture, education, and psychology was chosen.

In a case study, we used a mix of qualitative and quantitative data-collection methods including a questionnaire, a semantic differential scale, walking interviews and facilitated focus groups, as well as technical measurements and photo protocols.

Our results demonstrate that spatial characteristics such as acoustics, air quality, visual comfort, furniture and equipment, plants and greenspaces were essential factors in creating a conducive learning environment. Furthermore, students specified a strong need for appropriate spaces for collaborative work and individual and informal exchanges on campus. Noise disturbance and the lack of favourable design features were the most frequently mentioned characteristics perceived negatively. Our findings indicate that the design of informal learning spaces on campus that align with appropriate learning activities based on students' experiences and expectations is crucial for continuing education students.

## INTRODUCTION

Within the field of learning-space research, investigating the architectural aspects of physical learning environments and the connection between physical learning spaces and student learning is of growing interest for practitioners and researchers alike. Besides the overall quality of the learning, the psychological and physical well-being of the learners and teachers are of particular importance. The impacts of physical learning spaces on different aspects of learning, both for compulsory and post-compulsory education, are already generally recognised and accepted in educational sciences as well as in design and architecture (Higgins *et al.*, 2005; Melhuish *et al.*, 2008; Sivunen *et al.*, 2014).

Nevertheless, only a small amount of highly fragmented research has been identified regarding the use of space in higher education (Ellis & Goodyear, 2016). One specific topic that has, thus far, received particularly scant attention is the area of learning spaces in adult and continuing education, even though it is recognised that adult learning is significantly different from the learning of students in the formal education system in terms of motivation, orientation to learning, experience in learning and self-concept (Knowles *et al.*, 2005).

In 2016, 44.4% of adults in the EU ages 25 to 64 participated in at least one formal or non-formal educational or training activity (Eurostat, 2020). Programmes offered by universities are currently gaining momentum, especially in the German-speaking countries of Austria, Germany and Switzerland. Universities offer a variety of programmes and courses as part of their continuing education activities. These may be listed as individual seminars without ECTS, free continuing education series, summer courses, university courses without degrees, corporate programmes, ECTS-based certificate courses, ECTS-based individual seminars and academic expertise programmes (Gornik, 2019). In addition to these, academic continuing education, which can be defined as formal learning activities (leading to a bachelor or master's degree) offered by universities for adults, is one of the common activities within the framework of university continuing education. Some programmes admit students without prior academic degrees through permeability and recognition of prior learning. There exist specialised universities, such as Danube University Krems, that offer academic continuing education programmes to adults. In Austria, the number of students participating in academic continuing education programmes increased by 77% between 2009 and 2019 (Kulhanek *et al.*, 2019). In 2018, 12% of the adult population in Germany participated in some form of academic continuing education activity (BMBF, 2019).

Despite increasing participation, little is known about the learning experiences and conditions of this cohort. There is a significant gap in the literature, and our literature research has not identified any appropriate studies on the physical learning environment in continuing education settings. Thus, it is crucial to study adult participants' experiences regarding physical learning spaces and to investigate the patterns and qualities of learning spaces unique to continuing education. For this purpose, an interdisciplinary research project was conducted combining the fields of architecture, education and psychology to answer the following main research question:

*How do learners in academic continuing education experience the physical learning environment on a university campus?*

## STATE OF THE ART

To achieve a holistic picture of the learning spaces and students' experiences in academic continuing education, we follow a learning-space model from Wilson (2009), the *Places for Learning Spectrum*. He argues that campuses need to be considered as a network of connected learning environments. From this perspective, the process of learning is not carried out in isolated physical spaces but rather within a range of different types of learning and teaching activities, spaces and technologies. He identifies a balance and mixture of learning spaces ranging from formal learning spaces, such as labs or seminar rooms, to informal learning spaces like parks or catering areas.

Wilson's model recognises a continuum from informal to formal learning environments: from completely independent, self-directed and unstructured to highly structured and teacher-led didactics. The *Places for Learning Spectrum* is a student-centric model and can be divided into three components that explore their relationships from a learner's perspective: (1) the types of physical spaces that support learning, (2) the various communities of people who support learning (staff, peers, community), and (3) learning modalities to enable learning for different student outcomes (see *Figure 1*).

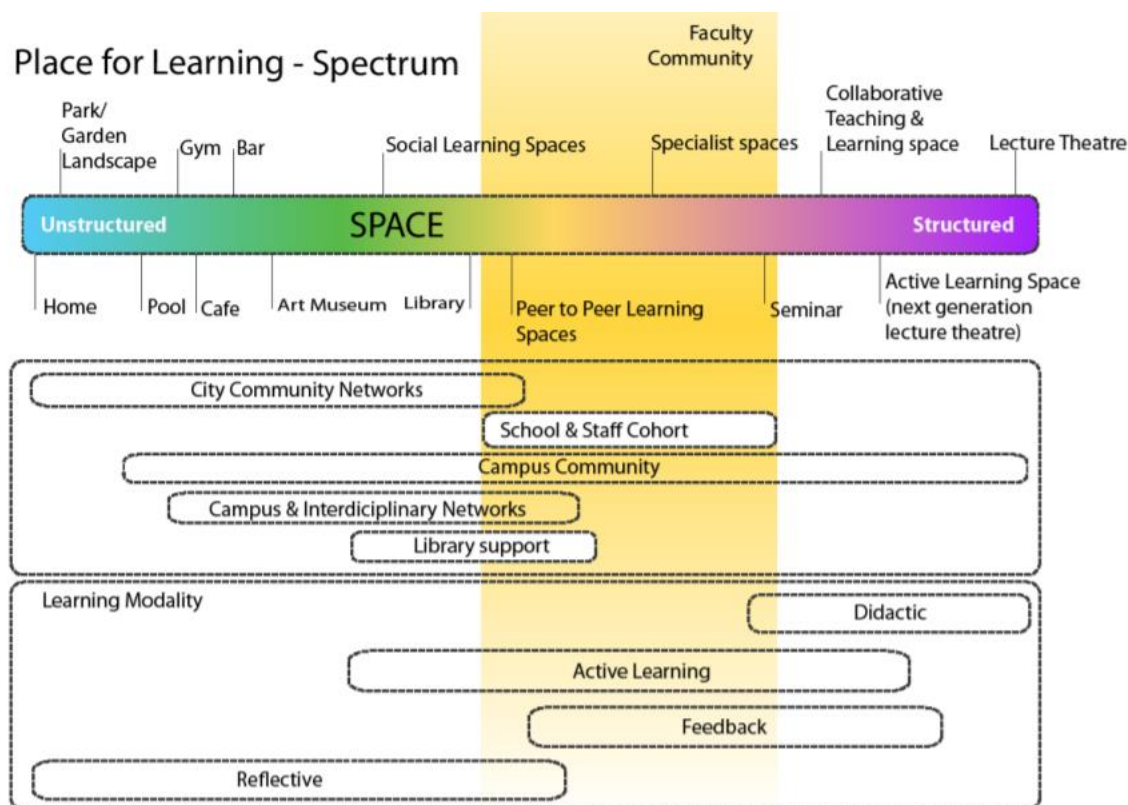


Figure 1: Places for Learning Spectrum (Wilson, 2009, p. 20)

In this study, we follow this line of research on students' experiences of learning spaces. Ellis and Goodyear (2016) provide a useful review of previous research on students' experiences. Understanding and designing learning spaces based on students' experiences and well-being are strongly recommended both for the campus and for individual seminar rooms, lecture halls and other discrete spaces.

Several studies focusing on physical learning spaces from learners' perspectives have investigated the relationship between spatial characteristics, student satisfaction and learning experiences. According to Hanssen and Solvoll (2015), the factor that most strongly influences student satisfaction with university facilities is the quality of the social areas, auditoriums and libraries. A study by Sankari *et al.* (2018) suggests that learners in an academic context would appreciate spaces that reflect some of the characteristics of co-working spaces, such as community, multipurpose offices, high accessibility and overall attractiveness.

According to Kärnä and Julin (2015), characteristics of spaces that are close to universities' core activities like teaching have a greater impact on overall learner satisfaction compared to spatial characteristics like campus accessibility and environment that are more distant to these activities. Several studies have also highlighted the importance of the physical space and technical equipment conducive to active-learning techniques as factors contributing to student engagement and connecting learners and lecturers in an active learning process (Brooks, 2011; de Borba *et al.*, 2019; Hill & Epps, 2010; Yeoman & Wilson, 2019).

Besides interior settings and designs, classroom views to greenscapes were shown to have a positive impact on student satisfaction and course ratings (Benfield *et al.*, 2015). Furthermore, access to natural views increased visual creativity (Studente *et al.*, 2016), resulted in higher grades at the end of the semester (Benfield *et al.*, 2015), had an impact on better performance on tests of attention and increased student recovery from stressful experiences (Li & Sullivan, 2016).

There is also broad evidence on the impact of indoor environmental quality (IEQ) on occupants' health and productivity (Mujan *et al.*, 2019) as well as cognitive functioning (Wang *et al.*, 2021) and on the relationship of different aspects of IEQ (including thermal, visual and acoustic comfort, indoor air quality) to student satisfaction and learning performance (e.g. Ramprasad & Subbaiyan, 2017; Sarbu & Pacurar, 2015; Shan *et al.*, 2018; Yang & Mak, 2020).

Against this empirical and theoretical background, the article is organised as follows: in the research methods, the context of the study and our selected methodological approaches are described. To investigate the broader learning spaces of a university campus and IEQ of specifically designed seminar rooms, qualitative and quantitative data were collected. In the results, the perceptions and experiences of the learners are presented. Finally, we discuss the main findings regarding students' experiences with learning spaces in continuing education and their implications.

## RESEARCH METHODS

To explore students' experiences of physical learning spaces in academic continuing education, we conducted a case study based on qualitative and quantitative data collections (Yin, 2018). For this purpose, a five-day compulsory learning module, *Cognition and Creativity*, which took place at Danube University Krems in Austria, was investigated. This case study focussed both on the university campus, with its spectrum of different formal to informal learning spaces and on seminar rooms with various interior settings and designs.

### Research Context

Danube University Krems is a public continuing education university in Austria providing post-graduate education programmes. Currently, about 8000 students are registered. The average age of students is about 40 years; 19.4% are over 50 and 2% are over 60 years old. The majority of the students are employed while studying, and most have several years of professional experience. Educational background is quite diverse as students without higher-education entrance qualifications are admitted with equivalent qualifications achieved through non-formal or informal learning activities (Humer *et al.*, 2019).

The campus covers an area of about 34,000 m<sup>2</sup> and is located at the foot of vineyards that are typical for the Wachau region, which is a UNESCO World Heritage Site. In addition to vehicle-free access areas and walkways, it offers greenspaces, rest areas and art installations. The building stock consists mainly of a listed historic industrial building constructed in the 1920s and carefully renovated in the 1990s and a modern building that was completed in 2005 and houses seminar rooms, office space, research infrastructure, a library, catering areas and an auditorium (see *Figure 2*).



Figure 2: The historic (left) and modern building at the campus of Danube University Krems (© Gregor Radinger)

## Data Collection

To conduct a comprehensive examination of learners' experiences in relation to physical learning spaces, including the whole campus as well as specific seminar rooms, we applied a mix of qualitative and quantitative data collection methods.

### 1. Questionnaire: Expectations and satisfaction with the physical campus learning environment

The aim of the questionnaire was to gain insights into students' experiences of the physical learning environment on the university campus, including their expectations and degree of satisfaction regarding the following topics and criteria:

- Characteristics of indoor environmental quality: contemporary design (of buildings, indoor and outdoor spaces, interior and furniture), adequate temperature conditions, adequate air quality, adequate room acoustics, use of health-promoting building materials and modern equipment;
- Availability of space on campus suitable for various activities related to learning and well-being: spaces for concentrated individual study, retreat and relaxation, group work, creative tasks and informal exchanges with peers and lecturers;
- Campus environment and accessibility: quality of campus environment (e.g. natural surroundings, cultural offerings and gastronomy), campus accessibility and connection to public transport.

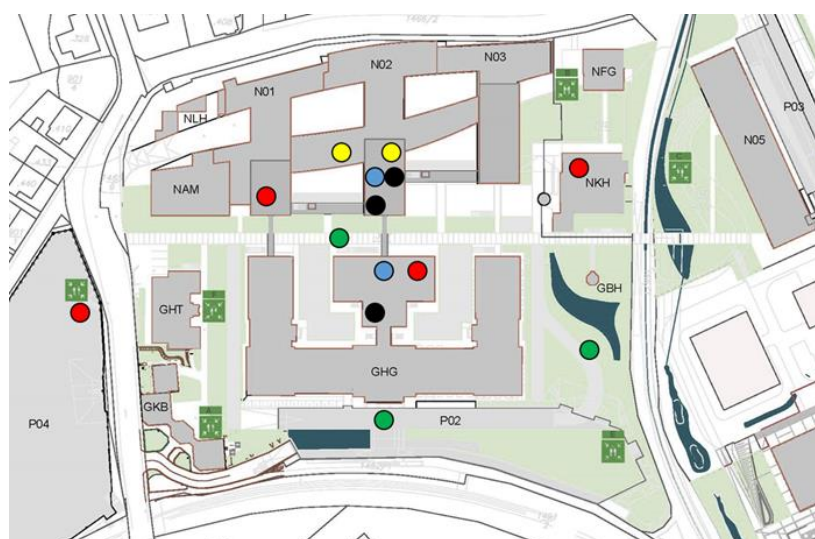
Data were collected using a paper-and-pencil questionnaire that was handed out at the end of the module week. Students were asked to assess the importance of the criteria for learning spaces in continuing education on a four-point scale: (1) unimportant, (2) rather important, (3) important or (4) very important. The extent to which they felt their expectations were met by the spaces provided within the campus was also rated on a four-point scale: (1) not fulfilled, (2) insufficiently fulfilled, (3) satisfactorily fulfilled or (4) very satisfactorily fulfilled.

## 2. Walking interviews: Perception and use of the campus learning environment

The aim of the walking interviews was to explore how different rooms, facilities and areas on the campus are perceived and, particularly, how they are used by students within their learning activities in the context of continuing education. In walking interviews, researchers accompany the participants in their usual spatial environment and collect their experiences, interpretations and practices within the environment in which they move (Carpiano, 2009).

For this part, each of seven researchers accompanied two students and visited two preselected locations on the university campus. Hence, 14 locations were visited, which can be assigned to five spatial categories: four campus catering areas (restaurants and cafeterias), two seminar rooms, three freely accessible indoor work and lounge areas, three outdoor areas, and two learning spaces in the university library (see *Figure 5*). The researchers followed guiding questions related to the students' perceptions, evaluations and uses of the visited locations.

The students' statements were audio-recorded and evaluated according to the number of comments regarding positively or negatively perceived spatial qualities, patterns of usage and expressed desires regarding the spatial infrastructure.



*Figure 3: Campus plan with the investigated locations: seminar rooms (blue dots), catering areas (red), lounge and work areas (black), public outdoor areas (green) and library spaces (yellow).*

## 3. Semantic differential: Perception of interior space in different equipment settings

To analyse students' perceptions of specific spatial settings while performing creative group tasks, two similar seminar rooms in the new building on the campus were prepared with different equipment and furniture as shown in *Figure 4*. The conventional seminar room (C 2.2) was set up with basic conventional furnishings including uniform tables and chairs. The innovation room (C 2.8) was equipped with posters, plants, a variety of furniture and a reading corner, and equipment was provided such as flipcharts, mobile lamps, etc. aiming to offer a more creative environment and an inspiring atmosphere.



Figure 4: The conventional seminar room (C 2.2, left) and generously equipped innovation room (C 2.8, right) (© Gregor Radinger)

Several workshop tasks were conducted in groups of three to four people on two consecutive days in these room settings. The groups changed rooms in a randomised selection. A semantic differential scale developed by Frank *et al.* (2015) as an *atmospheric seismograph* to analyse spatial, material and lighting effects in different architectural environments was adapted to investigate the students' perceptions of the two different room settings. The participants rated their affective attitude towards the different spatial settings on a seven-point scale between 20 bipolar-association terms (see Figure 7).

#### 4. Facilitated focus group: Experiences with physical learning environments

At the end of the module week, the students' perceptions regarding the influence of the experienced spatial settings on their learning activities during the module were collected in a moderated group discussion. The discussion followed guiding questions related to the students' perceived impact of physical-spatial characteristics on their learning experience and their opinions regarding specific requirements for the physical learning environment in continuing academic education.

#### 5. Technical measurements and photo protocols

The indoor air temperature (thermal) and CO<sub>2</sub> concentration (as an indicator of indoor air quality) of the seminar rooms were measured during the time period under observation, and the characteristics in the seminar rooms were documented using photo protocols.

#### Study Setting and Participants

The study was conducted during the university course module *Cognition and Creativity*, which was organised by the Department for Knowledge and Communication Management as an elective module eligible for different master's degree programmes. The time-blocked courses were held in different rooms on the campus of Danube University in Krems between 9:15 am and 4:45 pm each day during the second week of December in 2019.

In all, 14 participants, seven males and seven females, took part in this module. Their average age was 37.9 years, and 61.5% of the participants already had a university degree, 15.4% a university entrance qualification, and 23.1% an apprenticeship qualification. Moreover, 76.9% of the participants were employed and 23.1% were self-employed, all of them studying on a part-time basis. The students had already completed one or more modules at Danube University Krems and were familiar with the spatial offerings and campus infrastructure.

## Characteristics of Seminar Rooms

During the course module, four seminar rooms were available as lecture rooms. Two seminar rooms (SE 2.4 and SE 3.4) are located in the refurbished historic building, which has box-type windows. Two additional seminar rooms (C 2.2, C 2.8) are located in the modern building. The floor-to-ceiling fixed glazings in the new building have external, vertical sun-protection louvres. Although the rooms in the new building are mechanically ventilated, natural ventilation is also possible through room-high ventilation flaps. The usable floor areas of all four seminar rooms each range from 43 to 139 m<sup>2</sup>. The interior design of the seminar rooms in the old and new buildings differs regarding colour and materials. In the old building, the interior room surfaces are plastered in a light or cream colour with fittings and door frames and panels painted in shades of pastel green, while the new building is dominated by exposed concrete surfaces and dark-violet acoustic panels as well as large, glazed areas.



Figure 5: Seminar rooms in the historic building (SE 2.4, top) and in the modern building (C 2.8, bottom) (© Gregor Radinger)

Average room temperatures in the seminar rooms during the course module were in a range between 22.7 °C and 23.1 °C, with simultaneous prevailing outdoor temperatures of a maximal 6.4 °C. Thus, the measured air temperatures are in a range perceived mostly as comfortable according to different standards such as ISO EN 7730 (International Organization for Standardization, 2005). The peaks of CO<sub>2</sub> concentration in the seminar rooms never exceeded 1176 ppm. Considering these peak levels, the indoor air quality can be classified as between moderate and low (Umweltbundesamt, 2008) but can quickly be improved by shock ventilation.

## RESULTS

### Expectations and satisfaction with the physical campus learning environment

The average of all investigated criteria regarding their *importance* was 3.1 (SD = 0.75) and lies in the range between 'important' and 'very important' (see *Figure 6*). Regarding IEQ, the quality of the indoor air was rated as the most important criterion (M = 3.6, SD = 0.51), while the use of health-promoting materials was ranked of only moderate importance (M = 2.67, SD = 0.89). In terms of spatial availability, places for conducting complex tasks (M = 3.4, SD = 0.65) were considered most important, while spaces for individual study on campus seemed to be less important (M = 2.85, SD = 0.99). The campus environment (natural surroundings, cultural and gastronomic offerings) was assessed as rather important (M = 3, SD = 0.82), whereas campus accessibility and connection to the public transport network were rated as less important (M = 2.5, SD = 0.78).



The average of all investigated criteria regarding their *fulfilment of expectations* was 2.9 (SD = 0.63). The lowest satisfaction was shown regarding the availability of areas for conducting complex tasks (M = 2.31, SD = 0.63) as well as for group work (M = 2.54, SD = 0.66), relaxation (M = 2.54, SD = 0.66) and individual study (M = 2.62, SD = 0.65). The criteria for IEQ were assessed as rather satisfactory except for the indoor air quality (M = 2.77, SD = 0.44), which was rated as the most important of all the criteria.

Expectations regarding the campus environment as well as campus accessibility and connection to public transport were both considered to be sufficiently fulfilled (M = 3.00, SD = 0.58; M = 3.08, SD = 0.49).

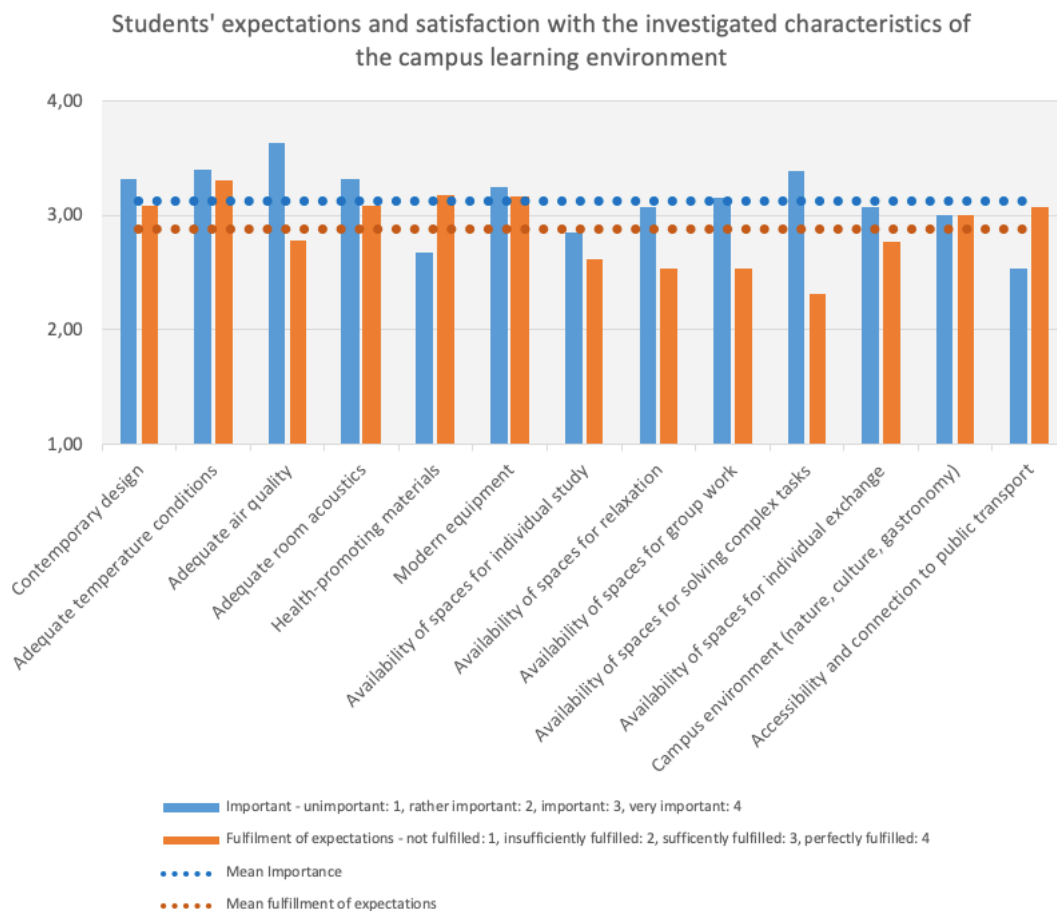


Figure 6: Students' expectations and satisfaction regarding indoor environmental quality, availability of spaces for different activities, and campus environment and accessibility

## Perception and use of campus learning environment

The analysis of the walking interviews revealed that noise and poor acoustics as well as sterile or 'cold' room design are the most frequently mentioned negatively perceived room qualities (5 mentions for each). Brightness and the availability of daylight are often mentioned positively (4 mentions). Regarding the available space, the lack of privacy (4 mentions) and non-existent or unsuitable furniture in generally accessible areas (3 mentions) were also noted. The availability of greenspace, the view and the spacious interiors with high ceilings (3 mentions each) were perceived positively. The demands on the spatial offerings on campus refer primarily to suitable furniture and equipment in outdoor areas (4 mentions) as well as to room areas for group activities and exchanges with other students (3 mentions each).

The analysis confirmed the need for more suitable spaces for group work, collaborative work, and individual and informal exchanges. Furthermore, several reasons that certain spaces were not used or were disliked could be identified, including inappropriate design and lack of furniture. One student commented, 'One has the feeling it's not at all desired that one communicates here or that group work takes place'. Other reasons were poor acoustics (especially in the lounge and catering areas), limited accessibility due to restricted access or opening hours, lack of service infrastructure (e.g. catering, restrooms) and lack of retreat or privacy, which another student described as being '... too open to concentrate'. Since most of the students in the compulsory learning module were accommodated in hotel or dormitory rooms close to the campus, they used these predominantly for individual study.

### Perception of interior space in different equipment settings

The analysis of the semantic differential scale showed that the redesign of the seminar room into a generously equipped innovation room strongly influenced the students' perceptions and experiences. *Figure 7* illustrates the average ratings of the two rooms ranked according to rating differences. Overall, the innovation room was rated more positively than the seminar room on almost all dimensions (no overlap of the 95% confidence intervals). However, the innovation room was perceived as more chaotic than the seminar room. We found it particularly interesting that the innovation room was not rated as 'new'. As one participant stated, almost all companies already provide 'some sort of innovation space', so the novelty value is limited. In addition, it must be noted that the positive perception of the room did not automatically affect students' interactions with the provided equipment. For example, while conducting the team activities, it was observed that, while one group immediately started to use the foam cutter in the innovation room, another group remained seated and paid no further attention to the equipment.

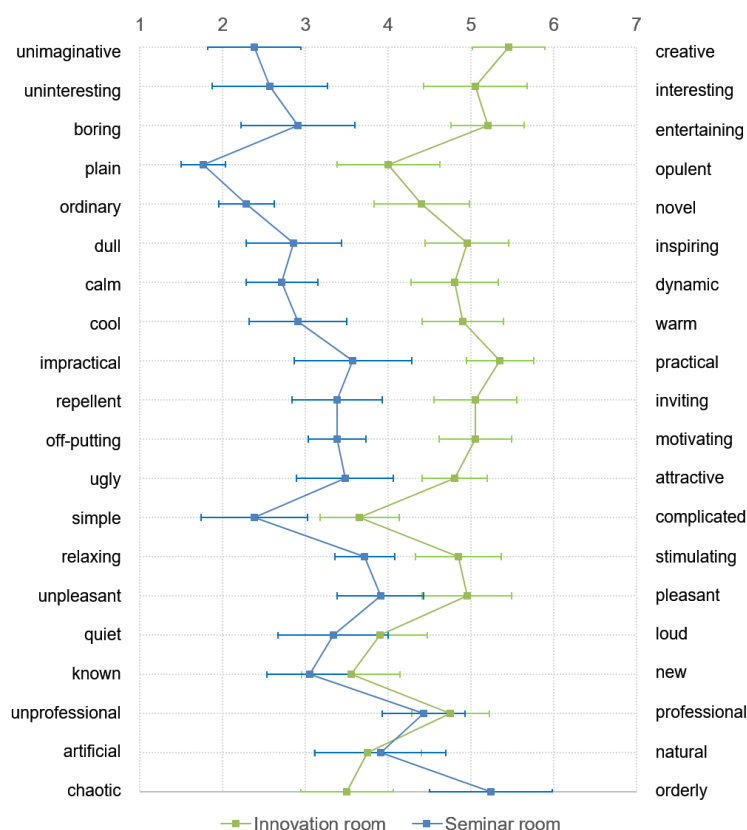


Figure 7: Results of the semantic differential scale sorted by size of difference and including 95% CI

## Experiences with the physical learning environment

In the group discussion, participants stated that the seminar rooms in the historic building were considered a more suitable learning environment compared to the new building. Above all, the use of natural materials such as wood and the patina caused by aging were perceived as pleasant. The rooms in the new building were perceived as stimulating, but at the same time sterile, although the combination of wood and concrete attracted positive attention. The ventilation flaps in the new building were considered disadvantageous compared to the window ventilation in the old building. Upholstered seating was found to be more comfortable than chairs without upholstery. The design of the restrooms in the historic building (spacious, with light colours) was considered positive compared to those in the new building with dark-coloured walls.

Technical infrastructure with ample electrical outlets, charging stations for electronic devices and internet connectivity, windows that can be opened and appropriate room size were mentioned as essential basic requirements for learning spaces, as well as adequate room lighting without glare. In terms of spatial design, light cream-coloured room surfaces were considered more pleasant than saturated dark colours. Flexible and comfortable furniture and the U-shaped arrangement of tables were considered practicable.

Greenscape views, plants, and proximity to additional facilities such as restrooms, food sources and coffee machines also had an impact on the perception of space. Further ideas and wishes included writable walls, retreat areas, possibilities for food preparation and furniture in the outdoor space suitable for group work or relaxation.

## DISCUSSION

Reflecting on the findings in regard to our research question, which aimed to understand the adult learners' experiences of physical learning spaces, students were generally satisfied with the physical characteristics of spaces on the university campus. The structured, formal learning spaces as seminar rooms (Wilson, 2009) were rated rather positively compared to informal, unstructured learning spaces for activities and tasks such as collaborative work or individual exchanges. Regarding structured learning spaces, our study revealed results similar to those of previous research (Wilson & Cotgrave, 2016) that also considered the roles of temperature, equipment and spaciousness in student satisfaction. In a comparable study (Hill & Epps, 2010), adult students also indicated higher satisfaction in innovative rooms with improved seating, lighting and classroom noise control compared to conventional seminar rooms. To a significant degree, improved learning environments create a different and more positive experience for students. Basic measures like adding plants or changing colours, furniture and equipment can result in a better learning experience.

The design features of the historic building with its natural materials, patinated fittings and simple-to-use operating elements influenced a positive perception of space. Although combinations of wooden floors with industrial design in the new building were considered stimulating, the students prefer the old building to the modern, high-tech architecture as a learning environment in many respects.

The provision of different types of furniture for sitting and standing activities, artefacts, tools, technical infrastructure, etc. enables a significantly more positive perception of space compared to a minimalist room design. The demands regarding the quality of the furniture, especially in terms of ergonomics, as well as expectations related to indoor environmental properties, such as acoustics, temperature and air quality, were high. The perception of space was positively influenced by flexible furniture arrangements and the simple operability of windows and shades, which allowed users to regulate temperature and air quality as well as lighting and view. Above all, noise and disturbing sounds should be reduced by

appropriate construction and design measures (Castro-Martinez *et al.*, 2017; Dias *et al.*, 2019).

Informal learning spaces were among the main topics regarding the campus experience. Areas for group work, informal exchanges and relaxation are essential components of the spatial repertoire of universities. Therefore, the exterior is seen as an important spatial resource that has to be designed accordingly and equipped with furniture and technological infrastructure. In addition, interspaces such as corridors and access areas can be used and designed as meeting and communication spaces, with amenities like coffee machines, water dispensers, etc. to encourage their use. Moreover, the design and functionality of restrooms were recognised by students, especially if their usability was impaired (Wilson & Cotgrave, 2016). The maintenance of facilities can, therefore, contribute significantly to a positive perception of the space.

The students emphasised the lack of informal learning spaces on the campus and within the buildings. Informal learning spaces or social learning spaces (Wilson, 2009) are important elements of the learning environment; they promote a culture of freedom and openness and enhance relationships between students (Berman, 2020). In our case, students' needs for special places for collaborative learning activities and for accomplishing complex tasks were quite high. Panacci (2015) also emphasises that active, collaborative and interactive approaches that take into consideration their own experiences and knowledge about both the content and learning are more appealing to adult students (Knowles *et al.*, 2005).

Although we have attempted to provide a comprehensive view of the experiences and perceptions of these learners, this study is also limited in several ways. The findings are based on the analysis of a single course module conducted in late autumn at one university campus. Comparisons with an analysis of additional modules with students from different disciplines, conducted in both the winter and summer seasons, but also broadening the research focus to other contexts such as different universities in other geographic and climatic locations, cultural settings and modes of university lifelong learning would contribute to the expansion and consolidation of the insights in future studies.

## CONCLUSION AND IMPLICATIONS

The design of informal learning spaces on campus that align with didactic aspects and the nature of learning activities is essential for a positive experience for learners. Our study revealed that for academic continuing education students, who bring their professional knowledge and experiences to the learning environment, a variety of structured and unstructured spaces that meet their immediate needs for different types of learning activities is of importance. Based on the findings of our case study, questions for further inter- and trans-disciplinary research arise. Experiences and expectations of adult learners regarding the physical campus environment may be different from those of traditional students. Thus, we recommend a comparative study using the same measures to collect data from traditional and continuing academic education students.

In this context, a question emerges regarding the extent to which expectations and perceptions of the physical learning space are related to defined learning objectives of the attended course or to specific learning goals of adult learners for their own purposes (e.g. career-related goals, networking or exchanging ideas and knowledge with peers). A longitudinal study could provide further insights on how students' expectations, perceptions and use of campus learning spaces change over the course of an educational programme. Furthermore, it would be of interest to examine the reasons for the observed preferences of learning spaces in the historic building, to what extent they are influenced by individual and cultural values, and in which way(s) they are related to the experience of being part of an academic tradition and community. Additional investigations could address the use and

revitalisation of historic buildings within academic continuing education and university lifelong learning.

The scientific investigation of suitable learning environments also has a direct influence on the practical pedagogical work and design of the corresponding spaces. A deeper understanding of the effects of spatial environment on learners could further inspire educators to choose a didactically conducive spatial environment or to design it accordingly. As shown in the case study, even singular modifications of furniture and equipment in a seminar room can alter the perceptions and experiences of students. In the long term, these results should be taken into consideration for the architectural design of learning spaces. It is no longer sufficient to understand a campus exclusively as a physical object; it must be seen as a multidimensional learning space that combines insights from, at least, architecture, pedagogy and psychology.

Re-imagining the learning spaces and considering the provision of more unstructured but enhanced social and cognitive engagement spaces for learners are crucial for continuing education students who visit the campus for short blocks of time during their study. The careful adaptation of historical building stock, a high-quality indoor environment, and ample supplies of adequate furniture and equipment in combination with natural elements can support the creation of stimulating learning environments. Hence, in the design and implementation of learning spaces for academic continuing education, these factors should be considered in order to provide a conducive learning environment.

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