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## **Beyond The Lecture Hall: Exploring Informal Learning Spaces as Catalysts for Interpersonal Relationships, Student Well-Being and Campus Satisfaction in Higher Education Institutions**

**Monika MAČIULIENĖ\***

*Faculty of Creative Industries, Vilnius Gediminas Technical University, Vilnius, Lithuania*  
*ORCID: 0000-0002-8527-7468*

**Gintarė GULEVIČIŪTĖ**

*Faculty of Creative Industries, Vilnius Gediminas Technical University, Vilnius, Lithuania*  
*ORCID: 0000-0003-1896-0889*

**Aelita SKARŽAUSKIENĖ**

*Faculty of Creative Industries, Vilnius Gediminas Technical University, Vilnius, Lithuania*  
*ORCID: 0000-0003-1606-0676*

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Informal learning spaces have gained recognition as catalysts for student co-creation and engagement in higher education institutions. This study investigates the relationship between the availability and accessibility of informal learning spaces on campus and its influence on university belongingness, interpersonal relationships, student well-being, and university campus satisfaction. Mixed-method approach incorporating interviews and survey has been used in the study. Through qualitative research methods, including interviews with stakeholders, we explored the informal learning spaces at Mykolas Romeris University (MRU). The findings highlight that MRU offers a variety of spaces for both collaborative and focused learning, which are characterized by inclusivity, accessibility, digitalization, and availability for students. Guided by two research hypotheses, the quantitative part of the study examines the extent to which the availability and accessibility of informal learning spaces impact these key variables. The survey revealed a positive perception among respondents regarding the availability, accessibility, and satisfaction with informal learning spaces. Moreover, the study indicates that higher availability and accessibility of informal learning spaces on campus can significantly influence students' university belongingness and well-being. This paper contributes to the field by examining informal learning spaces from a holistic perspective that encompasses both students and stakeholders.

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\* Correspondency: [maciuliene@mruni.eu](mailto:maciuliene@mruni.eu)

## **Introduction**

The learning space, whether it is a physical or a virtual environment, plays a crucial role in the education of students. It sets the stage for the learning experience and can greatly impact the effectiveness of the instruction. Traditionally, the design of university campuses has focused on conventional instructional methods and formal learning spaces. However, there has been a growing trend towards incorporating informal learning spaces into the campuses of higher education institutions. Informal learning spaces are defined as spaces that are not formally designated for teaching and learning, but that can still be used for those purposes (e.g., common areas, lounges, outdoor spaces). These spaces, which are designed for students to use outside of formal instruction are becoming more prevalent as universities aim to improve the overall experience of their students and other stakeholder groups. Wang (2020) suggest that the balance between formal and informal learning will soon even out in the pedagogy of higher education. Thus, the planning of informal learning environments (both offline and online) and student behavior at those places are taking on new relevance.

Based on the presented statements, the main goal of this paper is to explore the potential of informal learning spaces available for and used by students in higher education institutions. The paper will examine the current state of informal learning spaces in higher education and the ways in which these spaces can be used to support the student learning, engagement and co-creation. Additionally, the paper will examine the challenges and limitations of informal learning spaces and will provide recommendations for how institutions can create and manage these spaces to better support student success. The context of the investigation is the Lithuanian higher education ecosystem and Mykolas Romeris University (MRU) in particular. The importance of environment in educational institutions is highlighted in the Lithuanian National Education Strategy 2013-2022, the National Progress Programme, the Operational Programme for Investment of European Union Funds and other strategic documents. The underlying premise of these documents is that both the right learning environment and quality of curricula are crucial for developing creative members of society and higher-level competencies needed for Lithuanian society to flourish.

Hence, this study investigates the relationship between the availability and accessibility of informal learning spaces on campus and its influence on university belongingness, interpersonal relationships, student well-being, and university campus satisfaction. Mixed-method approach incorporating interviews and survey has been used in the study. Through qualitative research methods, including interviews with stakeholders, we explored the informal learning spaces at MRU. Guided by two research hypotheses, the quantitative part of the study examines the extent to which the availability and accessibility of informal learning spaces impact these key variables.

The article is structured to present a comprehensive overview of the study conducted on the potential of informal learning spaces and their use in Lithuania. The first section presents a review of existing literature in this field, highlighting the key findings and contributions of previous studies. The second section provides an in-depth description of the research methodology used in the case study, including the design of both qualitative and quantitative components, the data collection procedures and the techniques applied for data analysis. Finally, the last sections present the findings of the study, discusses the results in light of the literature review and research questions, provides insights into the relationship between the design of informal learning spaces and student satisfaction.



## Background of research

This section provides a theoretical background of the research focused on informal learning spaces in higher education institutions. The first subsection discusses the need for such spaces and their impact on student belongingness, well-being and academic outcomes. The second subsection emphasizes the importance of co-creation and stakeholder engagement in their design process. Finally, the third subsection highlights the differences between individual, collaborative and online learning spaces.

### *The need of informal learning spaces at higher education institutions*

The availability and accessibility of informal learning spaces on campus spaces can provide opportunities for informal interactions and social connections, which can foster a sense of community and belonging among students. In addition, student belongingness, has been shown to have a positive impact on affective commitment to the university and interpersonal relations (Allen & Meyer, 1990). Affective commitment refers to the emotional attachment and investment a student has in their university. Interpersonal relations refer to the social connections and relationships a student has with others within the university community (French & Oakes, 2004). All of these factors can contribute to a student's overall well-being and satisfaction with their university experience (van den Bogerd et al., 2021). Yorke's (2016) research has also shown that students who feel a sense of belonging and have positive interpersonal relations are more likely to persist in their studies and have better academic outcomes.

However, it is not just the availability of informal learning spaces on campus that contribute to university belongingness and well-being of students. The design of these spaces also plays an important role. For example, spaces that are comfortable, flexible, functional, have a good spatial hierarchy, open and have other support facilities can contribute to the well-being of students. Researchers have been working to understand the functional definition and spatial design principles of informal learning spaces. For instance, Harrop and Turpin (2013) developed a typology of learning space preferences based on learning theory, place making and architecture. They used a mixed-method approach that included observational sweeps and photographic mapping exercises. The typology includes nine attributes that can be used for planning or evaluating informal learning spaces: destination, identity, conversations, community, retreat, timely, human factors, resources and refreshment. Valtonen et al. (2021)'s research highlighted five main themes of informal learning spaces that should be considered: characteristics of the campus, available resources, flexibility of learning opportunities, pedagogy and implementation of ICT in education. Finally, Wu et al. (2021) focused on identifying spatial design elements of informal learning spaces and concluded that six characteristics - comfort, flexibility, functionality, spatial hierarchy, openness and other support facilities - influence student use of the spaces.

Informal learning spaces can also provide opportunities for students to engage in activities that promote well-being, such as relaxation and stress management (Topp et al., 2015). For example, studies have found that green spaces on campus can positively impact students' satisfaction levels (Çetinkale & Demirkan, 2020; Koning et al., 2022; Sun et al., 2023). The universities play an active role in this process. According to the research by Salihoğlu and Açıkgöz (2021), students' satisfaction and their perceptions of campus life quality increases as the opportunities and services (e.g., infrastructure accessibility, library services, social life services, dormitory services, security services, campus environmental design) provided by university expand.

### ***Co-creation and stakeholder engagement in design of informal learning spaces***

Riddle and Souter (2012) suggest that any space design process should keep in mind the culture of an institution, learner-centered approach, and pedagogy. In similar vein, Vanichvatana's (2019) research emphasized the importance of considering students' preferences when managing facilities that support informal learning on university campuses. According to the researcher, if universities do not do this, students will choose to use informal learning spaces located off-campus. The studies suggest the design of informal learning spaces should follow the principles of co-creation (Lundström et al., 2016; Mäkelä & Leinonen, 2021). Co-creation is a process where multiple stakeholders come together to actively participate in the design and development of a space (Storey, 2015). Involving community members from the beginning is essential in co-creation because it allows for diverse perspectives, ideas, and insights to be incorporated into the final outcome. This can lead to a more inclusive and effective solution, as well as increased buy-in and ownership among students.

### ***Collaborative, individual and online learning spaces***

Existing research has demonstrated the significant differences between the needs of students completing focused/individual learning activities and collaborative/social learning activities. For example, Becker et al. (2016) suggests that students prefer learning space at home for individual activities and for collaborative study activities with peers, they prefer learning space at the university. Both types of spaces serve an important function. On the one hand, collaborative informal learning spaces can provide opportunities for students to work and learn together, which can foster social interactions, collaboration, and a sense of community among students. Collaboration can also help students to develop important skills such as communication, teamwork, problem-solving and critical thinking (Gapinski, 2018). On the other hand, individual learning spaces can provide students with the opportunity to focus on their own learning and to work independently (Mozzon-McPherson, 2007). These spaces can be useful for students who need a quiet and distraction-free environment to study and focus on their work. Hence, while in general the non-lecture spaces in the university campus serve as catalyzers in socializing and form the sense of community (Oblinger & Lippincott, 2006), the institutions should also consider developing learning spaces aimed at focused/individual learning activities.

The COVID-19 pandemic has had a significant impact on the educational environments of universities worldwide. Overall, the crisis has presented many challenges, but it has also accelerated the adoption of digital technologies and has shown the potential for more flexible and remote learning. The studies analyzing the effects of the pandemic (Baticulon et al., 2021; Kapasia et al., 2020) show that the lack of convenient learning place has been a barrier for students to participate in learning activities. The research also has highlighted the digital divide issues, and the need for more equity in access to technologies and internet for students and teachers (Lai & Widmar, 2021; Jaggars et al., 2021). Even though the digitalization in learning and its effects on students have been researched for few decades (Başoğlu, 2010; Sariçoban & Özturan, 2012), the scientific discussion intensified because of shift to online learning brought on by COVID-19. The design of online learning spaces in universities is critical to the success of students' learning experiences. Research suggests that effective design should focus on creating a sense of community (McInnerney & Roberts, 2004), engagement (Yang et al., 2018) and interaction among students and instructors (Jagdish, 2014). Overall, students have generally positive perceptions of online learning spaces and applications due to its flexibility, convenience, and accessibility (Altunoğlu, 2020). However, research has also identified some areas of concern including feeling of isolation and difficulties to stay motivated and engaged



(Nuñez, 2021).

Informal online learning spaces have received less research attention. In general, they refer to digital environments that are not directly associated with a formal educational institution or programme i.e., groups and chats on social media, online forums and discussion boards, YouTube and MOOCs (Massive Open Online Courses). Rather informal online spaces are created by individual or groups of learners for the purpose of sharing information and knowledge on different subjects. These spaces can provide learners with access to a diverse range of perspectives and expertise, as well as opportunities to connect with others who share similar interests. Moreover, research has shown that informal online learning spaces can be especially beneficial for learners who are not well-served by formal educational institutions, such as adult learners, individuals with disabilities, and those living in rural or remote areas (OECD, 2020).

### Methodology

Based on the consideration outlined in the previous section following research questions was designed: *What is the relationship between the availability and accessibility of informal learning spaces, university belongingness and the well-being of students, and how does the type of informal learning space (collaborative vs. individual) affect this relationship?* Mixed methods research combining qualitative and quantitative methods was applied in answering this question. The use of multiple methods to collect and analyze data increases the validity and reliability of the findings by providing multiple perspectives on the research question. Table 1 provides an overview of the methodological approach and following sections detail the methods and their synergies.

Table 1. Overview of the methodological approach

Elements	Stakeholder interviews (qualitative and explorative approach)	Survey (quantitative and hypothesis testing approach)
(1)	Availability, accessibility, spatial characteristics, equipment and usage of informal learning spaces by different student groups (project-developed scale for availability and accessibility)	
(2)	Analysis and categorization of users' perceptions and experiences regarding the fit of learning strategies and learning spaces (segmented into focused and collaborative learning)	In-depth analysis of focused and collaborative learning environments
(3)	Impact of the used informal learning spaces on students' well-being, knowledge acquisition and university belongingness: Satisfaction with campus and knowledge acquisition (project-developed scale) measuring belongingness, affective commitment to the university, interpersonal relations and well-being.	In-depth analysis of satisfaction with the support and the learning environment
(4)	Existing inequalities and barriers related to informal learning spaces, including access to technical equipment and internet as well as to physical-spatial environments conducive to learning and well-being (project-developed survey items)	
(5)	Students' and lecturers' awareness and enabling strategies to deal with existing inequalities and barriers.	

### ***Design of qualitative study***

The qualitative research component of the study focused on collecting data through interviews with various stakeholders associated with Mykolas Romeris University in Vilnius, Lithuania. The stakeholders included users of the informal learning spaces, university staff involved in managing and supporting these spaces (such as facility management, technical support, study coordinators, department heads, librarians, and student representative councils), as well as representatives from public authorities. The purpose of including a diverse range of stakeholders was to capture a comprehensive understanding of the informal learning spaces from multiple perspectives. This approach allowed for a holistic exploration of the experiences, opinions, and suggestions regarding the design, usage, and management of these spaces.

To ensure the quality of data, participants for interviews were selected based on established criteria. These criteria ensured that the participants: (1) belonged to one of the stakeholder groups at the university, (2) possessed knowledge of informal learning spaces, and (3) actively used or was involved in design/management of the informal learning spaces. By selecting participants who had direct experience and knowledge in utilizing these spaces, the research aimed to gather valuable insights and perspectives that would contribute to the overall understanding of the topic.

The chosen data collection method for the qualitative research was semi-structured interviews. This method was deemed most suitable for addressing the research questions effectively (Elo et al., 2014). The semi-structured interview approach provided a balance between providing a general framework for the discussion while allowing flexibility to explore individual experiences, opinions, and ideas in depth. The open-ended nature of the interviews enabled participants to share their unique insights and perspectives, allowing for a rich and detailed understanding of the issues surrounding informal learning spaces. During the interviews, several key themes were discussed extensively with the help of semi-structured interview questionnaire. These themes encompassed the following issues related to informal learning spaces at the university: spatial characteristics, availability, accessibility, usability, equipment, infrastructure, inclusivity (including challenges and measures taken), the role of digitalization in using the spaces, and future perspectives and plans. These thematic areas were carefully designed to cover a wide range of aspects pertaining to the informal learning spaces, ensuring a comprehensive exploration of the topic. The discussions within each theme provided valuable insights into the strengths, weaknesses, opportunities, and potential improvements associated with the design and utilization of the informal learning spaces. The semi-structured interviews incorporated a range of questions tailored to address the key thematic areas relevant to the study.

In total, six interviews with stakeholder (1 individual and 5 in group) were conducted in July, 2022. The individual interview provided an opportunity for a one-on-one in-depth exploration of a stakeholder's perspective, while the group setting allowed for interactive discussions and the exchange of ideas among multiple stakeholders. The combination of these data collection methods ensured that diverse perspectives of stakeholders were collected, enabling a comprehensive analysis of the research topic.

Table 2. Interview participants

Code	Department / Division	Tasks / Responsibilities
SH1	Center for Academic Affairs, Digital Studies Group	Digital facility management, Student's consulting for digital studies and support
SH2	Division of Infrastructure, Library	Facility management
SH3	Information resources formation group	Informational facility management, Student's consulting for information resources and support
SH4	Information Services and Education Group	Information services facility management
SH5	Library, Customer service and consulting group	Library and university archives, Student's consulting and support
SH6	Library, Science Data Formation Group	Library and university archives

Source: developed by authors, 2023

The interview process began with the selection of participants who met specific criteria ensuring their relevance and contribution to the research. The interviews were scheduled at times convenient for the participants and were conducted in a comfortable setting to encourage open discussion. During the interviews, the researchers followed the semi-structured questionnaire but remained flexible, allowing the conversation to flow naturally and probe further based on the participants' responses. All the interviews were audio-recorded with the consent of the participants, and notes were taken to capture non-verbal cues and ensure no detail was missed. After the interviews, the recordings were transcribed verbatim. The researchers then applied thematic analysis to identify patterns and draw out the rich, detailed information provided by the stakeholders. This analysis helped to inform the understanding of the current state of the informal learning spaces and to identify actionable recommendations for their improvement.

To ensure research ethics and participant consent, stakeholders were required to sign a compliance agreement prior to their participation in the interviews. This agreement outlined the purpose of the study, assured confidentiality and obtained informed consent from the participants. By adhering to ethical guidelines, the research team ensured the protection of participants' rights and the integrity of the research process.

### ***Design of quantitative research***

The quantitative aspect of the study involved the use of a survey questionnaire as a research method to collect empirical data. The questionnaire was designed to explore the characteristics of informal learning spaces available and utilized by higher education students at MRU. The research design was sensibly outlined to ensure a systematic and objective analysis of the collected data, allowing for a comprehensive understanding of the unique features and usage patterns of these learning spaces. The review of research presented in previous sections revealed that the literature lacks evidence on the relationships between the availability and accessibility of informal learning spaces with the well-being and belongingness of the students. Hence, the following hypotheses were set to be tested with the empirical data:

- (1) Hypothesis 1a: The higher the availability and accessibility of informal learning spaces on campus, the higher the university belongingness.

- (2) Hypothesis 1b: The higher the availability and accessibility of informal learning spaces on campus, the higher the interpersonal relationships.
- (3) Hypothesis 1c: The higher the availability and accessibility of informal learning spaces on campus, the higher the well-being of students.
- (4) Hypothesis 1d: The higher the availability and accessibility of informal learning spaces on campus, the higher the university campus satisfaction.

In addition, the presented literature showed important differences exist between the collaborative and individual informal learning spaces. Thus, the research aims to evaluate the relationship between the type of informal learning space and university belongingness and well-being of the students. Based on outlined considerations following hypotheses has been formed:

- (5) Hypothesis 2a and 2b: Informal collaborative learning spaces are more relevant to enhance university belongingness and well-being than informal individual learning spaces i.e., there is a stronger relationship between informal collaborative learning spaces and university belongingness and well-being than between informal individual learning spaces and university belongingness and well-being.

The survey questionnaire was designed to test these hypotheses by including relevant items related to the availability and accessibility of informal learning spaces and measuring the variables of interest using established scales. The survey was based on main thematic blocks: sociodemographic data (i.e., age, gender, fewer opportunities); questions about studies (i.e., study model, BA/MA, full-vs. part-time); focused learning activities (i.e., use of places, availability, accessibility, barriers); collaborative learning activities (i.e., use of places, availability, accessibility, barriers); hybrid learning activities (i.e., availability of technological devices, virtual places, barriers); university campus (i.e., satisfaction with campus, belongingness, well-being). The constructs in the questionnaire were measured using 5-point Likert scales to capture respondents' levels of agreement or disagreement.

Non-random convenience sampling was used to determine the sample of subjects. Different samples at 6 universities (Akdeniz Üniversitesi University, Turkey; HTW , Germany; Mykolas Romeris university, Lithuania; Sapienza Università di Roma; Universität für Weiterbildung Krems, Austria) were selected based on population from different faculties or institutes. Just one faculty or institute were participating at the research so the population at each university was not higher than 1000. The sampling technique based on selection just of one faculty, institute or even study program as the population was commonly used in the previous research (Barrot et al., 2021; Baticulon et al., 2021). The online survey was distributed on March - June 2022. Six universities were participating in the survey. In total, 1041 responses were received: Akdeniz University, Turkey 334 (32%), HTW Berlin, Germany 331 (32%) Mykolas Romeris university, Lithuania 105 (10%), Sapienza Università di Roma, Italy 156 (15%), Universität für Weiterbildung Krems, Austria 115 (11%). For the purposes of this research paper, the analysis focuses specifically on the Lithuanian sample to provide context-specific results and meaningful recommendations. However, the availability of results representing other institutions provides opportunities for comparison and allows to produce more actionable recommendations.

Regarding research ethics, the survey was designed to ensure the anonymity of participants and did not collect any personal data that could be linked to individual respondents. Participants were informed of the voluntary nature of their participation, and registration was not required





to take part in the survey. Measures were in place to safeguard the privacy and confidentiality of the data collected.

## **Results**

### ***Context of the study***

Higher education in Lithuania is imparted by universities and colleges (Centre for Quality Assessment in Higher Education, 2022). The universities offer university-level degree-granting studies and award Bachelor's, Master's, and Doctoral degrees. The colleges offer college-level degree-granting studies and award Professional Bachelor's degrees. Both types of the institutions can also provide non-degree granting studies. At the beginning of the 2021-2022 academic year, there were 41 higher education institutions in the country - 19 universities and 22 colleges - with 103,373 students, including 71.6 thousand in universities and 31.8 thousand in colleges (Statistics of Lithuania, 2022). The universities produced the largest number of graduates in business and administration (2,800 or 17.3% of all graduates), engineering (1,900), health sciences (2,200) and social sciences (1,600).

Moreover, the educational landscape in Lithuania is characterized by a significant proportion of individuals holding higher education degrees, with Lithuania ranking among the countries with the highest percentages of people aged 30-34 having completed tertiary education (Eurostat, 2020). However, there is a growing concern over the decreasing number of students enrolling in higher education institutions, making it imperative for universities to explore new ways of attracting and engaging potential students. Enhancing the quality and appeal of learning environments, including informal learning spaces, becomes crucial in this context of educational competitiveness and student engagement. In response to the decreasing numbers of students, evolving learning paradigm and the concept of life-long learning, the universities in Lithuania are increasingly recognizing the need for flexible learning environments that extend beyond the traditional lecture halls and classrooms (Jucevičienė & Tautkevičienė, 2004). However, the absence of a unified strategy for these learning environments presents both challenges and opportunities. While some institutions are embracing the idea of learning spaces that transcend physical boundaries and incorporate social and virtual spheres, there is a lack of consensus on what these spaces should encompass.

Funding for education is a state priority and is publicly funded at all levels, with the exception of higher education, where around half of the students finance their studies based on their achievements. However, the higher education institutions have high degrees of autonomy and self-governance regarding internal structure, academic programs, research agendas, and administrative decisions. The autonomy enjoyed by institutions of higher education in Lithuania allows for independent decision-making regarding the creation and management of their learning environments. This autonomy results in a diverse range of approaches across different institutions, with each institution having the opportunity to shape their learning spaces according to their unique visions and priorities. However, the absence of networks or communities dedicated to improving learning spaces in higher education institutions in Lithuania hinders the exchange of best practices, collaboration, and collective efforts to optimize the design and functionality of these spaces.

The unique educational landscape of Lithuania, coupled with the autonomy granted to higher education institutions, creates an intriguing context for investigating informal learning spaces.

## Results of qualitative study

The qualitative research component of this study focused on exploring the perspectives of various stakeholders regarding informal learning spaces at Mykolas Romeris University. Through interviews, stakeholders were able to provide valuable insights into their experiences, the usability of these spaces, and their expectations for the future. Table 3 below provides a summary of affirmative statements.

Table 3. The results of stakeholder interviews

Category	Subcategory	Affirmative statements
Informal learning spaces	Collaborative learning	<i>“Library rooms are the most popular for collaborative learning in groups.” (SH 5); “At the library we have 3 closed rooms for a collaborative learning.” (SH 2)</i>
	Focused learning	<i>“We had more closed places at the library for individual learning, now we have prepared an open space and students really like it.” (SH 5)</i>
Usability of informal learning spaces	Inclusivity	<i>“We are a small university; students can feel like at home. Informal learning spaces can be used by everyone equally.” (SH 5); “We are focused on students with disabilities needs. MRU infrastructure is adapted for people with disabilities: elevators, specialized computerized workstations in the library. We had the project where material for people with visual disabilities were created.” (SH 2)</i>
	Accessibility	<i>“We are trying not to ask students to register in order to use library or other informal learning spaces rooms. So far the spaces are not crowded so everyone can come and study.” (SH 5); “Students with disabilities do not like to be noticed, we are prepared to allow them use informal learning spaces, but we cannot see a lot of people with disabilities at those spaces.” (SH 5)</i>
	Capacity	<i>“We have enough space for all students who wants to use library for informal learning.” (SH 5)</i>
Future expectations and plans	Inclusivity	<i>“All technical bases will be even more renewed in informal learning places.” (SH 1); “Digitalization will pay the most important role in the future taking into account informal learning spaces.” (SH 6).; “There should be more specific plan of the creation of new informal learning spaces – the architects should be involved in this process.” (SH 2)</i>
	Use of informal learning spaces	<i>“There should be more specific plan of how to use university informal learning spaces during summer, when university is almost empty – now we are doing summer schools, but there can be more initiatives.” (SH 2)</i>

Source: developed by authors, 2023

Overall, the qualitative findings underscored the positive perception of stakeholders towards informal learning spaces at MRU. One key finding was the popularity of library rooms for collaborative learning in groups. Participants highlighted the availability of closed rooms specifically designed for collaborative learning, emphasizing their preference for these spaces. Additionally, the introduction of open spaces for individual learning was positively received by students, indicating a shift in the usability of informal learning spaces to cater to diverse learning needs.

In terms of usability, stakeholders emphasized inclusivity and accessibility as important factors. They highlighted MRU's efforts to create an environment where all students, including those with disabilities, can feel welcome and have equal access to informal learning spaces. The university's infrastructure, such as elevators and specialized workstations in the library, was



commended for accommodating the needs of students with disabilities. While stakeholders acknowledged the availability of spaces and the absence of registration requirements as positive aspects, they also noted that the utilization of informal learning spaces by students with disabilities appeared to be limited.

Looking towards the future, stakeholders expressed expectations for further advancements in inclusivity and digitalization within informal learning spaces. The renewal of technical resources was seen as a priority, indicating a commitment to keeping the spaces up-to-date and technologically equipped. Digitalization was recognized as a crucial aspect of future developments, highlighting the role technology plays in enhancing the learning experience. Stakeholders also emphasized the need for specific plans and involvement of architects in the creation of new informal learning spaces, emphasizing the importance of strategic planning and design expertise.

Regarding the use of informal learning spaces during specific periods, stakeholders raised the issue of inefficient utilization of campus spaces during weekends and summer holidays when the university is less occupied. They suggested the need for a more specific plan to maximize the use of informal learning spaces during these periods, potentially through the implementation of initiatives such as summer schools or other creative programs. The participants proposed conducting a survey among students to gather their input and insights, considering it as a valuable approach to inform the development of new strategies.

### ***Results of the quantitative study***

The survey conducted in this study served as a quantitative research method to complement and expand upon the findings obtained through qualitative research. The results of the survey were analyzed based on the constructs of the survey questionnaire, providing valuable insights into various aspects of informal learning spaces and their impact on student experiences. Table 4 presents an overview of the demographic characteristics of the survey respondents, including demographic information such as age, gender, educational background, and study mode. By capturing this information, the survey aimed to ensure a diverse representation of students at MRU and offer a comprehensive analysis of the survey results.

Table 4. The demographic characteristics of survey participants

	Frequency	Percentage
<i>Gender</i>		
Female	73	70
Male	32	30
Total	105	100
<i>Age</i>		
Up to 20	33	31
21-25	68	65
26-30	2	2
31-40	2	2
Total	105	100
<i>Field of study</i>		
Social Sciences, Journalism and Information	100	95
Other	5	5
Total	105	100

Source: developed by authors, 2023

Cronbach's alpha coefficient provides an indication of how well the items within each construct of the questionnaire correlate with each other, ultimately reflecting the reliability of the

construct as a whole. To evaluate the reliability of the constructs presented in the questionnaire, Cronbach's alpha coefficient was computed for each construct (see Table 5 below). The minimum acceptable value for Cronbach's alpha coefficient is generally considered to be between 0.7 and 0.8 (Gaižauskaitė & Mikėnė, 2014, p. 146). This threshold ensures that the items within a construct are sufficiently consistent and reliable in measuring the intended construct.

Table 5. Checking the reliability and compatibility of the constructs based on Cronbach's alpha coefficient

Construct	The number of questions that make up the construct	Cronbach alfa $\alpha$
Availability	6	0,90
Accessibility	8	0,95
Satisfaction	4	0,93
Satisfaction university campus	6	0,92
Belongingness to your university	3	0,80
Satisfaction with interpersonal relationships	6	0,89

Source: developed by authors, 2023

The assessment of belongingness was conducted through the evaluation of specific statements, providing insights into the respondents' perceptions and attitudes towards their affiliation with MRU. The results indicate that a majority of the respondents (55.3%) expressed agreement or strong agreement with the statement expressing their willingness to pursue another degree at MRU. However, when it comes to assessing their personal meaning and sense of belonging to the university, respondents exhibited a more neutral stance, with a significant portion selecting neither agreement nor disagreement with the respective statements. These findings are illustrated in the Figure below, highlighting the nuanced perspectives of the respondents regarding their connection to MRU.

Evaluation of Belongingness statements	1- Strongly disagree	2 - disagree	3 - Neither agree nor disagree	4 - Agree	5 - Strongly agree
I would be happy to pursue another degree at my university	5.7	7.6	26.7	42.9	12.4
This university has a great deal of personal meaning for me	3.8	12.4	46.7	30.5	3.8
I feel a strong sense of belonging to my university	8.6	14.3	42.9	27.6	4.8

Figure 1. Students' evaluation of belongingness statements

When examining the availability and accessibility of informal learning spaces, the survey results reveal a positive perception among the respondents. A significant majority of the participants expressed agreement or even strong agreement with the notion that places for studying in groups or for focused learning are open to all students. This indicates that there is a general consensus that these learning spaces are inclusive and accessible to the student body as a whole. Moreover, the survey findings indicate that the respondents believe that all informal learning spaces are easily accessible, further affirming the university's efforts in providing convenient and barrier-free access to these spaces. These findings are visually represented in the Figure below, providing a clear overview of the respondents' positive outlook regarding the availability and accessibility of informal learning spaces at MRU.

Evaluation of Availability and Accessibility statements	1- Strongly disagree	2 - disagree	3 - Neither agree nor disagree	4 - Agree	5 - Strongly agree
Places for studying in groups are open to all students at my university	1.	1.9	13.3	38.1	41.
Places for studying in groups are easily accessible at my university	1.	2.9	10.5	41.	40.
If we want to study in groups, we can find a place at my university at short notice	1.	4.8	10.5	42.9	37.1
I can reach learning places for collaborative learning activities without any barriers	2.9	1.9	12.4	38.1	40.
If I want to study together with my fellow students, I know where I can go in my university	0	2.9	9.5	42.9	42.9
There is the opportunity to study together in groups with other students at the campus of my university	1.	1.	6.7	40.	48.6
There are enough places for studying in groups on campus of my university	1.	4.8	16.2	31.4	41.
Places for focused learning activities are open to all students at my university	0	2.9	8.6	48.6	36.2
Places for focused learning activities are easily accessible at my university	1.	1.	7.6	50.5	37.1
If I want to study on my own, I can find a place at my university at short notice	0	3.	7.9	54.5	34.7
I can reach learning places for focused learning activities without any barrier	0	8.9	10.9	43.6	36.6
If I want to study on my own, I know where I can go in my university	0	3.8	5.8	48.1	42.3
There is the opportunity to study on my own at the campus of my university	0	1.	4.9	47.6	46.6
There are enough places for focused learning activities at my university	1.	3.	13.9	46.5	35.6

Figure 2. Students’ evaluation of availability and accessibility statements

The evaluation of satisfaction statements pertaining to informal learning spaces reveals that the respondents express high levels of satisfaction and comfort with the places designated for collaborative and focused learning activities. The majority of participants indicated that they enjoy studying on campus and appreciate the conducive atmosphere provided by these spaces. The survey findings indicate that respondents generally agreed or strongly agreed with statements related to their satisfaction, indicating a positive perception of the learning environment. This positive sentiment reflects the efforts made by the university to create a welcoming and supportive atmosphere conducive to effective learning and academic engagement. The Figure 3 visually represents the respondents' favorable evaluation of satisfaction statements, further highlighting their contentment and comfort with the informal learning spaces available at MRU.

Evaluation of Satisfaction statements	1- Strongly disagree	2 - disagree	3 - Neither agree nor disagree	4 - Agree	5 - Strongly agree
I am satisfied with the places for collaborative learning activities on the campus of my university	0	0	7.6	50.5	38.1
I feel comfortable at places for collaborative learning activities on the campus of my university	0	2.9	15.2	40.	37.1
I am satisfied with the places for focused learning activities on the campus of my university	2.	1.	14.1	50.5	32.3
I feel comfortable at places for focused learning activities on the campus of my university	1.	3.	13.	49.	34.
I like to study at the campus of my university	1.	3.1	22.4	51.	22.4
I like the atmosphere at the university campus	1.	4.9	16.7	50.	27.5
I feel comfortable at places for learning activities on the campus of my university	1.	3.	17.	49.	30.
I think the places for students at my university support studying	1.	1.	22.8	46.5	28.7
The places for studying in my university motivate me to study more	2.9	11.7	21.4	36.9	27.2
I would recommend my university to other students	1.9	1.9	18.4	39.8	37.9

Figure 3. Students' evaluation of satisfaction statements

The evaluation of satisfaction with interpersonal relationships among the respondents demonstrated a positive approach, as the majority of participants agreed or strongly agreed that they have developed close personal relationships. These relationships were seen as influential factors in their intellectual growth, values, and attitudes, with respondents acknowledging the positive impact of these connections. The survey results highlight the importance of interpersonal relationships within the informal learning spaces at MRU, as they contribute to the holistic development of students. The Figure 4 below visually presents the respondents' positive evaluation of satisfaction with interpersonal relationships, further emphasizing the significant role these relationships play in shaping intellectual and personal growth within the university community.

Evaluation of Satisfaction with interpersonal relationships statements	1- Strongly disagree	2 - disagree	3 - Neither agree nor disagree	4 - Agree	5 - Strongly agree
My interpersonal relationships with students have positively influenced my intellectual growth and interest in ideas	1.9	2.9	18.1	47.6	29.5
I have developed close personal relationships with other students	2.9	4.8	20.	41.9	30.5
The student friendships I have developed have been personally satisfying	0	2.9	15.4	41.3	40.4
My personal relationships with other students have positively influenced my personal growth, values, and attitudes	1.9	5.8	16.3	45.2	30.8
It has been easy for me to meet and make friends with students	3.8	1.9	19.	45.7	29.5
Most students at this university have values and attitudes similar to mine	2.	10.8	23.5	37.3	26.5

Figure 4. Students' evaluation of satisfaction with interpersonal relationships statements

In order to validate or refute the formulated hypotheses, statistical analysis was conducted using the SPSS program. Hypotheses 1a, 1b, 1c, and 1d were tested using the Pearson correlation coefficient. The hypotheses were tested taking into account MRU case (N=105) in comparison with all participated in the survey universities results (N=1041). The results of these tests are presented in Table 6, which displays the correlation coefficients between the availability and

accessibility of informal learning spaces and various outcomes, such as university belongingness, interpersonal relationships, well-being, and university campus satisfaction.

Table 6. Hypothesis 1a, 1b, 1c and 1d tests

	Belongingness MRU	Belongingness ALL	Interpersonal Relationships MRU	Interpersonal Relationships ALL	Well- Being MRU	Well- Being ALL	University Campus Satisfaction MRU	University Campus Satisfaction ALL
<b>Availability</b>	r = 0,42 p < 0,001	r = 0,29 p < 0,001	r = 0,53 p < 0,001	r = 0,27 p < 0,001	r = 0,29 p < 0,001	r = 0,27 p < 0,001	r = 0,70 p < 0,001	r = 0,55 p < 0,001
<b>Accessibility</b>	r = 0,54 p < 0,001	r = 0,30 p < 0,001	r = 0,55 p < 0,001	r = 0,29 p < 0,001	r = 0,38 p < 0,001	r = 0,28 p < 0,001	r = 0,71 p < 0,001	r = 0,57 p < 0,001

The results indicate statistically significant positive correlations between the availability and accessibility of informal learning spaces and all of the outcomes measured. Hypotheses 1a, 1b, 1c and 1d are supported for both – MRU case and all universities in general. It is important to note that while these results support the hypotheses, they do not establish causal relationships. It is possible that positive interpersonal relationships, higher well-being, and greater campus satisfaction lead to a higher perception of the availability and accessibility of informal learning spaces, rather than the other way around. Nevertheless, the findings suggest that when students perceive informal learning spaces as available and accessible, they tend to experience positive outcomes in terms of belongingness, interpersonal relationships, well-being, and campus satisfaction. This highlights the importance of investing in and improving these spaces to promote students' academic and personal progress. Improving informal learning spaces on campus is a measure which is significantly related to positive effects. Thereby, availability and accessibility of informal learning spaces on campus should be fostered.

Moving on to Hypothesis 2, which examines the differences between informal focused learning spaces and informal collaborative learning spaces in terms of availability, accessibility, and satisfaction, a t-test and effect size Cohen's d were used for analysis. The results are presented in Table 7, which shows the means, standard deviations, sample sizes, t-test results, and effect sizes for each construct.

Table 7. Hypothesis 2 tests

	Mean MRU	SD MRU	N MRU	N ALL	T-Test MRU	T-Test ALL	Effect size Cohen's d MRU	Effect size Cohen's d ALL
<b>Availability_FL</b>	4,27	0,67	104	988	t (103) = 0,30, n.s.	t (987) = 1,9, n.s.	0,03	0,06
<b>Availability_CL</b>	4,26	0,74	104	988				
<b>Accessibility_FL</b>	4,20	0,66	101	959	t (100) = 0,12, n.s.	t (958) = 5,9, p < 0,01	0,02	0,12
<b>Accessibility_CL</b>	4,12	0,81	101	959				
<b>Satisfaction_FL</b>	4,11	0,80	100	944	t (99) = 2,90, p < 0,05	t (943) = 0,6, n.s.	0,29	0,20
<b>Satisfaction_CL</b>	4,24	0,69	100	944				

The findings indicate that there are no significant differences in the availability and satisfaction between informal focused learning spaces and informal collaborative learning spaces. However, there is a significant difference in the accessibility of these spaces, with informal collaborative learning spaces being perceived as more accessible by the respondents. This suggests that universities should not solely focus on providing individual, focused learning spaces, but also invest in and enhance the availability and accessibility of informal collaborative learning spaces to meet the diverse needs of students.

## **Discussion**

Previous research on informal learning spaces has examined various elements such as inclusiveness (Altunoğlu, 2020; Berman, 2020), campus infrastructure and design (Salihoğlu and Açıkgoz, 2021; Yılmaz, 2015; Riddle, Souter, 2012; Augeri, Kajita, 2017; Harrop, Turpin, 2013; Wu et al., 2021), digitalization and technology use (Başoğlu, 2010; Sariçoban, Özturan, 2012; Günüş and Kuzu, 2014; Valtonen et al., 2021), students' preferences and satisfaction (Vanichvatana, 2019; Çetinkale, Demirkan, 2020; Delamare Le Deist, Winterton, 2005) and individual and collaborative study activities (Becker et al., 2016; Buono et al., 2021). However, most of these studies have primarily focused on students as the main subject of investigation. This paper aims to broaden the scope by analyzing informal learning spaces from the perspective of not only students but also stakeholders in Lithuanian universities.

Recent research has emphasized the significant impact of physical learning environments on learners' well-being, learning experience and academic performance (e.g., van den Bogerd et al., 2021; Yorke, 2016). While the design and operation of formal learning spaces have started to consider these findings, there remains limited information available on the availability, accessibility, spatial characteristics, equipment, and usage of informal learning spaces for different student groups. This research fills this gap by exploring these aspects in the context of informal learning spaces. The findings of qualitative study affirm the significance of collaborative learning, accessibility, and inclusivity in informal learning spaces. Interviewed stakeholders valued the university's efforts to accommodate students with disabilities and the adaptability of spaces for both group and individual learning, which aligns with the literature on well-being and academic performance. The expressed need for a strategic approach to space utilization during less busy periods, such as summer, introduces a practical dimension to the research, suggesting a direction for future policy and planning. Moreover, the anticipation of further technological enhancements reinforces the relevance of digitalization in the evolution of informal learning spaces.

The findings of quantitative study confirmed that higher availability and accessibility of such spaces on campus can positively influence students' university belongingness (commitment) and well-being. The survey results, which revealed high levels of satisfaction with these spaces and their positive association with students' sense of belonging, interpersonal relationships, and well-being, align with the theoretical perspectives on the role of learning environments in academic success. Moreover, the significant correlations found between the availability and accessibility of these spaces with positive student outcomes underscore their importance. The lack of differences in satisfaction between focused and collaborative learning spaces, except for accessibility, suggests a nuanced approach is necessary when developing these areas.

The theoretical contributions of this paper lie in its exploration of understudied aspects, including the availability, accessibility, spatial characteristics, equipment, and usage of





informal learning spaces, while considering the perspectives of both students and stakeholders. This expands our understanding of the role and significance of informal learning spaces in higher education. The implications for practice are also significant, as the paper can serve as a foundation for developing recommendations and guidelines to enhance technologically enhanced and inclusive informal learning environments. These guidelines can be useful for learners, lecturers, university administration, and other stakeholders in creating learning spaces that promote equality, inclusivity, and well-being in higher education settings. However, it is important to acknowledge the limitations of the present study. The findings are based solely on the Lithuanian case, involving stakeholders and students' perspectives on informal learning spaces. Further research with larger and more diverse samples is necessary to validate and generalize the findings to a broader context. Future analyses should also encompass perspectives from university administration and other relevant parties involved in the design and management of informal learning spaces.

## **Conclusion**

This paper has explored the significance of informal learning spaces in higher education, with a particular focus on inclusivity, students' well-being, and campus belongingness. Previous research has highlighted the importance of elements such as inclusiveness, infrastructure and design of the campus, digitalization and technology use, students' preferences and satisfaction, and individual and collaborative study activities in shaping the effectiveness of informal learning spaces.

This study was conducted at Mykolas Romeris University (MRU) in Lithuania, employing a combination of qualitative and quantitative research methods. The qualitative research revealed that MRU offers ample spaces for collaborative and focused learning, characterized by inclusivity, accessibility, digitalization, and availability for students. The quantitative research findings indicated a positive perception among respondents regarding the availability, accessibility, and satisfaction with informal learning spaces. The results suggest that investing in the improvement of informal learning spaces at the university can lead to positive outcomes. Enhancing the availability and accessibility of these spaces can contribute to a higher sense of belongingness, decreased intention to quit studies, and increased likelihood of recommending the university. Moreover, positive interpersonal relationships fostered within informal learning spaces promote student inclusion and facilitate knowledge acquisition.

In light of these findings, it is recommended that universities allocate resources to enhance their informal learning spaces. This may involve further improving inclusivity, ensuring easy accessibility, embracing digitalization, and considering students' preferences and satisfaction. By creating conducive environments for informal learning, institutions can foster a sense of belonging, well-being, and engagement among students, ultimately enhancing the overall educational experience. Future research should continue to explore the dynamics of informal learning spaces, incorporating perspectives from various stakeholders, including students, faculty, administration, and other relevant parties. Comparative studies across different institutions and countries can provide valuable insights into best practices and facilitate the development of universal guidelines for creating effective and inclusive informal learning spaces in higher education.

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