

Interactive XR for Collaborative Distance Education

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The innovative and collaborative Extended Reality (XR) learning environment, which empowers flexible and interactive continuing education, is a characteristic of the first distance learning programmes at the FH Burgenland. With their well-organised module structure, the programmes not only give students the freedom to plan their online and asynchronous coursework independently, but also underscore their commitment to offering a contemporary learning experience through the central role of the XR platform MeetYoo. Features of this platform such as its info-point and virtual fireside chats, promote student interaction and networking with experts. The ongoing interaction that follows, coupled with access to resources without time or space constraints reflects the desire to optimise the learning process and offer students exceptional flexibility and support in their academic and professional journey.

The University of Applied Sciences Burgenland Continuing Education [L1] designs distance learning courses as comprehensive continuing education programmes in a variety of subject areas. A key feature of these courses is their unlimited flexibility: students can begin their studies at any time and the course content is taught online and asynchronously. This methodical approach allows students to plan their studies individually and independently of time and space constraints, thus

maximising the learning experience and increasing academic success [1]. Further characteristics that set distance learning apart include unrestricted access to instructional resources and the flexible organisation of study and examination times without the need to be physically present.

Utilising a learning management system (LMS) such as the Moodle learning platform, which provides a wealth of resources such as detailed scripts, videos, audios, interactive learning elements, and self-checks, enhances preparation for exams and fieldwork. This aligns with research indicating that multimedia use not only improves student engagement but also contributes to enhanced learning outcomes. Furthermore, a strong focus is placed on acquiring practical knowledge, which is essential for professional practice and for empowering students to effectively apply theoretical knowledge [L2].

The collaborative XR learning environment makes it possible to expand student networks through interaction in virtual spaces at any time. Kanimozhi [L4] and Donelan et al. [L5] emphasise the potential of collaborative XR learning environments to complement traditional teaching methods and to minimise or, as in the case described, replace physical presence in lecture halls. A large virtual lecture hall for fireside talks with experts and a Walk & Talk area are just two of the features of the collaborative XR learning environment that encourage student involvement and networking. Additionally, open communication is promoted and institutional ties are strengthened by holding a monthly info-point with the course director. The collaborative XR learning environment is the foundation or starting point for students to access the Moodle LMS (Fig. 1). This means that the path to Moodle is always through the XR collaborative learning environment, helping the students to save time, by providing the links to the various resources in the LMS.

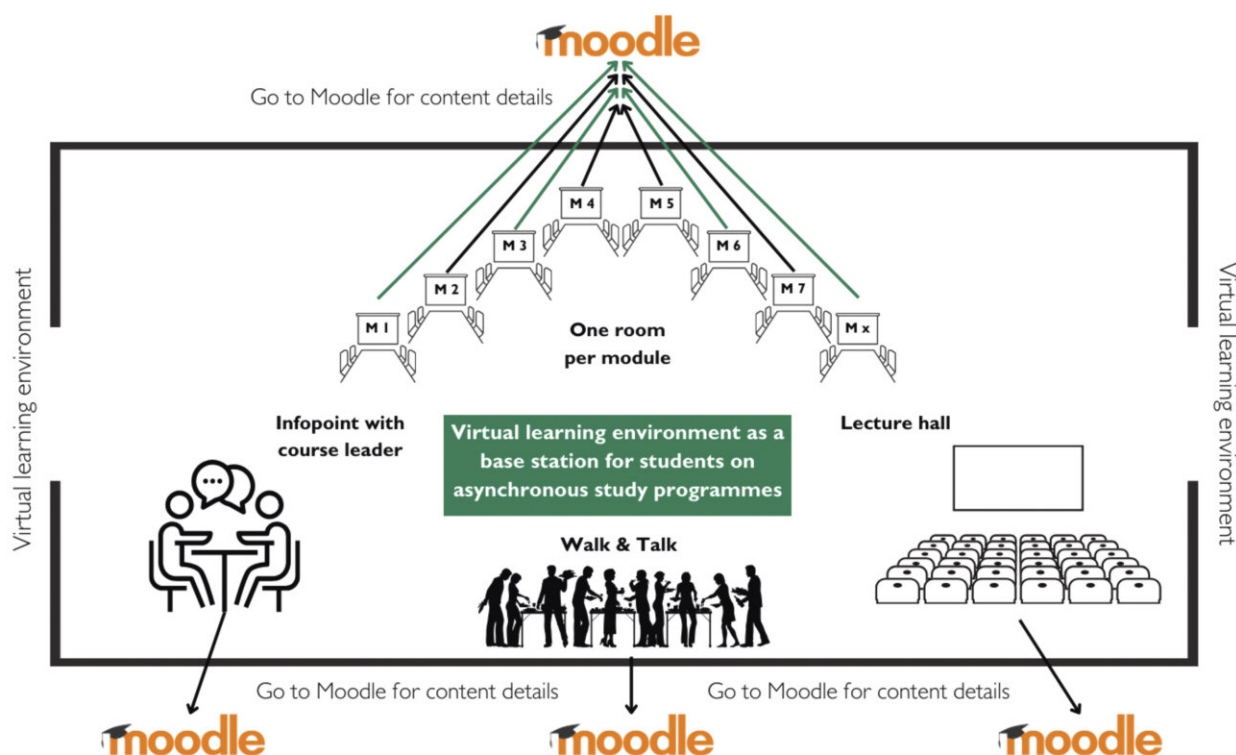


Figure 1: Collaborative XR learning environment as a basis.

There is a large virtual lecture hall, as well as module-specific rooms intended to promote student discussion and idea sharing, in addition to the Walk & Talk area. These permanently available spaces provide flexibility in studies and facilitate both planned and spontaneous academic discourse. Furthermore, they foster the development of learning communities and a sense of community [L6], which strengthens group problem-solving and knowledge sharing. This setup overcomes traditional learning environment limitations, creating a dynamic, interactive space for today's digital student generation.

The programme director is available for direct communication once a month, via the Infopoint in the virtual auditorium in the collaborative XR learning environment, aimed at improving the academic community [L7]. For ongoing assistance, regardless of time or place, students can also email the director or management, ensuring that queries and comments can be handled effectively. The Infopoint's permanent location in the virtual auditorium [L8] signifies the institution's commitment to offering comprehensive student guidance and the importance of flexible communication in modern education. By leveraging technology, this approach meets the expectations of the digital age by improving academic support and student satisfaction.

The Digital Campus's virtual Walk & Talk area is a key interactive space for interdisciplinary exchange, open to students from all academic levels and locations. It encourages knowledge sharing [L9] and collaboration, essential for professional growth and networking. This interactive space responds to the growing digitalisation in education and work, facilitating community formation around common interests and goals. It serves as an incubator for future professional collaborations allowing students to expand their networks, gain multidisciplinary insights, discuss challenges and practical solutions from their field. This informal setup promotes the exchange of ideas and project initiation, crucial in a networked, dynamic work environment where interdisciplinary skills are increasingly valued [L10].

Virtual fireside chats, for instance, offer an interactive, personal discussion environment, bridging the gap of physical distance, while the virtual lecture hall serves as a platform for student-expert interactions and is one way that higher education is becoming more digitally enhanced. This interactive space supports large student audiences, extending access to learning and networking. Featuring experts from different fields in these virtual settings enriches academic content with current expertise and professional insights, facilitating direct engagement with industry-relevant knowledge. These kinds of interactions greatly improve the preparation of students for their future careers by bridging theory and practice [L11].

Developed through meticulous conceptual efforts in close consultation with the provider, the incorporation of a collaborative XR learning environment not only enhances the appeal and practicality of distance learning programmes but also facilitates knowledge transfer and fosters engagement within the academic community. This emphasis on the social dimension, as underscored by the platform, proves to be integral to the success of both the network and the overall programme [L12].

Overall, the combination of asynchronous online learning supported by a comprehensive learning platform and the innovative use of collaborative XR learning environments shows that distance learning programmes create a future-oriented and flexible learning environment that promotes both the academic success and the professional development of students.

Links:

- [L1] <https://fh-burgenland-weiterbildung.at/>
- [L2] <https://kwz.me/hAV>
- [L3] <https://www.meetyoo.com/de>
- [L4] <https://ijarcs.info/index.php/Ijarcs/article/view/5601/4631>
- [L5] <https://onlinelibrary.wiley.com/doi/10.1002/cae.21928>
- [L6] <https://link.springer.com/article/10.1007/s11528-014-0733-x>
- [L7] <https://kwz.me/hAW>
- [L8] <https://kwz.me/hAX>
- [L9] <http://ieeexplore.ieee.org/document/1039223/>
- [L10] http://link.springer.com/10.1007/978-3-030-26342-3_14
- [L11] <https://kwz.me/hAZ>
- [L12] <https://kwz.me/hDC>

References:

- [1] J. E. Nieuwoudt, "Investigating synchronous and asynchronous class attendance as predictors of academic success in online education," *Australasian Journal of Educational Technology*, pp. 15–25, 2010.
<https://doi.org/10.14742/ajet.5137>
- [2] D. Birch, M. Sankey, M. Gardiner, "The impact of multiple representations of content using multimedia on learning outcomes," *Int. J. of Instructional Technology and Distance Learning*, vol. 7(4), pp. 3–19, 2010.

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