"Virtual Excursions" in Archaeology

Teaching Early Christian Archaeology using 360° videos

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At FAU's Chair of Early Christian Archaeology, the project *"Virtual Excursions"* has been realized since summer 2020.[1] This teaching project aims to innovatively improve and supplement the curriculum through virtual excursions with the help of 360° panoramic images and videos. The basic knowledge of Christian Archaeology includes key monuments of Late Antiquity and early Christianity, which is acquired in teaching through visual representations of the corresponding monuments in the seminar or through excursions. A comparable experience is opened up by 360° images, which can be entered using VR glasses. There is the possibility to turn around and to look up and down and thus to get an impression of space, to estimate distances, to determine the position of certain structural elements in relation to each other, to understand visual axes, etc. All this is only possible to a limited extent through plans and illustrations and requires years of training and practice. The option to travel virtually through a church building or a burial chamber fundamentally enriches the modes of instruction and facilitates the students' understanding.[2]

A central goal of the project's conceptualization is to create learning situations as similar as possible to a "real" excursion, in which the students can enter via a screen or even by means of VR glasses.[3] Analogous to real excursions, they are guided through the monuments by experts pointing out special features of the buildings and discussing technical questions directly at the building or object. The impression of being part of an excursion group is intentional in order to create an almost participatory situation.

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[1] The scientific discussion of the use of virtual reality in teaching has increased rapidly in recent years: Choi, D. H., Dailey-Hebert, A., Simmons Estes, J. (2016). *Emerging Tools and Applications of Virtual Reality in Education.* Hershey, Penn.: IGI Global. Gökçe, A., Demmans Epp, C. (2021). *Designing, Deploying, and Evaluating Virtual and Augmented Reality in Education.* Hershey, Penn.: IGI Global. Taçgin, Z. (2020). *Virtual and Augmented Reality: An Educational Handbook.* Cambridge: Cambridge Scholars Publishing.

[2] Thompson, L. J. et al. (2021), 'Using 360-degree video for immersive learner engagement', *Journal of Extension,* 56, no. 5. [Online]. Available at: https://tigerprints.clemson.edu/joe/vol56/iss5/1/ (Accessed: 30 July 2021).

[3] The concept could build on the teaching project "CA 2.x - Christian Archaeology in the inverted classroom", which has been successfully carried out at the chair since 2018. Mührenberg, L, Verstegen, U. (2020). 'CA 2.x – Christliche Archäologie im inverted classroom. Ein Beitrag zur videobasierten digitalen Lehre an der Friedrich-Alexander-Universität Erlagen-Nürnberg', in Zeaiter, S. and Handke J. (eds.) *Inverted Classroom. Past, present and future. 8. ICM Konferenz am 26. und 27. Februar 2019 in Marburg*. Marburg: Tecum, 165–177.
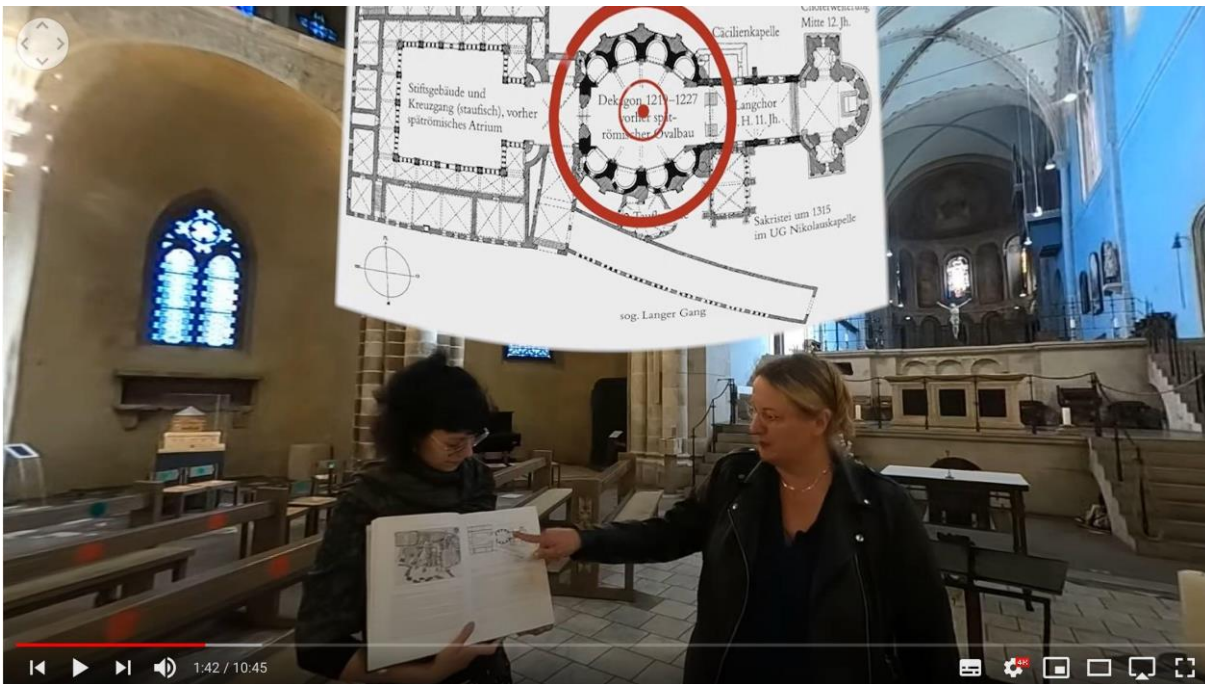
Fig. 1: Ute Verstegen guides visitors through the church building of St. Gereon in Cologne. The inserted map enables orientation in the building (Photo: Falk Nicol, Alissa Dittes and Luis Fensel, 2020).

In September 2020, despite the corona pandemic, initial filming with a GoProMax camera was possible at Trier and Cologne. The recordings include 360° videos of the so-called Basilica of Constantine or Aula Palatina at Trier and the Church of St. Gereon at Cologne. In each case, characteristic excursion scenarios were created at changing locations inside and outside the buildings. The videos have been elaborately edited afterwards; for example, specially created plans have been inserted into the videos to support spatial orientation and to enable localization within the buildings' structures (Fig. 1). In addition to the guided virtual tours, standard 360° "still images" have been created. Further 360° videos will be recorded in the future as part of real excursions to sites and monuments of early Christianity.

Due to the Corona pandemic, all planned excursions of the chair had to be cancelled so far. Instead, virtual excursions based on the chair's own video material have been offered in the winter term 2020/1 and the summer term 2020.[4] The courses combined the students' individual experiences of virtual expert tours via VR or YouTube 360° videos with group presentations by students. The presentations took place via Zoom, with students using different combinations of PowerPoint and online video sequences for presentation. Since the students themselves did not have their own VR glasses, a session was held in which instructions were given on how to craft a cardboard for their own smartphones. In addition, a do-it-yourself video was created by a student assistant of the chair and uploaded to the chair's YouTube channel "INVESTIGATIO_CA" (Fig. 2).[5]

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[4] Drake, L. et al (2021). 'Digitale Lehre in den archäologischen Wissenschaften an der Friedrich-Alexander-Universität Erlangen-Nürnberg – Erfahrungen nach einem Jahr Coronapandemie', *Blickpunkt Archäologie (*H. 2 2021), pp. 103–113 (in print).

[5] The video is available on the chair's YouTube channel INVESTIGATIO_CA: https://www.youtube.com/watch?v=Lk6KlgEFd70 (Accessed: 30 July 2021).

Fig. 2: In the YouTube video, Alissa Dittes explains how to make VR glasses out of a smartphone (Photo: Christopher Koch, 2021).

The Corona situation not only posed an enormous challenge to university lecturers and students alike. From the current perspective, it has also proven to be a catalyst for the further development and acceptance of new digital teaching formats. The course evaluations show that there is a high level of acceptance and openness among students for the newly introduced forms of teaching and learning. A continuation and expansion of online courses and courses with virtual components are also desired and will certainly persist for the time after the pandemic.

For the future, the chair is planning to cooperate with cultural heritage institutions such as museums and archaeological sites, since the format of 360° videos is not only suitable for university teaching, but also for other educational scenarios.

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Author Contributions

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Supervision: Ute Verstegen
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Writing – original draft: Lara Mührenberg, Ute Verstegen

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