Concepts of Experiential Learning in Digital Collaboration

New Perspectives for the Higher Education Sector

https://doi.org/10.3991/ijac.v16i1.35871

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Abstract—Reflecting on the manifold interrelations of experience and education, this paper focuses on concepts of experiential learning in digital collaboration in the higher education sector. Therefore, evaluation findings from a digital project-based course in the higher education sector are discussed with a primary focus on students' experiences in digital project-based settings. The paper presents and analyzes the different stages of planning, implementation, and critical reflection of students' projects. It thereby discusses the results of a qualitative study that concentrates on the students' experiences within the course and the collaborative projects. The study uses digital qualitative interviews for the evaluation research. By doing so, the study investigates and reflects the quality of students' experiences and their possible influences on learning. It also discusses the question of how these experiences can be constructively implemented to improve future digital or blended-learning scenarios in the higher education sector. On that basis, possible implications for concepts of experiential learning in digital collaboration are discussed.

Keywords—concepts of experiential learning, digital collaboration, experience, higher education sector, empirical qualitative evaluation

1 Concepts of experiential learning and digital collaboration

Concepts of experiential learning have become increasingly important in digital contexts in the higher education sector. As students and teachers learn, research, and collaborate more and more in digital environments, the idea of experience in learning has to be discussed in the face of new challenges. Experiential learning offers important approaches for various fields of education and focuses mainly on the concepts of experience and reflection [1]. The underlying idea of experiential learning suggests that knowledge can only be created through the transformation of experience as ideas are constantly formed and re-formed through experience [2]. However, with the development of synchronous and asynchronous digital learning, concepts of experiential learning have been exposed to new opportunities and challenges [3]. The world of learners and teachers has become more flexible and interconnected and, at the same time, more

isolated as a result of digital learning environments. Learners engaged in the higher education sector work in various digital contexts, such as eLearning, interactive digital collaboration, digital research, and many more [4]. Against this backdrop, collaborative learning in project-based settings can play a crucial role, when it comes to experience-based learning in digital contexts, as learners actively co-constitute physical and digital spaces, entangling digital online and offline learning in various ways [5]. While collaboration options in digital settings may be readily accessible, the qualities and characteristics of digital and in-person collaboration are different [6]. Digital learning environments influence experiences in learning, offering new opportunities but also challenging existing potentials. This is discussed by many academics whose interests lie within the scope of experiential and digital learning scenarios [7]. In this regard, it shows that the research about concepts of experiential learning has to be respected as crucial for digital learning environments; experiential learning can be regarded as one of the most original learning processes, deeply rooted in human nature [8]. Of course, not all experiences are equally educative. However, personal experience and education are often closely related [9]. Thus, the quality of experience, especially in digital environments, has to be discussed in depth. Discussing concepts of experiential learning in digital environments seems to be an important basis and challenge for future research. Looking at the intimate relation of experience and education in non-digital environments, the question arises of how exactly digital contexts influence the experience in learning. To discuss this question students' experiences in digital contexts are discussed against the backdrop of the dual tensions of action/reflection and experience/abstraction, which are derived from foundational works of Kurt Lewin [10], John Dewey [9], Jean Piaget [11], and others. The Lewinian Model as presented by Kolb [12] serves as a basis to structure the data of students' experiences in digital and collaborative contexts. Four stages of experiential learning are therefore used as categories: *(1) Concrete experiences, (2) Reflective Observation of new experiences, (3) Abstract Conceptualizations of Reflections, and (4) Active Experimentation of Conceptualizations.*

2 Conceptualization of experiential learning in higher education

This paper analyzes and discusses students' learning experiences in the contexts of experiential learning and project-based digital settings in the higher education sector. Therefore, it evaluates digital experiential learning scenarios, focusing on possible relations between digital learning and experience. Furthermore, it discusses these experiences in the horizon of concepts of experiential learning. Against this backdrop, the study reports on the development, implementation, and evaluation of a course in the Master's program "Teacher Education" at Ludwigsburg University of Education (LUE) in Germany. Participants were twenty-six students enrolled in teacher education programs at LUE in the summer term of 2021. Students' attitudes, practices, and preferences concerning learning experiences in digital settings play a major role in the design of the courses and their evaluation. The course discussed shows a mix of synchronous and asynchronous course sessions [13]. In addition to this, the participating students reserve several weeks within the semester for a project-based,

autonomous development and execution of a small-scale project in the field of education. The focus of this paper is to discuss possible potentials for experiential learning in digital environments and to present results on the possible impacts of digital learning scenarios on experience in learning. To facilitate an insight into the learning experiences of students in the described digital settings, the paper discusses qualitative studies focusing on the reflections of students toward personal learning experiences in digital contexts. By doing so, the study assesses current practice and analyzes the course mentioned in detail. The discussion of fundamental pedagogical characteristics and concepts [2, 9, 11, 12] that influence learners' experiences combined with the perspectives of a digital environment [5], leads to a theoretical framework for the development and analysis of the qualitative interviews [12, 14]: (1) Concrete experiences: New experiences in the project-based and digital contexts of the course are discussed; (2) Reflective Observation of new experiences: Students' perceptions of the learning experiences are discussed with a special focus on inconsistencies between the new experiences and existing knowledge; (3) Abstract Conceptualizations of Reflections: New ideas and insight from the students' perspectives are discussed; and (4) Possible Active Experimentation of Conceptualizations: The possible significance of experience-based learning for the students' future work fields are discussed. In the horizon of these four deductive categories connected processes are evaluated to create a more structured interpretation: (a) personalization in terms of customized activities within the course and the project can lead to experiences of ownership and control; (b) collaboration with other students and partners can create experiences of membership and responsibility as students work together with common goals; (c) authenticity through project-based scenarios can provide contextualized learning scenarios that can produce experiences of motivation and involvement [15]; (d) empathy can include the student emotionally in the learning process and might lead to an experience of belonging [16]; and (e) experiences in digital environments can influence experiences in the learning.

The research process is open for further characteristics which might be developed inductively.

3 Experiential learning in digital contexts: Description of the course design

The course "Experiential and project-based learning in (religious) education" serves as the basis of this study and was conducted at LUE in the summer semester of 2021. The main foci of the course are (a) the discussion of project-based and experiential learning, (b) the autonomous implementation of a small-scale project in the field of education, and (c) the presentation and reflection of the projects. The character of the course aims for the interconnection of students with their future work area, their future colleagues, and their future students through a project in the field of education. The course was conducted digitally. Approximately 50% of the digital course sessions were conducted in a synchronous way using mostly videoconferences. The other 50% of the course was carried out in a digital asynchronous way, using learning management systems such as Moodle. The synchronous session mostly offered guided discussions

on the asynchronous content and the planning and implementation of projects. Furthermore, students had the chance to reflect on the theoretical backgrounds of the contents and discuss the various projects. The videoconferences were based on students' questions and reports, offering group discussions and individual tutoring in break-out rooms. The asynchronous sessions offered a blend of learning arrangements: readings, podcasts, audio presentations, interactive forums, videos, and chats were used. To these ends, (a) apt presentations with audio commentary were created; (b) a podcast with experts was offered; (c) common topics were deepened through a selection of pertinent literature; (d) videos of professors and students working in project-based settings were provided; and (e) digital forums were established to offer an ongoing interactive exchange of ideas [17]. The project-based focus of the course aims at helping students to gain experience in digital settings by actually implementing a project in the field of education. Students can gain up to three credit points (as defined by the European Credit Transfer and Accumulation System [ECTS]) for the course and can use their projects as a basis for their Master's Thesis.

4 Qualitative design of the study

The study focuses on the reflections and discussions of the participating students of the course, concerning their individual experiences in the described learning contexts. Therefore, it uses a creative qualitative design, which is conducted digitally. The complex research focus — students' experiences in learning in digital environments — asks for an innovative approach to observing multiple perspectives through (a) synchronous dialogue-based interviews and (b) individual asynchronous feedback. Against this backdrop, the study looks for individual, subjective feedback, and group discussion to gain a more comprehensive view. Semi-structured qualitative interviews were carried out in (a) a synchronous digital way, using video calls, and (b) in an asynchronous digital way. The digital asynchronous way of interviewing students is a rather new technique in qualitative research, which encourages respondents to reflect on their answers by allowing them to structure their ideas and responses beforehand [18].

The (a) synchronous interview situations offered the possibility to discuss questions in deep, clarify ambiguities, and develop a constructive dialogue between the interviewer and the participants. In these processes, the study follows established structures of qualitative research and analysis in manifold ways [19].

The (b) asynchronous way offered the possibility to record answers as audio files independently. The participants could take as much time for reflection as they individually considered appropriate. The completed audio files were then sent to the research team via a digital transfer system [18].

Using this combined method, the study looks for data, which offers a comprehensive view through individual, reflected, subjective feedback, and dialogue [20]. The semi-structured questionnaire shows different categories which were developed in a deductive procedure: (1) concrete experiences, (2) reflective observation of new experiences, (3) abstract conceptualizations of reflections, and (4) active experimentation of conceptualizations. These deductive categories were built based on the reflection of theoretical frameworks focusing on experiential learning. Each category includes

several key questions, which are supported by specifying impulses or further questions, focusing on the processes of (a) personalization, (b) collaboration, (c) authenticity, (d) empathy, and (e) experiences in digital environments. The questions furthermore focus on students' attitudes towards and usage of the digital environment. Reflections on learning strategies and perceptions of change within learning are also part of the questions.

5 Findings of the study

The qualitative study focuses mainly on learners' experiences in (a) project-based contexts and (b) digital settings. The analysis and discussion of the data show different combined categories, which are based on the deductive categories and new inductive impulses found within the data. The findings are structured and discussed according to these categories. Several answers and reflections show links to more than one category and are therefore discussed in various contexts. Experiences in digital environments are discussed in all categories; therefore, a special focus is given to these experiences in category 5: Experiencing digital environments.

5.1 Concrete experiences

Authentic experiences in learning are often connected to the individual contexts of the learner and thus can lead to a high level of motivation and involvement [21]. The fact that students were able to develop projects individually motivated them to choose fields and topics connected to their lifeworld. It shows that students appreciate a high level of authenticity which can be created by connecting the learner's lifeworld with the actual learning processes. A high level of individual freedom in planning the projects seems to be necessary to create experiences of authenticity. These concrete experiences seem to be connected to factors such as autonomous working, practical instruction, authenticity, interdisciplinarity, and collaboration. Also, emotional inclusion in the learning process seems to create concrete experiences of belonging and thus can lead to sustainable learning effects [22]. Against this backdrop, the development of empathy towards the project and its participants seems to be crucial. In this case, empathy is understood as an act of deeper understanding and the development of a reflected awareness of the project's topic and the involved participants [23]. Many students discuss concrete experiences of emotional involvement and belonging connected to their projects and the participants: *"... the learning experiences are or can be emotional. These emotions affect one's awareness and because of this, one perceives things differently."*[1] In this context, the factor of "encounter" is mentioned by many students. The participating students did not differentiate between digital and face-to-face[2] encounters in their projects. It seems that the discussed projects both, digital and face-to-face encounters,

[1] Results, quotations, transcriptions, and analysis phases of the study are available through the author.

[2] Face-to-face interaction in this article means analog, physical collaboration.

led to the development of emotional experiences and empathy: *"Especially the (digital) collaboration … helped to develop empathy for the other."*

Concrete experiences in digital learning contexts, for example in interdisciplinary collaboration and autonomous learning, seem to foster motivation and involvement in learners. The development of empathy seems to play a crucial role and can be offered in digital environments.

5.2 Reflective observation of new experiences

Many students report that they experienced a strong involvement in their projects as they could incorporate personal interests in their projects: *"… because one had so many possibilities to connect topics and subjects and add a pedagogical value."* Therefore, the interviewed students seem to appreciate learning contexts that can be personalized through individual project-oriented learning processes. The responsibility of controlling an individual project seems to increase an experience of ownership in the sense that students are running a project by themselves: *"… we were able to reach certain goals by implementing our individual project. Therefore, the learning processes are more effective and bigger – on top of that, the learning is sustainable and interdisciplinary."* Within the project-oriented digital settings, students had various possibilities to customize their learning activities, experience ownership over their learning arrangements, and control their projects. The digital contexts of the course and the projects enabled students to plan, organize, and implement activities efficiently. Against this backdrop, collaboration plays a major role in all projects as students work together with different partners in schools and communities. The various collaborations led to experiences of membership when a group of people worked together with a common goal for a certain time. Some students report that their projects involved a network of people who were able to develop and foster relationships: *"… I realized that the project had far-reaching impacts when parents of the participating children became interested and seniors wanted to join."*

Personalization and responsibility seem to create a learning environment that fosters the reflective observation of experiences. The interviewed students show a strong interest in reflecting on learning experiences, connected to collaboration in and control of projects.

5.3 Abstract conceptualizations of reflections

It shows that the students developed a broader understanding of collaboration and community while working on their projects: *"The whole social environment, whether it be friends, work or family … different areas came together in the projects: such as school, hobbies, and family."* Students report that some collaborations laid foundations for long-lasting relationships. Students experienced that they were responsible for the implementation of a project, but also that their partners developed individual momentum which outlasted the project. The students mostly used a mix of digital and face-to-face interaction within their projects and appreciated the autonomous organization of this mix. Furthermore, many students report the benefits of practical instruction and

action-oriented collaboration within the course and their projects: *"Project-oriented work offers intensive learning experiences because the implementation of projects is not just theoretical but also practical."* Furthermore, students observed changes in the perspectives of participants through digital encounters: *"The children gained a deeper understanding of the position of the other. Looking at Dewey's idea of 'experience', these might be sustainable positive experiences for them."* Experiencing empathy in learning has the potential to foster a variety of competencies: *"It (project-oriented learning) offers intensive learning experiences, as it deals with more than specific subject matters. In the projects social learning, communication, and encounters are taking place. This leads to a much broader learning."*

Students seem to value experiences of social learning and encounter within the project-based and digital settings, as they offer new learning potentials which have practical aspects, are sustainable, and connect various subjects.

5.4 Active experimentation of conceptualizations

In addition to this, many students see the great importance of project-based experiences for their future work fields. The reasons for this are mainly found in the interdisciplinary and social character of project-based learning: *"... it (project-based learning) is very much about social learning and interaction."* The fact that many of these interactions took place in digital environments did not seem to be problematic to most of the students. Again, empathy seems to be an important factor for intensive learning experiences in this study. The interviewed students report many times about their experiences of belonging to the project and the group of participants. Additionally, the development of empathy in project-based settings seems to change individual perspectives when it is connected to encounters. The type of encounter does not seem to be important for the students, as digital and face-to-face encounters are discussed without any further differentiation. Additionally, the interviewed students experienced close relationships between different themes and subjects: *"I think the learning processes are intense as I experienced that learning is not one-sided but closely connected to many different fields."* The discussed connectedness is not limited to topics and subjects but also seems to play a role in collaboration. Some students report about succeeding projects which developed based on their work. This is interpreted as proof of authenticity as these new projects grew out of the personal interest of participants: *"At a later stage, the project dealt with completely different topics. Children and seniors discussed cultural and pedagogical themes and the children developed new ideas about the concept of aging."* In this example, the initial project developed pen-friendships between children in kindergartens and seniors in retirement homes. Based on these projects, the participants discussed topics that were authentic to them individually.

Experiences connected to encounters and relationships motivated the interviewed students to reflect on active experimentation in future work fields. Again, the interdisciplinary and collaborative environment of the project-based seminar is discussed by students as something important for their future work in the field of education.

5.5 Experiencing digital environments

The interviewed students discuss experiences in digital environments in all categories and in connection to different topics and processes. They used different strategies for the implementation of their projects in digital environments: Some students conducted their projects completely digitally, whereas others balanced online and face-to-face modes.

Students who chose completely digital ways mostly report positive effects such as (1) the possibility to establish contact easily, (2) the opportunity to schedule meetings quickly, (3) the possibility to gather and share information online and simultaneously, (4) the chance to meet without using a car or public transport, and (5) the time-saving aspects of digital communication [17].

In contrast, students who chose face-to-face modes emphasize the necessity of face-to-face interaction as many participants cannot handle the required digital devices on their own. Additionally, some students report that they experienced an unobstructed flow of information and communication in face-to-face encounters and that the use of certain materials, i.e. pictures or items, may have a better effect.

Students explicitly report about their experiences with various digital tools: *"I advertised my project digitally. And I created a messenger group for the parents (of the participating children)."* Digital tools were often used for establishing contacts, organizing schedules, and research: *"... we were looking for pictures and stories online."* Additionally, students used video calls and messengers to prepare and discuss their projects: *"... to stay connected – especially in Covid times, all stayed in different places. Because of this, we had to connect digitally to communicate constructively."* However, the use of digital tools in the students' projects also shows limitations: *"... to offer video calls instead of handwritten letters would have been too far from my initial idea of a pen friendship."* Analog options sometimes seem to be more suitable and constructive: *"There was one child who painted on the back of the letter and the paintings added even more value. I don't think this would have been possible with digital tools."*

All interviewed students appreciate and make use of digital environments, when planning and implementing their projects. Within the projects, digital tools seem to be used especially for establishing contacts, researching materials, and organizing schedules. Furthermore, the students balance digital and analog processes within their projects.

It is noticeable that most collaborations were established digitally. However, the students do not discuss this fact in detail. On the contrary, it seems almost conventional to the participating students to use exclusively digital ways for establishing collaborations. The interviews indicate that authentic experiences can also be created in digital contexts. Students report about according experiences during the digital implementation of their projects.

6 Discussion of the findings

The qualitative approach of this study is looking for the reflection of individual experiences in digital and project-based courses in the higher education sector. The qualitative perspectives were implemented to gain deeper knowledge about the individual

experiences of the participating students in (5) digital environments and to discuss (1) concrete experiences, (2) reflective observations of new experiences, (3) abstract conceptualizations of experiences, and (4) reflections on active experimentations of conceptualizations. The methods employed largely focus on the same phenomena and the findings are discussed in this analysis, by triangulating the different qualitative approaches (synchronous, dialogue-based, asynchronous) [24].

Three main foci could be established during the analysis process and are discussed in the context of experiential learning: (I) the role of relationships in experiential learning; (II) experiences in project-based learning in digital environments; (III) the use of digital environments in experiential learning contexts.

6.1 The concept of relationship

Within the students' projects, various relationships developed in different dimensions and spaces, digitally and face-to-face. Participants developed relationships with others in different social spaces, enhanced their relationships with themselves, and fostered relationships with organizations and groups and society as a whole: *"One could see various relationships which played a role."* Thus, the concept of relationship has to be discussed from a multidimensional perspective [25]. Relationships within the projects were established and developed both, digitally and face-to-face. Students report different digital ways, such as voice messages and videos, which helped foster relationships between various participants in social spaces: *"The relationships between children and seniors developed and created happiness, even though they did not know each other from face-to-face contact."*

Thesis: Experiential learning should focus on relationships as a crucial factor for constructive learning development. Digital environments can help create and foster relationships when offering project-based learning tasks. Common goals and collaboration are essential for the development of relationships in digital contexts.

6.2 Experiential learning: project-based and digital

Project-based learning in digital contexts offers a variety of learning experiences. Students can experience a high level of autonomy as they can pursue individual interests and control fundamental processes within their projects. Students can personalize learning experiences, as they can customize activities and processes in the course and the project [17]. Furthermore, digital project-based approaches can offer a high level of contextualization. Projects offer the inclusion of lifeworld experiences and interests and thus can lead to experiences of involvement and belonging. These experiences seem to motivate students and can lead to a strong connection between projects and their participants. Students can develop empathy and are included in the learning processes emotionally as they are in charge of their projects and collaborate with different participants.

Thesis: Digital environments create experiences as they enable students to customize their activities. Contact can be established and maintained easily in digital environments and therefore experiences can be generated easily. However, the potentials of digital environments in experiential learning vary; while the development and organization

of projects seem to profit from digital environments, the establishment of relationships through encounters does not necessarily.

6.3 Use of digital environments in experiential learning contexts

There is a strong and partly natural use of digital environments in project-based settings. Establishing contact, advertising projects, organizing processes, and structuring activities mostly happens via digital tools. Within the digital environments, learners appreciate and use the manifold opportunities offered through digital tools. Students report various positive experiences with the flexible blending of various digital methods. Concerning this, digital environments seem to encourage independent learning as online content can be retrieved and reused self-responsibly. Additionally, collaboration can be established with chosen partners outside the classroom and online interaction can take place anytime.

Thesis: Digital environments offer effective, flexible, and largely independent ways for collaboration and experiential learning. Still, students experience face-to-face encounters as more authentic and sustainable. Blended approaches have to be developed and adjusted individually.

7 Outlook

Project-based and experiential learning can be contextual, emphatic, individual, authentic, collaborative, and action-oriented [26]. The interviewed students show a high level of involvement and report about sustainable experiences when working in project-based contexts: *"... and in my opinion, you only learn things, when you actually do things. This is why I appreciated the projects so much."* In this horizon, digital environments offer new potentials for experiential learning as many processes can be handled more efficiently with digital tools. Experiential learning in digital settings can generate a high level of motivation in students and encourage them to do work autonomously and self-responsibly: *"... we had the chance to work on our own, completely independent of time and place, which was good. And afterward, we could share (...) our solutions and our thoughts (...)."* However, certain processes seem to have different characteristics, when implemented digitally: The quality of digital interaction for example seems to have a different quality than face-to-face interaction. This is especially important, as collaboration and interaction are crucial factors of experiential learning. The development of relationships and the experiences of membership and belonging seem to be more intense in face-to-face interactions. This shows when experiences with collaboration and coherent encounters are discussed in the study. Especially encounter seems to play a crucial role in project-based learning, as students hardly work on their own but are rather connected to several partners and participants [28]. Collaboration seems to create experiences of membership and offers the potential for emotional involvement. This can lead to the development of strong relationships between the participants.

Digital environments can make experiential learning more efficient, contextual, and personalized. Relationships can also be established digitally, however, probably not as

intense and sustainable as in face-to-face collaboration. In this context, face-to-face contacts seem to play an important role, whereas experiences with encounters in digital environments seem to be less sustainable [29]. Thus, experiences in collaboration tend to be more powerful if the interaction is face-to-face. Digital tools seem to be more efficient, though, when it comes to logistical tasks, like organizing and structuring collaboration. It shows that digital environments are of great importance for collaboration and encounters. However, the benefits and quality of encounters are different from face-to-face situations.

Courses focusing on experiential and project-based learning in digital environments should take these findings into account. Thus, these courses require a structure, which enables students (1) to find themes and develop projects individually through online content; (2) to share and discuss ideas online; (3) to establish contacts online; (4) to develop shared knowledge through collaboration online; and (5) to meet online and face-to-face with partners and participants. Moreover, the entire learning environment should offer different digital and face-to-face learning methods. A combination of self-regulated learning, interaction, and diversified working options should be developed to meet the students' needs and provide digital and non-digital options. A flexible combination seems to be especially valuable as it offers efficient and suitable tools for different needs and the development of experiences [27]. Given this, digital environments have to be discussed in terms of their functionality and efficiency for individual projects. Experiences in the fields of personalization, authenticity, collaboration, and empathy [9] can be helpful for this reflection and offer a structure for discussing experiential learning in digital environments.

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This is a revised and extended version of a presentation given at The Learning Ideas Conference 2022, held in New York and online June 15–17, 2022. Article submitted 2022-10-07. Resubmitted 2022-12-06. Final acceptance 2023-02-09. Final version published as submitted by the authors.