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Crafting Effective Online Learning Environments: A Conceptual Design Framework for Teaching in Higher Education

Abstract

This paper explores the application of Laurillard's Conversational Framework in designing effective online learning environments that foster self-directed learning (SDL) in higher education (HE). It examines how various learning types, including acquisition, inquiry, and practice, can be integrated into online learning settings to enhance students' SDL capabilities. The study presents the case of an online master's program in business psychology and management at the MCI, an Austrian university of applied sciences, demonstrating the practical implementation of the framework's elements. This research highlights the potential of this approach in creating learning environments that support lifelong, self-directed learning, particularly in online learning contexts.

Die Gestaltung effektiver Online-Lernumgebungen: Ein konzeptioneller Rahmen für die Lehre im Hochschulbereich

Dieser Beitrag stellt einen konzeptionellen Gestaltungsrahmen für die Entwicklung effektiver Online-Lernumgebungen in der Hochschullehre vor, mit einem besonderen Fokus auf die Förderung selbstgesteuerten Lernens (Self-Directed Learning, SDL). Aufbauend auf dem Conversational Framework von Laurillard werden zentrale Lernformen wie Wissenserwerb, erfahrungsorientiertes und entdeckendes Lernen beleuchtet und deren Potenzial zur Förderung von SDL analysiert. Anhand eines Fallbeispiels eines Masterstudiengangs am MCI, einer österreichischen Hochschule, werden die theoretischen Grundlagen in die Praxis überführt. Das Beispiel zeigt, wie durch gezielte Gestaltungselemente selbstgesteuertes und lebenslanges Lernen, insbesondere in Online-Lernumgebungen, gefördert werden kann.

Schlüsselwörter: *Educational Design, Self-Directed Learning, Online Learning*

1 Introduction

Higher education institutions (HEI) face the challenge of preparing students for an increasingly complex and rapidly changing world. Traditional approaches to management education often focus primarily on promoting analytical skills and theoretical knowledge but fall short of adequately developing students' abilities to address ill-defined problems and navigate uncertainty. Therefore, preparing students for "wicked problems" - complex, continuously evolving challenges that require ongoing adaptation and learning from those attempting to solve them – is key (Ramaley, 2014). Due to the ongoing transformational process in business and society, students need to be equipped with competencies that are applicable across various life contexts and span across professional specializations (Ostendorf & Meyer, 2024). Given the dynamic

nature of contemporary challenges, a robust foundation of relevant knowledge is hardly sufficient. To tackle these challenges, continuous development by individuals confronted with them is needed. Consequently, students must acquire control over their own learning and development. For educators in HEI, this means designing learning environments that give students the opportunity to learn in accordance with their intended outcomes (Geitz et al., 2019). Ehlers (2020) also emphasizes the importance of "learning literacy"-the ability and willingness for self-directed, lifelong learning that enables individuals to continually adapt to emergent contexts. Therefore, universities have to find ways to promote this "learning literacy" by designing learning environments that empower students to become lifelong learners.

Building on this understanding, HEI should focus on implementing innovative strategies and pedagogical approaches that foster self-directed learning (SDL) among students. Knowles (1975, p. 1) defines SDL as “a process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes”. It emphasizes learner control and autonomy and recognizes the importance of collaboration and facilitation in formal educational settings. SDL is crucial for lifelong learning and adaptation to rapid societal and technological change. It is considered both a process and goal in education, with the aim of developing individuals capable of moral, emotional, and intellectual autonomy (Candy, 1991; Loyens et al., 2008).

Online learning environments in HE offer unique opportunities to promote and enhance self-directed learning (SDL) skills. By leveraging digital tools and platforms, educators can create flexible, personalized learning experiences that empower students to take greater control of their educational journeys (Jeong, 2022). The asynchronous nature of many online learning activities allows students to pace their studies according to their individual needs and preferences, further developing their ability to manage their own learning (Saluky & Bahiyah, 2023). Effective online learning environments focus on student engagement with content and their chosen approaches to learning, which plays a crucial role in developing cognitive and problem-solving skills (Geitz et al., 2019). Goodyear (2015) emphasizes that students need to become designers of their own learning, capable of creating and navigating learning environments that suit their evolving needs. The challenge for educators is to design online learning spaces that support this development, guiding students to become proactive, reflective learners who can shape their educational journeys while providing the necessary scaffolding for SDL processes.

This study aims to investigate how educators can effectively design technology-enhanced learning experiences that foster self-directed learning skills. The primary contribution of this study is the exploration and application of Laurillard's (2012) conceptual design framework as a structured approach to crafting online learning environments that promote self-directed learning. Based on an illustrative case, this study examines how the different components of Laurillard's approach can be transferred into practice. These elements are crucial for cultivating self-directed learners capable of addressing complex professional challenges. The structure of this paper reflects this design focus: it begins with a comprehensive analysis of Laurillard's framework, detailing its design principles and components. Following this, a case study illustrates the practical application of this design framework in shaping an online master's program in

business psychology and management, demonstrating how various design elements can enhance self-directed learning.

2 Teaching as a Design and the Conversational Framework

2.1 Design-Based Education

Design, in its broadest sense, can be characterized as an “intentional act of creation” (Roman & Boling, 2024, p. 1981) aimed at achieving a specific goal or purpose. In the context of education, Learning Design refers to the process of creating practices, activity plans, learning resources, and tools that align with specific educational objectives (Mor & Craft, 2012). The design process can be described as an iterative loop of building and evaluation to generate purposeful artifacts (Li et al., 2022). This iterative nature of design aligns closely with the principles of design science, which focus on developing practical principles rather than abstract theories. Design science extends the concept of design by applying scientific methods to solve real-world problems, thereby making it particularly relevant to the field of education. This approach is especially valuable in teaching, as it is inherently complex and cannot be reduced to universal guidelines (Laurillard et al., 2018; Morris & Hiebert, 2011).

The application of design principles in education is crucial because of several factors. First, teaching requires integrating subject knowledge with effective pedagogical strategies, highlighting the complexity of pedagogical content knowledge (Baumert, 2009). Applying the concept of teaching as a design science to online environments requires a comprehensive approach that considers technological, pedagogical, and content knowledge (TPACK) (Niess, 2017). Second, education systems often function as "massive uncoordinated experiments" (Laurillard et al., 2018, p. 1045), necessitating the ongoing design and refinement of teaching practices. This underscores the importance of continuous experimentation and improvement in educational settings. Finally, the articulation of tacit knowledge, as educators possess extensive experiential knowledge (Neuweg, 2011) which is rarely documented or shared systematically (Laurillard et al., 2013). By adopting a design science approach, educators can address these complexities, improve their practices, and create more impactful learning experiences. This approach offers a promising pathway for enhancing pedagogical practices and improving student outcomes.

2.2 Design for (Online) Learning

Design plays a crucial role in addressing diverse student needs and in enhancing learning opportunities in HE. It serves as a powerful tool for creating stimulating learning environments, particularly in online contexts where self-directed learning is prevalent and much learning occurs without direct teacher supervision (Goodyear, 2015). Design shapes student activities, defined as "what students actually do" (Goodyear et al., 2021, p. 446), but these may not always align with instructor intentions, especially in online learning environments. This highlights the importance of considering physical, social, and epistemic contexts in design (Goodyear et al., 2021). Learning itself cannot be designed, only designed for (Goodyear & Dimitriadis, 2013), emphasizing that "what the student does is actually more important in determining what is learned than what the teacher does" (Shuell, 1986, p. 429). Every learning activity should be

considered as a resource for student engagement, which may involve mental, physical, or emotional aspects. Conceptualizing student activities as situated (Lave & Wenger, 1991) underscores the educator's role in configuring the virtual learning context, considering various situations in which learning is intended to occur (Goodyear et al., 2021).

However, the design of an online learning environment can be particularly challenging, as demonstrated by a survey conducted by (Moessenlechner et al., 2021) among faculty regarding the abrupt transition to online teaching during the COVID-19 pandemic. Furthermore, the fact that in HEI academics are typically not trained as educators (Laurillard et al., 2018) - much less so as online instructors – underscores the necessity for support in the design process. This discussion focuses on a framework that can guide this process. Laurillard's conceptual design framework for teaching provides a structured approach to creating effective learning experiences that align with these objectives.

2.3 The Conversational Framework

Laurillard's (2012) Conversational Framework draws from the central theories of teaching and learning, focusing on the dialogue between teachers and learners as the foundation for knowledge construction. At its core, this approach advocates structured student learning, in which teaching is organized to facilitate learning through a structured process. (Laurillard et al., 2013). This framework is particularly well suited to technology-enhanced learning environments, where iterative feedback loops and student-teacher interactions are crucial (Holmberg, 2017).

The Conversational Framework focuses on dialogue between teachers and learners as the foundation for learning to take place (Laurillard et al., 2013). It outlines various cycles that support effective teaching and learning, as illustrated in Figure 1. The Teacher Communication Cycle emphasizes dialogue to facilitate conceptual understanding. The teacher presents the concept, students engage through questions or reflections, and the teacher provides feedback. The Teacher Practice Cycle describes a process in which teachers design learning activities, implement them with students, gather feedback on their effectiveness, and refine the activities based on that feedback. The Teacher Modeling Cycle involves teachers using models to represent and explain concepts to students, helping them understand the underlying principles, and then adjusting the model or approach based on student feedback and performance. Finally, the framework also considers the role of peer learners by complementing teacher-learner interactions with the peer communication cycle and the modeling cycle, shifting the focus to collaborative learning, where students exchange ideas, model skills for one another, and provide mutual feedback.

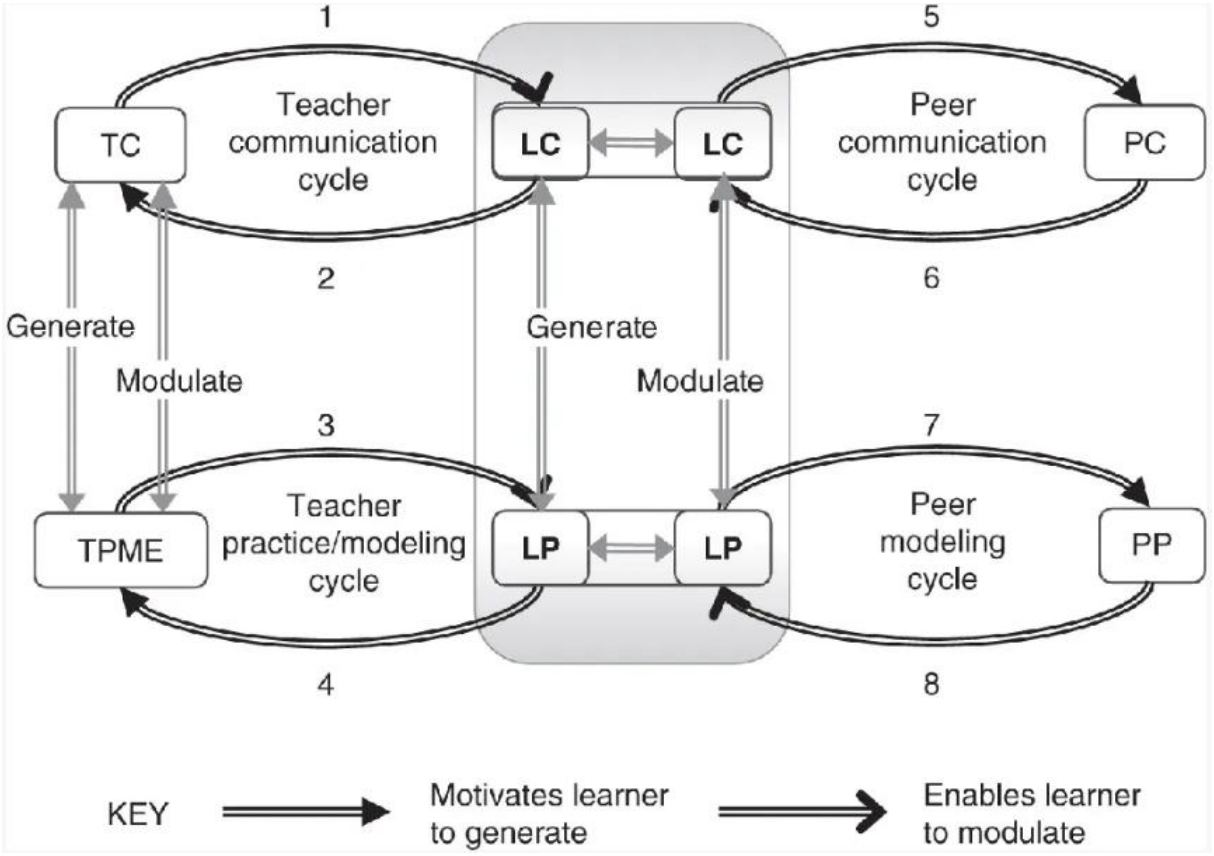

Figure 1: Learner learning through interaction with peers' concepts and practice (PC,PP) (Laurillard, 2012, p. 92)

In this context, the teacher's role is to facilitate students' generation and refinement of concepts through iterative cycles of practice and reflection. This approach can help address the motivational challenges, that students face due to the delayed nature of rewards, by creating a well-designed teaching-learning environment that supports and guides engagement. The teacher's role is to facilitate the students' generation and refinement of concepts through iterative cycles of practice and reflection. To address various components of the Conversational Framework, the following learning forms and their roles in the teaching-learning process can be used.

As Laurillard (2012) describes, learning through acquisition is a passive form of learning in which teachers explain concepts. In an online setting, this typically occurs with the help of digital media and tools. While beneficial for structuring content and aiding comprehension, course designs should incorporate methods to facilitate teacher-student dialogue and interactive activities to transform passive learning into an active process. Despite these efforts, challenges remain, as research shows that students may only show limited engagement with activities such as in-text questions or written tasks (Marton & Booth, 1997; Fung, 2005).

Learning through inquiry can be defined as 'the learning activity through which students turn the teacher's narrative into their own' (Laurillard, 2012, p. 122). Rooted in scientific investigation methods, this approach strongly emphasizes formulating questions, collecting and examining data, and developing arguments supported by evidence (Hmelo-Silver et al., 2007). This

emphasizes the active role of students in constructing their own understanding through engagement with various resources (Laurillard, 2012). For Garrison et al. (2013, p. 10), a Community of Inquiry (CoI) is even the “concept that best captures the ideal of a higher educational experience” since it sees it as the most promising methodology to foster critical thinking. However, Kaczko and Ostendorf (2023) critically examine the CoI framework's conceptualization and operationalization of critical thinking, arguing that it has become narrowed to focus primarily on knowledge confirmation and problem-solving, rather than facilitating 'good judgment'. Their analysis suggests that the CoI framework and its associated coding schemes may not fully capture the complexity of critical thinking as originally intended, potentially limiting its effectiveness in fostering deep, meaningful discourse and inquiry.

Learning through discussion, grounded in Vygotski’s constructivist theory (1978), underscores the vital role of peer interactions in cognitive development. By encouraging students to articulate, critique, and refine their ideas through reciprocal exchange, discussions promote a deeper understanding and elaborate conceptual knowledge. However, effective peer discussion necessitates careful design and scaffolding by educators, as simply instructing students to "discuss among yourselves" (Laurillard, 2012, p. 142) is insufficient. To fulfill its pedagogical purpose, a discussion must guide students to adopt specific positions, support them with evidence and explanations, respond to counter-arguments, and reflect on their evolving viewpoints (Kanuka & Garrison, 2004).

Learning through practice enables students to apply acquired knowledge and skills that are essential in both informal and formal education. Laurillard (2012) describes it as a modeling cycle involving goal-setting, actions, feedback, and revisions. Unlike traditional instruction in which feedback is usually extrinsic and indirect, practice-based learning offers intrinsic feedback, allowing students to directly experience the natural consequences of their actions. For learners to effectively interpret this feedback, the educational setting must offer appropriate support, ensuring that students remain within their zone of proximal development (Vygotski, 1978). In formal learning, teachers, therefore, should create "microworlds" (Laurillard, 2012, p. 166) environments that offer feedback aligned with students' readiness and learning goals.

Learning through collaboration is a "coordinated synchronous activity" (Roschelle & Teasley, 1995, p. 70) resulting from ongoing efforts to develop and maintain a shared understanding of a problem. Unlike other learning forms such as acquisition, inquiry, or discussion, collaboration focuses on shared knowledge construction (Scardamalia & Bereiter, 2006). It involves participating in a coordinated, iterative process of problem solving and idea development, where learners engage in peer modeling, cognitive elaboration, and mutual practice (Laurillard, 2012). Collaboration's effectiveness stems from an iterative cycle in which learners observe their peers' approaches, generate feedback, and refine their ideas. The negotiated and shared construction of knowledge highlights the efficacy of collaboration. However, effective collaboration requires guidance, because students do not inherently collaborate effectively.

Progression through these forms highlights the possibility of designing comprehensive learning environments that incorporate multiple modalities. This approach aligns with the challenges faced in HE, particularly in online settings, where educators must create engaging, interactive,

and effective learning experiences, empowering students to take control of their own learning processes.

3 Examining the Influence of Laurillard's Approach on SDL

To analyze Laurillard's approach with respect to its self-directed learning impact, a more comprehensive examination of SDL is necessary. In this study, SDL is conceptualized as a framework that emphasizes individual initiative and responsibility in the learning process. According to Loeng (2020), SDL enables learners to establish objectives and determine the value of learning content, and can be implemented both within and outside formal educational institutions. Garrison (1997) emphasizes that SDL involves personal control over the planning (goals) and management (support) of the learning experience, although it does not necessarily aim for complete learner autonomy. Self-directed learning can also be conceptualized through various dimensions and categorized according to distinct characteristics or aspects. This classification approach has been explored by multiple scholars in the field (for example, Brockett & Hiemstra, 1991); Candy, 1991). For the underlying analysis and the design of the respective master's program, Candy's approach was used because it addresses two highly relevant settings for the illustrative cases employed in this study. In his definition of self-directed learning, Candy (1991) employed two interconnected views, the first of which relates to control within an institutional setting. At one end of this spectrum, educators have complete authority over content presentations, study materials, and expected outcomes. At the opposite end, learners possess full control over their learning experiences. Self-direction results from the interplay between an individual and their environment (Loeng, 2020). The second view in Candy's (1991) definition pertains to learner control in non-institutional contexts. In this dimension, students make decisions about their learning, including content, activities, timing, location, and evaluation methods (Loeng, 2020). As the overarching goal is self-directedness in various learning contexts, explicitly addressing the non-institutional aspect is appropriate for this study. The following dimensions, based on Candy (1991) and built on these two views, are used:

1. Personal autonomy: Self-direction is seen as a personal attribute characterized by independence, which refers to having the freedom and responsibility to make decisions about what, when, and how to learn rather than following a preset curriculum or externally imposed objectives. This is considered a primary educational goal across all settings and ages.

2. Self-management in learning: This dimension describes the learners' willingness and capacity to manage their own learning. It refers to the practical skills and organizational abilities that learners need to effectively structure and oversee their learning process. While autonomy focuses on the freedom to make choices, self-management emphasizes learners' capacity to handle the logistical aspects of their learning journey. Therefore, this dimension involves the practical application of autonomy in learning contexts.

3. Independent pursuit of learning (autodidaxy): Autodidaxy describes the learning that occurs outside formal educational settings. It is often self-initiated and self-guided, and refers to the capacity and drive for self-teaching, where learners independently seek knowledge and skills without formal instruction. Unlike "self-management," which emphasizes planning and

organization, autodidaxy is about the learner's intrinsic motivation to explore topics of interest, curiosity, and intellectual curiosity in pursuing knowledge

4. Learner control of instruction: The control dimension refers to the extent to which learners have authority over the instructional process, including the content, methods, pacing, and evaluation of their learning. In contrast to personal autonomy, which focuses more on the overall freedom learners have about their learning journey, learner control emphasizes the ability to shape how learning unfolds.

All learning types previously described incorporate elements of SDL to varying degrees. However, learning through inquiry and learning through practice align most closely with Candy's dimensions, as they emphasize student autonomy, self-management, independent pursuit, and control over the learning process, which is why the focus in the following illustrative case is mainly on these aspects. The third learning form selected for this study is acquisition, due to its dominance.

4 Online Course Design in Practice: A Case Study Using the Conversational Framework

Having established the theoretical foundations and practical applications of Laurillard's Conversational Framework and SDL, the focus is now on its implementation in a specific educational context. This illustrative case will show how pedagogical cycles and selected learning types can be integrated into a cohesive educational program aimed at the development of self-directed learners. While this integration also occurs beyond the actual teaching and learning process, specifically at the macro and meso levels (Seufert, 2013), this study primarily focuses on the micro level, where the design of learning environments is situated. Nevertheless, the following brief description of the entire program is intended to provide the readers with contextual understanding.

The online master’s program, "Business Psychology & Management", comprises 120 ECTS credits and is delivered in a blended learning format. The program's structure was constructed around two parallel 5-ECTS courses spanning an 8-week period. The course structure pertains to four of the six courses in each semester, thus accounting for 20 of the designated 30 ECTS credits. The remaining 10 ECTS are allocated to an accompanying competence development course in the field of self-leadership, a so-called on-campus "skills lab,” and an integrative examination encompassing each semester's content.

The design of the courses incorporates various learning modalities to ensure a comprehensive educational experience that accommodates both independent studies and interactive elements. As illustrated in Figure 2, each course commences with a synchronous online introductory session. During this session, the instructor provides an overview of the course content, delineates the learning objectives, and elucidates expectations. This initial meeting also serves as a platform for establishing a social presence among students, facilitating interaction and connection at the outset of the course. After this initial session, students enter a two-week intensive self-study phase, during which they independently prepare for a multiple-choice assessment that

occurs in week three. Multiple-choice assessments serve two primary purposes. First, they ensure that all students, irrespective of their prior knowledge, attain a baseline understanding of the course material, which is particularly significant, given the heterogeneity of the student cohort. Second, by addressing fundamental concepts, it enables the remainder of the course to operate at an advanced level, minimizing redundancies that might otherwise overlap with bachelor's-level content.

Following this "activating prior knowledge" phase, each course progresses into a series of guided self-study phases. These are supplemented by three live online sessions (LOS), which are integrated into a structured learning path in the learning management system (LMS). This path comprises distinct phases: content preparation, LOS, and post-session follow-up. To enhance collaborative learning further, students are provided with reserved peer group slots on a biweekly basis, where they can collaboratively engage in preparation or follow-up tasks, promoting a deeper understanding of the material through peer interaction. The assessment methodology for each course is designed to evaluate both foundational knowledge and advanced applications. The multiple-choice test accounts for 15% of the final grade, ensuring that all students comprehend the core concepts necessary to move forward. The remaining 85% of the grades are determined using the final individual assignment. The assignment may take various forms, including a proctored online exam or case study analysis, and is designed to assess students' ability to apply theoretical knowledge to real-world problems.

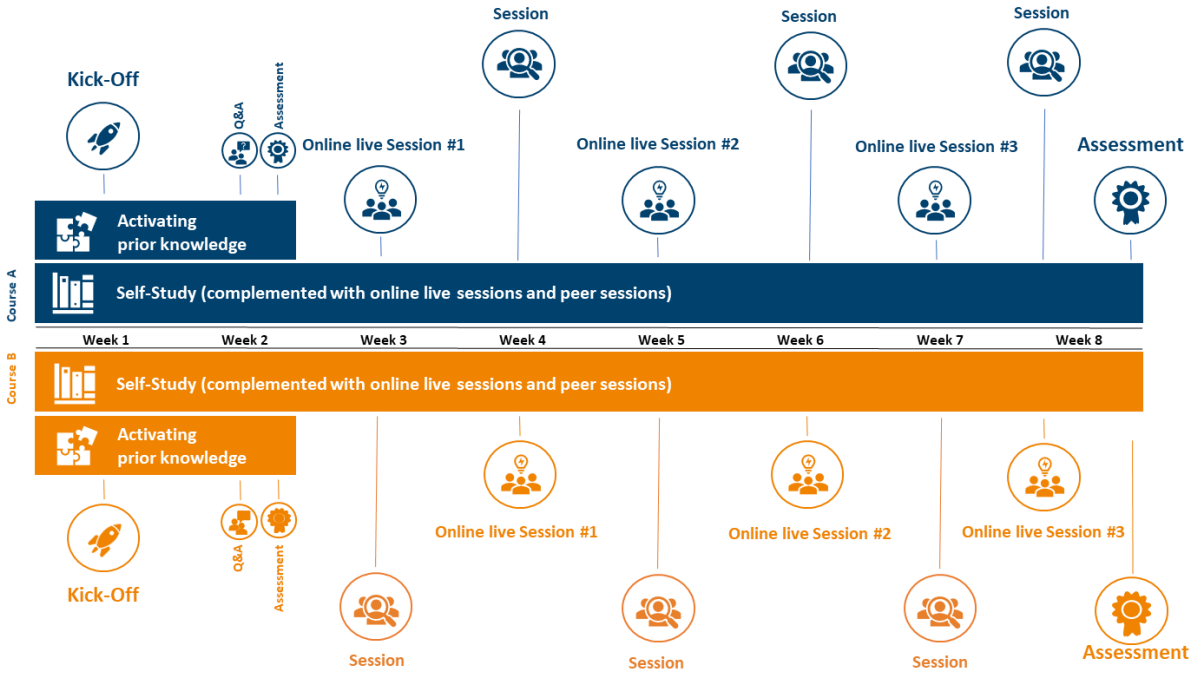

Figure 2: Typical course structure (own illustration)

As previously stated, the conversational framework can provide a foundation for understanding how to design teaching and learning by offering a practical approach to the design process. Each cycle within the framework refers to potential design elements for teaching-learning

activities within the conversational framework. In the subsequent steps, specific design elements for the most relevant learning types and their implementation in the respective master's program will be described, and their contribution to the development of self-directed learners will be analyzed and discussed.

4.1 Learning Through Acquisition

Traditionally, learning through acquisition often refers to 'teacher explains concepts' (Laurillard, 2012, p. 106). In the online context, as in the example case here, this narrative form of instruction can encompass podcasts, videos, screencasts, websites, and other digital resources that allow for more freedom and learner control in the process. In a flipped classroom setting (Bergmann & Sams, 2012), students can choose when and where to learn in the self-paced study phases. Additionally, for some courses students can choose between a variety of study materials; for example, they can learn for the MC test with videos, podcasts, or book chapters.

One of the key benefits of narrative forms of learning, such as teacher presentations, is their structure, which allows students to discern the meaning of the content (Luckin et al., 2001). To help students comprehend the structure, kick-off meetings in week one of the courses function as advance organizers, a cognitive instructional strategy designed to facilitate the learning and retention of new information by linking it to existing knowledge. Presented before the main material at a higher level of abstraction, advance organizers help learners activate prior knowledge, create mental frameworks, and improve comprehension and retention (Ausubel, 1960). Well-structured advance organizers can also play an important role in fostering SDL (Gurlitt et al., 2012). By providing learners with a roadmap for upcoming content, allowing them to anticipate how new information will connect with their existing knowledge, they enable learners to make autonomous decisions about which areas require more focus, empowering them to take control of their learning priorities. Additionally, advance organizers encourage self-reflection by prompting learners to compare their current understanding with the material to be covered, fostering a more active and engaged approach to learning. However, the inherently passive nature of acquisition limits students' full autonomy; to fully promote SDL, it is important to look beyond learning through acquisition.

4.2 Learning through Inquiry

Laurillard (2012) emphasizes that teachers must carefully design a learning environment that facilitates students' iterative process of inquiry by assisting in the modulate-generate cycles. In the respective master's program, learning through inquiry is supported by practical assignments where students bring in topic-related open questions from their workplaces. These real-world challenges arising from students' individual work contexts can be used as case studies in these courses. Another element is regular expert interviews with guest lectures that help students to link theory and practice. Furthermore, the integration of research and teaching plays a major role in enabling students to experience the process of scientific inquiry and contribute to the generation of knowledge that is potentially of interest to others (Reinmann, 2019). In practice, this can include poster sessions to showcase student research, or research logs for the ongoing assessment of the research process.

These examples show that learning through inquiry can enable students to assume control of their learning paths. Encouraging them to include their questions gives them autonomy in a certain subject matter. Investigating their questions in research projects or case studies demands strong self-management skills, as students must plan, organize, and follow through on their investigative processes. Instead of following a predetermined set of materials, students must select the resources and techniques most relevant to their questions, allowing for a highly personalized learning experience.

4.3 Learning through Practice

A well-designed environment for learning through practice enables students to experiment, receive feedback from the environment or models, and compare their outputs with expected results (Laurillard, 2012). It provides both intrinsic feedback from the activity itself and extrinsic feedback from teachers or peers, thus ensuring a holistic and self-sustaining learning process. In the Master's program, the most common form of learning through practice is case-based learning, according to the "Harvard method" (Andersen & Schiano, 2014; Ellet, 2018). However, the described environment is also created, for example, through role-plays that allow students to practice interpersonal skills, decision-making, and problem-solving in controlled settings. In addition, AI-based learning approaches used in various roles, like tutor or mentor (Mollick et al., 2023), offer personalized learning experiences, adapt to individual student needs, and provide immediate feedback, thereby reinforcing the practical application of concepts. For instance, in the fields of business psychology and organizational change, students are encouraged to use a GPT-based tool designed to function as a virtual change leadership coach. The tool embodies one of three distinct personas, each characterized by unique backgrounds and specific challenges related to organizational change. By interacting with these personas, students engage in realistic and contextually rich scenarios, requiring them to demonstrate empathy, analyze diverse perspectives, and apply effective leadership strategies. Regardless of the role that AI-based tools are used, it is crucial that their implementation is embedded in institutional frameworks, such as the one developed by Ostendorf et al. (2023) for the Faculty of Business and Management at the University of Innsbruck, providing scaffolding for students by highlighting their potential for various work and learning processes, while also emphasizing the students' personal accountability when employing AI-based tools.

Additionally, immersive environments and virtual reality (VR) technologies can create highly engaging, interactive learning spaces in which students can practice skills in lifelike situations, enhancing their practical understanding and retention. However, because of the necessary equipment, this is only possible on on-campus days and not on a regular basis. Furthermore, online simulations can provide students with opportunities to analyze complex scenarios, adapt to various outcomes, and apply theoretical knowledge in practical settings.

All of the aforementioned forms of practice-based learning contribute to SDL by allowing learners to take ownership. Students can make independent decisions regarding their suggested solutions and actions, fostering a sense of responsibility and choice that is central to autonomy. To succeed in practice-based activities, learners must effectively manage their time, organize tasks, and monitor their performance. For instance, in simulations or role-playing exercises,

students must align their actions with objectives, plan sequences, and adjust them based on feedback. Through role-plays, simulations, or virtual labs, students can identify areas for improvement and independently seek further information or resources to enhance their performance. These practice-based forms also provide learners with a high level of control over the instructional process. By choosing specific actions to take in a simulation or problem-solving scenario, students determine how they engage with the material, fostering a personalized approach to skill acquisition. Technologies such as virtual reality or AI-based tutoring can further enhance this control by adapting feedback based on learners' choices.

5 Discussion

This study demonstrates the framework's potential for creating online learning environments that support lifelong, self-directed learning. It incorporates various learning types including acquisition, practice, and inquiry, which can be leveraged to develop SDL skills. The case study of an online master's program illustrates how the framework elements can be practically implemented to enhance students' SDL capabilities.

However, this study had some limitations. This study currently lacks substantial empirical evidence to support its claims about the framework's effectiveness in promoting SDL. A more rigorous evaluation of learning outcomes is required to strengthen these arguments. Additionally, a single case study may not be representative of diverse educational contexts, limiting the generalizability of the findings. The increasing importance of integrating design into teaching, especially in blended learning environments in HE, underscores the relevance of this approach. This can potentially help instructors integrate new digital technologies into their existing practices to achieve higher-order learning goals. However, further research using design-based research (DBR) (Reinmann et al., 2024) approaches is necessary to iteratively develop the concept of the respective master's program and empirically evaluate its long-term impacts on students' SDL capabilities across various disciplines and educational levels.

6 Conclusion

This study aimed to explore effective strategies for educators to design technology-enhanced learning experiences that foster SDL skills. The findings highlight the importance of implementing Laurillard's Conversational Framework, which emphasizes structured student learning through dialogue between teachers and learners in technology-enhanced environments. This research underscores the significance of incorporating various learning types, including acquisition, inquiry, and practice, to promote active engagement and foster SDL. It demonstrates the need for flexible, personalized learning experiences that leverage digital tools and platforms, allowing students greater control over their educational journeys. Fostering autonomy and self-management have emerged as crucial factors, with opportunities for students to make decisions about their learning content, activities, or timing. Integrating real-world challenges and utilizing advanced technologies, such as AI-based tutoring, chatbots, and virtual reality, have been identified as effective ways to create engaging, interactive learning environments that adapt to individual student needs. This study also highlights the importance of striking a balance

between structure and freedom in the learning process. By implementing these strategies, educators can create online learning environments that empower students to become proactive, reflective learners capable of addressing wicked problems and being prepared for future learning endeavors. Alternatively, Goodyear (2015, p. 34) states:

> […] one of the ways that teaching can take place is through shaping the landscape across which students walk. It involves the setting in place of epistemic, material and social structures that guide, but do not determine, what students do. There is a beguiling recursiveness to this conception. The aim is not just to shape landscapes (learning environments, if you prefer) that help students become more capable agents—it is not just about increasing their personal agency. While this is important, it is also important to help students read the landscape and learn to (re)shape landscapes for their own future activity, and for the activities of others, including for future learning.

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