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Creating an Online Social Learning Platform: A Model Approach for Open Development, Open Access and Open Education

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Abstract: The importance of online learning platforms in the face of the challenges of the 21st century cannot be stressed enough. Multiple approaches based on different didactic concepts and software have already been discussed. At Karlsruhe Institute of Technology, our team supports the development of an innovative digital infrastructure in creating a virtual campus that provides a portfolio of digital skills and key qualifications for students of all disciplines. The following paper presents this open source-based social online learning platform called *hocampus*: it aims to function as a model approach for future learning platforms connecting unsupervised learning, peer communication and tutoring as well as teaching. However, our platform is not a mere technical architecture that employs online learning and communication possibilities: it is characterized by a strong correlation of structure and content. For this, we advance a didactic concept focused on empowering students to strengthen their cross-disciplinary key competences and 21st century skills. We also depict the digital infrastructure and tools being used in the creating and operation of *hocampus*. Lastly, the general design principles for digital platforms are put forward. This paper also presents a firsthand account of how to implement such a learning platform by showing what hindrances need to be overcome, how students benefit from a social online learning platform and how digital learning can develop and change in the coming years. Thus, it can function as a manual portraying the necessary steps for the realization of concrete didactic concepts in a digital space.

Keywords: e-learning; didactic concept; digitalization; design-strategies; hybrid classroom; key qualifications; digital skills

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1. Introduction

Studies similar to [1] have shown that online social learning platforms can be beneficial for the academic training and that students are open-minded about online learning possibilities [1–3] Tomczyk et al. even refer to students preferring digital content over traditional learning offers [1]. Today, the idea of digital social learning mainly occurs on third party platforms with a commercial focus, e.g., messaging services, video providers, social media. [4], for example, focuses on the use of MIRO, a commercial web tool hosting all content on its own servers. The authors name visual attractiveness and an interactive and intuitive interface as key factors in choosing MIRO for their educational purposes. Over the past years, researchers especially praised social media not only for its attractive design language and usability but also as providers of a sphere of truly independent learning that allows the formation of learning communities [5–7]. Students, being used to those popular platforms early on, naturally adapt to the content provided and utilize their technology in a mixture of private and academic interests. Studies such as [8,9] show that even though the efficacy and implementation of online social learning platforms are being discussed, they mostly rely on commercial third-party options, which only enforces the preferences of the students. However, those third-party providers fully rely on students and tutors to

generate content as they are not able to produce it themselves. The success of e-learning, however, as the TPACK-theory (Technological Pedagogical Content Knowledge) states, relies not only on attractiveness but also on the relevant educational content as well as methodological knowledge [1]. Third-party tools also have a commercial focus and are prone to distorting content with advertising while neglecting user privacy [10]. The academic realm, on the other hand, can be seen as a shelter with its technological infrastructure, its quality-controlled content and its social role as an institution of certification. Recent studies show that these aspects are on the minds of students as well [11]. Many universities employ open-source software and server architecture for their digital offers. Those tools have been proven to be safe, to respect user privacy and are based on standardized or open exchange formats.

Additionally, open source is seen as the format to achieve digital sovereignty. As the *Aktionsrat Bildung* states, organizational digital sovereignty is a core requirement for personal digital sovereignty and is therefore of utmost importance for students who want to learn, study and work independently [12].

Trying to implement an online learning platform at the House of Competence, Karlsruhe Institute of Technology, we aim to provide our students with the maximum possible benefits that online learning settings can provide.

At universities, we already find a broad offering of technical infrastructure and tools that can be used to create an attractive and safe setting for learners. However, we realized that three aspects are fundamental to deal with if a social online learning platform should succeed:

Firstly, we need to learn from the alluring design, attention mechanisms and ease of use presented in social media. As the Technology Acceptance Model (TAM) suggests, the digital learning environment requires a focus on the usability of content and tools provided as well as ease of use [1]. Secondly, we need to adapt appealing factors such as social interaction and collaboration in our didactic concept [1]. Lastly, we are convinced that the structure of the platform should correspond with the presented content to reinforce each other.

hocampus at the House of Competence can be seen as the result of the aforementioned aspects: it is an LMS (Learning Management System)-based social online learning platform that provides key qualifications for students of all disciplines. Being liberated from domain-specific curricula, the platform can freely test the concept of independent and social learning discussed broadly in current publications about digital learning within an academic context.

Consequently, *hocampus* also supports the development of so-called 21st century skills (communication, collaboration, creativity and critical thinking) [13] by providing new and extended settings, while simultaneously providing access to the research-based teaching content of the House of Competence.

With *hocampus*, we strive to achieve proof of concept of a social online learning platform based solely on campus-provided software. Such a platform allows tutors to offer a broader range of teaching approaches via the interactive possibilities supplied while at the same time inspiring students to move to a digital sphere that focuses on learning and the learner itself. That way, *hocampus* retains advantages such as autodidactic learning and peer-to-peer exchange that researchers awarded social media with and ties them back to the scientific standards of the university.

2. Methods

hocampus shifts focus from a training-/teaching-based environments to a learning community, thus fitting Kerres' et al. definition of a social online learning platform (see Section 2.3) [5]. In addition to learning in conventional teaching settings, students can participate, communicate and study autonomously. *Hocampus* offers a portfolio of cross-disciplinary key qualifications (e.g., competences in the spheres of writing, learning, presenting, knowledge of scientific methods and self-determination). Those key qualifications can be learned via classroom and online courses, but also with the help of multimedia

resources such as digital tests, podcasts, handouts, etc. This content is provided by the scientific research of the House of Competence, an institution at Karlsruhe Institute of Technology solely focused on key qualifications. We also create an environment that provides students with opportunities to deepen these learned key competences through cross-linking (e.g., showing related content), digital forms of participation (e.g., by providing online workspaces for learners (see Section 3)) and specific design choices (see Section 2.2). To ensure the success of those measures, *hocampus* needed an adequate didactic concept.

2.1. Didactic Concept: Digitalization as a Catalyst

The aforementioned concept rests on Gnahs' observations about competences: firstly, he differentiates between domain-specific competences and cross-disciplinary competences. Focusing on the latter results in the competence types of social competence, methodological competence and personal competence. According to Gnahs, social competence refers to every aspect in our behavior that helps to interact, to mediate and to enable teamwork.

Methodological competence describes techniques for solving problems, for analyzing, for decision-making and for presentation. Personal competence is characterized as the ability to work independently, which includes, among other things, time management, autonomy and, in our opinion, resilience [14].

We combine Gnahs' model of competences with the 21st century skills mentioned above. All 21st century skills are always present in a digital context but, depending on the interaction with the cross-disciplinary competences, one or more of them might be dominating while others are in the background. For example: if you want to work on your social competence, collaboration can be a helpful instrument to train interaction skills. At the same time, you may improve your personal competence when you arrange schedules with your team members and integrate these into your own timetable. Communication is clearly a basis for social competence, but can also, similar to our schedule example, lead to the exchange of knowledge and therefore to the extension, innovation and optimization of your methodological competence. Creativity is dominant between methodological and personal competence: it is needed to find acceptable solutions for unprecedented questions, to create an interesting and compelling presentation and to structure and shape your personal life. A part of the methodological competence is critical thinking, which ensures that developed methods are adequate for the context and requirements as they will be revisited and reworked if needed. If your aim is to enhance your critical thinking skills, social competences such as interaction and exchange of insights may be possible ways. In its annual report of 2016, Hochschulbildung für die Arbeitswelt 4.0, the Stifterverband für die Deutsche Wissenschaft postulates eight theses concerning the future academic workplace that will be predominantly influenced by digital technologies. For this reason, it demands the enforcement of digital learning and teaching on all levels, emphasizing that this step simultaneously would transform learning from a mere consuming state into an active and creative education [15]. This necessity to strengthen the digital skills of students to prepare them for their future workplace is also stated by [4,16]. To support this transformation, the Stifterverband für Deutsche Wissenschaft develops a concept of competences that includes discipline-specific competences and work-oriented as well as personal competences, combining them with a digital dimension [15]. Different from their concept, we avoid categorizing specific digital competences, but place the process of digitalization between the three cross-disciplinary competences. Thus, digitalization acts as a connector of distinct competences and in this way as a catalyst for training 21st century skills. We favor this approach because of the critique formulated by Selwyn: "In particular, some of the most misleading assumptions about education and technology are the deterministic claims that technologies possess inherent qualities and are therefore capable of having predictable 'impacts' or 'effects' on learners, teachers and educational institutions if used in a correct manner." [6] It is not enough to postulate a positive effect of digitalization; it needs to be applied in a specific function to have a positive effect. To

translate this idea into action, we developed *hocampus* as a social online learning platform. A visualization of our concept is shown in Figure 1.

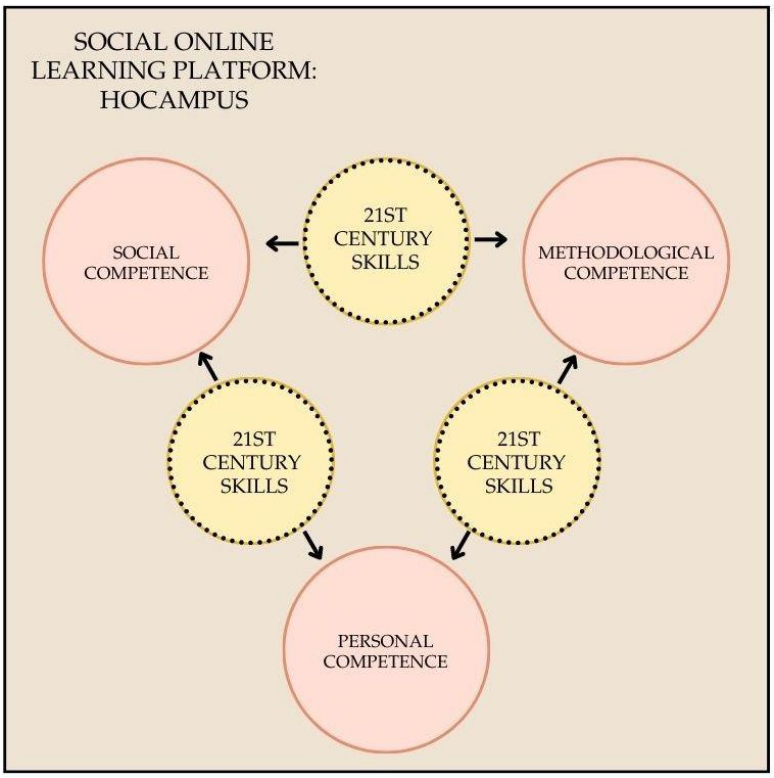

Figure 1. Concept of cross-disciplinary competences integrating the digital potential of our social online learning platform *hocampus*. The three cross-disciplinary competences are being linked with each through the learning platform. Those bonds allow the 21st century skills to grow and are strengthened by them at the same time.

2.2. Design Strategies of Hocampus: Design in Service of Content

Designing a social online learning platform within an academic setting poses a multitude of hurdles and challenges (even when leaving monetary concerns aside) beginning with the LMS your academic institution has decided upon. *hocampus* is running on the LMS ILIAS, which can be customized but only to a certain extent. In some cases, you are stuck with grey text boxes and edged design elements. At the same time, our didactic concept (see Section 2.1) called for specific design strategies. The design of *hocampus* is therefore partly a consequence of the circumstances we were confronted with while creating the platform.

With these challenges in mind, the following design principles and strategies do not claim to be a rigid guideline but rather concepts that any given platform might want to emulate depending on its technological background, didactic concept and goals.

The visual presentation is a deciding factor for the usability and attractivity of any digital educational offer. Studies have shown that an aesthetic design can positively influence the curiosity of learners in their interaction with a platform [17]. With that in mind, the design should always be in service of the type of content you want to present to a learner.

The content can be typified and located on a continuum from poetic to scientific. It is recommended that scientific content (e.g., data, studies, etc.) is displayed in established information hierarchies and structures. With the objective of avoiding biases, it should be presented without the aim of receiving an emotional response. The poetic content, on the other hand, needs to be experienced in a more involved way. The user should interact and experiment with it. The poetic content elicits an emotional response. It cannot be placed in clear and already established hierarchies; it is conceptual and may only be categorized [18].

Focusing on instilling cross-disciplinary competences (see Section 2.1), our content tends to fluctuate between pieces of scientific and emotional information. To ensure the engagement of our learners we needed a design that, on the one hand, centers on the content and, on the other hand, invites learners to explore and interact with the learning platform.

As a result, our design remains playful while also being able to display 'hard' facts. It does not stray too much from general design principles, ensuring that users can fall back on their knowledge of using other online platforms (e.g., Reddit, Instagram, YouTube) [19].

We identified and focused on seven general design principles: First off, our design follows a consistent logic. A left click always does the same, no matter which category the student is currently working on. This also applies to the structure of the different categories: They all follow the same logic and the content is structured in a similar way [18]. The second principle is an unambiguous starting point for all interactions on the platform. On the landing page, we provide five easily identifiable starting points for our different categories (see Figure 2). Those starting points are highlighted via color and placing, they are the first thing you see on the landing site. Inextricably intertwined to this is design principle number three: an obvious option to end or reverse the interaction. We ensure this by implementing a sidebar that enables effortless category switching. Additionally, a click on the banner at the top end of the page always brings the user back to the landing page. During more specific interactions, such as videos, H5P-elements or tests, we rely on established iconography: e.g., a click on 'x' terminates the current interaction. Fourth, there need to be design landmarks that allow the user to identify and navigate different conceptual spaces. We achieve this by reusing the set of icons employed for the general categories (see Figure 3). Furthermore, every category has a distinctive color scheme that encourages users to associate specific colors and icons with different concepts: for example, a coffee mug with a brown background is applied to all content related to taking a break (see Figure 4) [18]. Customizability permits users to adapt the platform to their own needs and is our fifth design principle. Especially in the category 'Collaboration', we empower our users by allowing them to create their own digital working spaces. Not only are they enabled to create specific objects (such as forums, blogs, videos, etc.) but they may also change the design of their working spaces to a certain extent. The students can choose the hierarchy of their objects via drag and drop, change icons and the color scheme of their group [18]. A direct consequence of this is principle number six: the user must at all times have the option to request help. The idea that children, teenagers and young adults who grew up during the digital age are more competent in the usage of technology has been widely refuted [20]. For that reason, we need to anticipate the difficulties our users may encounter during their stay on the platform. Not only do we provide a forum for questions and feedback but we also offer help in the form of tutorial videos wherever users might be in need of them. The same applies for tutors using the platform. We support them with the implementation of their seminars, workshops, etc. by offering them templates for courses on the LMS and video tutorials on how to use the plethora of tools in a teaching scenario. Those tutorial videos are highlighted and placed right next to the content that might cause difficulties [18]. The last principle, visual attractiveness, is connected to the belief that an attractive design has a positive effect on the perceived valence of the social online learning platform.

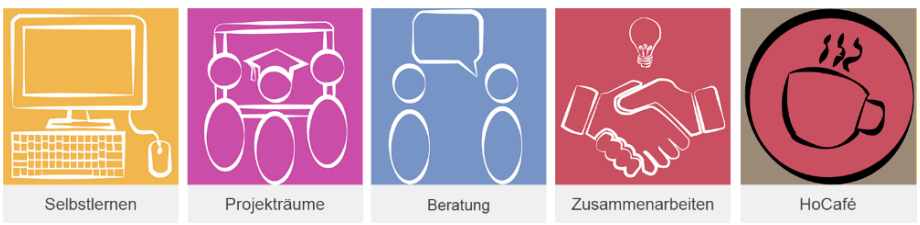

Figure 2. The five categories of *hocampus*: 'Self-learning', 'Academic project rooms', 'Tutoring', 'Collaboration', and 'HoCafé' (from left to right).

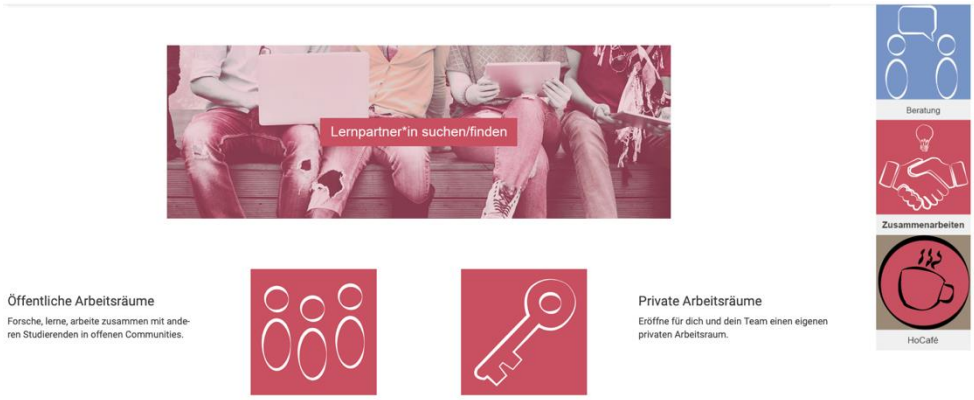

Figure 3. A snippet of the category 'Collaboration' highlighting the continuous color-scheme and returning icons of the central categories.

Figure 4. The coffee mug as a recurring icon signaling the need to take a break.

Meta-analyses have shown that warmer saturated colors and an iconography that relies on rounded edges can produce the aforementioned effects [17]. This can be subsumed under the concept of emotional design. You can see the influence of this design strategy in all aspects of *hocampus*. Beside a specific color scheme, we utilize anthropomorphized elements (see Figure 5) to draw the attention of users [21]. Furthermore, the selected hues produce the strongest possible contrasts that result in a design using complementary or close to complementary colors [19]. The chroma is also chosen to harmonize with the general color scheme of all official Karlsruhe Institute of Technology content. We likewise try to avoid the usage of grey tints and icons with sharp edges wherever the chosen LMS allows for it.

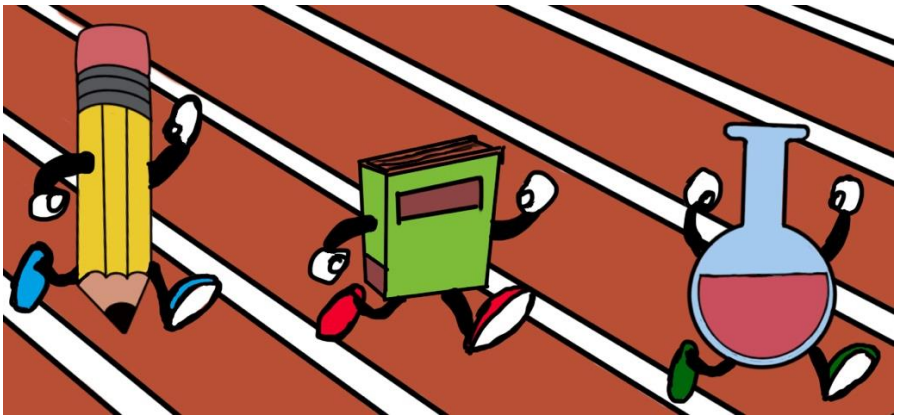

Figure 5. An example of anthropomorphized design elements. This graphic called 'semester-sprint' is used for advertising courses related to topics needed at the end of a semester, such as scientific writing, how to search for literature and how to find the right methodology.

As mentioned at the beginning of this section, the outlined design principles and strategies can be applied to different kinds of online platforms. No matter what your goal is, you can extrapolate from the principles above. Depending on the content you want to present some tweaking might be necessary, for example you might want to choose a

more hierarchical way of presenting content. In our case, the design of *hocampus* is a direct consequence of the aim to enable a didactic approach to strengthen 21st century skills.

2.3. Advantages in Creating a Social Online Learning Platform

The implementation of *hocampus* follows the remarks of Kerres et al. about transforming traditional learning platforms into social learning platforms. While the former works with defined and separated classrooms, the latter focuses on the learners' activity and interaction in order to create an environment in which collaboration as well as communication is not only possible but attractive.

Kerres et al. emphasize that, on a social learning platform, learners are provided with the opportunity to get to know each other, to communicate (in writing as well as verbally), to build up relations and collaborative workrooms. The learners do not have to stay in predefined teaching constellations but can choose their own learning partners and learning groups [5].

The idea of activity being a precondition to the act of learning was already formulated as early as in Benjamin Bloom's *Taxonomy of educational objectives* (1956) [22]. In addition, the works of Lev Vygotsky postulate a sociocultural concept of learning as a mainly social process [23]. The idea of social learning follows the logic of a constructivist approach to learning based on Jean Piaget and Jerome Bruner [24,25]. Selwyn elaborates on this line of didactic tradition, citing key theories from constructivist to sociocultural views, to answer the question of what education is and how it could be improved by technology [6]. It is in this vein that newer studies on social learning and technology follow. Following these approaches, studies today see a clear connection between the success of e-learning and social interaction resulting in a call for high levels of collaboration [1]. Through collaboration, the students build up task-based relationships that increase the attractiveness of the learning process. In completing these tasks in heterogeneous teams, they adopt different social personas, e.g., planning the project at hand, learning to discuss with empathy and respect and exchanging knowledge on a peer-to-peer level.

E-learning proves to be best suited for a collaborative knowledge construction via a problem-solving approach that also strengthens a student's action competences [4,11].

On *hocampus*, our design allows students to act and move effortlessly, spontaneously and intuitively (see Section 2.2). The digital structure of *hocampus* ensures in its permeability that our users always have access to options such as supervised classrooms, self-determined learning, social collaboration, de-stressing and even external resources such as podcasts, feeds and journals: interactions between participants lead them out of closed classrooms to an open exchange of ideas in self-organized groups. This self-organization is accompanied by further recommendations such as peer-tutoring and content of unsupervised learning. That way, we try to achieve our goal of creating a discipline-independent learning community, built on similar interests or similar academic advancements [5], which is attractive for students due to the easy access to diverse and individualized learning scenarios [1].

3. Results—*hocampus* as a Model Approach

With the didactic concept and design in place, we now shift our focus to the concrete digital tools and functionality of *hocampus*, thus answering the call for examples of practices regarding the development of digital skills [26,27]. Before describing the functionality of *hocampus* we want to emphasize two points. First, even though our platform runs on the LMS ILIAS, the general design and didactic principles that we apply can still be used for the development of platforms on different LMSs. They are adaptable to the specific needs and restrictions of other platforms (e.g., Moodle, Blackboard, etc.). Secondly, we want to change the way teachers and students interact with their university's LMS. Most students only use the university LMS for downloading files and course organization. With *hocampus*, however, we aim to integrate a platform for acquiring digital skills and key competences into the existing LMS, thus providing a seamless transition from coursework toward competence development and e-learning.

For our didactic concept to work, users need to be able to interact with the content of *hocampus* at the right time of the student life cycle utilizing the proper digital tools for the task at hand. To support self-organized but also collaborative learning on one digital platform, the right technical framing is indispensable: in order to fulfil Karlsruhe Institute of Technology-standards, *hocampus* is implemented merely as one of many digital classrooms within the LMS ILIAS. Besides technical limitations (as described in Section 2.2), this provides us with a couple of advantages in designing and integrating the platform in the infrastructure of the university: first up, every student at the Karlsruhe Institute of Technology already has an account and access to ILIAS, resulting in a potential user base of 20,678 Karlsruhe Institute of Technology students (as of 24 June 2022). For *hocampus*, we turn the concept of ILIAS classrooms upside down: instead of only addressing an exclusive group as a consequence of access-limitations and the need for extra applications, the platform is open for every student whenever they choose to join. Additionally, we do not have to worry about security or user privacy as we never leave the Karlsruhe Institute of Technology realm that already controls those aspects. It always lies with the students to decide whether they choose anonymity above revealing their identity to fellow students. Although research suggests that unambiguous virtual identities of participants can be part of a motivational concept to commit users to a social online learning platform [5], we prefer freedom of choice over such strategies.

Plus, we have access to a multitude of premier content: as one of many ILIAS classrooms, *hocampus* can easily link to or integrate parts of other online classrooms and courses, especially those of the House of Competence.

hocampus is divided into five subcategories that are advertised on the landing page (see Figure 2, Section 2.2). In the category 'Self-learning', students find materials relating to key competences formulated in our didactic concept. 'Academic project rooms' is a category that promotes and contains different projects and courses teaching the aforementioned competences. Offerings of peer tutoring on writing, learning, presenting and future skills are found in the category 'Tutoring'. 'Collaboration' comprises all tools, spaces and projects enabling students to study, learn and work together. The 'HoCafé' is a room of relaxation, where students can take a well-earned break from their academic ambitions. A big difference of our platform to standard online classrooms lies in the option for students to move freely between those content categories at their own speed and to use the tools provided in a way that suits their specific needs. There is no given curriculum or path leading through *hocampus*. This aspect is especially apparent in interactive learning nuggets: those H5P-elements convey learning units on key competences in a playful graphic processing (fitting our general design principles described in Section 2.2). Besides interactive elements such as tests, there is multimedia content such as podcasts and videos on topics of key qualifications or even practical instructions (e.g., on how to effectively design a break from a learning session), that students can freely choose from. By integrating learning content within the student life cycle, learning nuggets support independent, unsupervised learning on demand. Being merged with the possibilities of a full-fledged LMS allows us to link these nuggets to online courses providing the bigger context on a subject. Both are designed to be explored by students unsupervised. This way, students receive exactly what they need at the time they require it the most:

Nuggets are sorted to advertise competences regarding learning structures, on how to speak in front of class, etc., at the beginning of the semester, while highlighting online courses on academic writing toward the end of a semester when students are working on their papers.

Moreover, *hocampus* integrates a learning partner exchange hosted on the House of Competence website that helps students in finding peers of their own discipline. This way, we facilitate forming study groups for exams, for finding motivation to write a thesis or to practice in front of test-audiences for presentations. Once they find their peer group, we provide them with the option to exceed the limits of standard online classrooms by creating their own virtual room for group collaboration. They can either open a private

or a public space, invite their peers to join them and choose between different templates that offer tools such as file sharing, a forum, wiki or blog. Public working spaces can be moderated to integrate on-campus services from different institutions such as an online reading room provided by the Karlsruhe Institute of Technology library or virtual events such as guided learning sessions accompanied by tutors. Every working space may be linked to the communication software Microsoft Teams provided by the Karlsruhe Institute of Technology for videoconferencing, chat, file sharing and collaborative editing. Of course, an open-source videoconferencing solution would be preferable. Tools such as Big Blue Button even allow for a far deeper integration in ILIAS. In the case of *hocampus*, we are stuck with the option the KIT provides. On *hocampus*, the students are free to create their own team there for private conversation and to further ease their digital collaboration. Videoconferencing is also used for consulting offers by special-trained tutors in scientific writing, learning strategies and presentation skills. In consequence, peer-groups can ask tutors to join their conversation to help out on specific questions. Not only do we focus on private peer groups, but similarly on semi-public communication within the student body of Karlsruhe Institute of Technology. The students are able to meet up spontaneously with their fellow students and start a conversation on chat or a videoconference via pre-created public groups on Microsoft Teams. Convinced that students really benefit from peer knowledge and discussions, we also host a public forum for the free exchange of questions on scientific methods. This forum supports the opportunity to rate topics of quality and importance to cause those to be more visible for others. To ensure some quality control, this forum is moderated by tutors.

Still, there is room for another aspect of a social online learning platform: we call it 'hybrid classrooms with a twist'. Didactic research today demands a shift from a mere reproduction of expertise by students to the idea of life-long learning as an answer to the fundamental changes brought by digital technology enforcing the adoption of new knowledge in all areas of life [6,13]. Key competences such as learning, collaboration, communication in writing and presenting are the foundation that students build on to adapt to those ever-changing demands. *hocampus* strives to integrate online classrooms provided by ILIAS via a transformation of the existing teaching structure (may it be in physical or online classrooms) by the means of digital options such as networking and collaboration described above. On our platform, the students are able to easily find and connect with the participants of courses they attend, even if the course itself is not a part of *hocampus*. This facilitates student activities such as sharing independently acquired knowledge in the form of blog entries, wikis and mind maps via audio or video casts. By going one step further and linking classes with *hocampus*, we enable students to overcome the limits of the classroom and carry its topics, discussions and inspirations into the social field of semi-public peer-communication described above. It is this social aspect of the digital campus we consider not only as a driver for academic learning in general but also as a core tenant of the academic and modern work environment [4]. By learning and improving their key competences on *hocampus*, students simultaneously have the chance to train working in a team, to communicate efficiently and to perform in different social roles.

Besides the learning scenarios sketched above, *hocampus* in addition functions as a hub for live events on Microsoft Teams or Zoom organized and hosted by the House of Competence. Those events include talks, presentations or podium discussions such as *future talk* on onboarding in professional life, *Tag der Abschlussarbeit* on academic writing or *Kickoff Klausurenphase* on techniques and strategies to improve the ability to learn. Integration with our learning platform enhances those events by providing additional material and documents, technical support, event communication and interactive enrichment via related learning nuggets. This way, events that could only be attended in presence can become hybrid events: we allow the event to be live streamed on Microsoft Teams or Zoom and provide a moderator who can answer questions of the online audience. Depending on the format of the event, such as in the case of podium discussions, this moderator may also interact with the participants of the live event and pose questions of online participants for

all people in attendance to be heard. To sum up, our technical framing allows for individual, asynchronous and space-independent social learning scenarios by connecting unsupervised learning, peer communication and tutoring as well as teaching in one social platform.

An example of such a social learning scenario could be students at the end of their semester who are confronted with the challenge to write an essay for course completion. If those students decide to look for help on *hocampus*, they will find prompt support in our category *Self-learning*. Here, we created learning nuggets that provide first insights on the basics of scientific writing. If the learning nuggets peaked the student's curiosity, a link presented in the learning nuggets leads to a corresponding online course. In their own time, focus and extension, the student can enhance their writing skills. However, we are convinced that students who are writing their first or second academic text need personal support and feedback during their writing phase. Therefore, they have the option to book an appointment for peer-to-peer tutoring or to organize a writer's group with other students on *hocampus*. Thus, solitary writing turns into a social activity that can increase motivation, exchange of insights and reflection about the writing process. Apart from such ideal scenarios, in some cases, the students do not have the time to work in groups for weeks or to struggle through a complete online course. These students can receive an overview on the topic in the form of talks and presentations of prior events about scientific writing stored in our archive or listen to podcasts in the *hocafé*.

4. Discussion

In regard to developing and launching a social online learning platform as we sketched in the prior sections, two factors need to be stressed: the importance of content and the onboarding of students as well as tutors/teachers. As mentioned in Section 1, students are already using third party tools to cooperate and communicate. We have shown that it is possible to learn from those third-party tools especially in the realm of visual attractiveness, but it would be delusional to believe that students would abandon known apps and programs for an in some ways inferior option. To realize this is a common occurrence; one must only think of the numerous projects by *Google LLC* that did not succeed to penetrate the market and were consequently abandoned (e.g., *Google Hangouts*, *Google+*, *Google Spaces*, to name just a few), despite the financial backing and infrastructure the company could provide. This again demonstrates the importance of content: if a platform offers content that on the one hand satisfies a need of students, in our case learning cross-disciplinary competences, and on the other hand is only available in one place, it significantly raises the chances of the platform to be successful [28].

However, the availability of content on its own is not enough. The students need to know and need to be familiar with the platform early on in their student life cycle. To achieve this, students must be informed about the existence of the platform via multiple channels: at introductory events for first-semester students (official events and student organized events), via advertisement before lectures for freshmen, on social media, on official websites and in seminars. It should be apparent that this cannot happen without the support of teachers and tutors [1,16]. To ensure their backing, we implemented a support system, allowing them to realize their own learning environment easily via ready-made classroom templates. These diminish most of the difficulties that teachers will likely encounter in developing online teaching options according to a survey by [2]. Furthermore, we offer personal support whenever needed, enabling teachers and tutors to build up their own online classrooms on our platform step by step. As studies such as [16] have shown, it is crucial to boost the digital competences of teachers and tutors. To further advertise the platform, we also host onboarding events that highlight the benefits of *hocampus* for both teachers and learners.

To ensure not only an efficient launching but also a successful performance of the platform, in our opinion, a continuous optimization through the integration of user feedback is essential. On *hocampus*, we installed message boards for feedback and are turning proactively to students' unions and student councils to gather their insights as we already

have in our development phase. Furthermore, we plan to obtain user data where privacy settings permit but, due to being in the beta phase, we have not yet collected enough data to present in the current stage.

5. Conclusions

hocampus, as presented in the sections above, can function as a model for the implementation of other social online learning platforms. We focused on exemplifying our didactic concept, the digital tools offered on the platform and our design strategies. Didactically, *hocampus* concentrates on enabling students to develop cross-disciplinary key competences in general and more specifically so-called 21st century skills. Digitalization therein is seen as a means to an end: a catalyst for training the latter. The same is true for the digital tools that we supply our students with. They are chosen to empower them to work, study and learn independently, while also being able to connect with their peers and their teachers: all within the secure realm of an open-source platform placed within the digital infrastructure of the university and adhering to its data privacy guidelines. Lastly, our design too is in service of the goals formulated within our didactic concept. Employing general design strategies (e.g., consistent logic, clear starting and ending points of interactions, landmarks throughout the platform, customizability, etc.) and 'emotional design', we try to ensure that interacting with the platform is as pleasant as possible while also stimulating students to keep exploring, learning and studying. We have shown that especially the choice of the tools being offered as well as the design of the platform are highly reliant on the digital ecosystem of the university in question. The developers need to be flexible, adjustments need to be made and workarounds need to be applied to realize the goals of a specific platform.

Lastly, we want to point out our vision of the future for *hocampus* specifically and social online learning platforms in general. Arnold et al. formulate the idea of a virtual education room that is connected with other institutions, learning platforms, communication options and the internet [29]. Similarly, Kerres et al. see the potential of a stronger connection and permeability of the learning platform to the internet for a more vivid, intensified and broader exchange of insights [5]. Right now, such platforms are mostly relegated to single universities even though the content of those platforms is of interest for students of all educational institutions alike (one might argue that this is not limited to students). A platform similar to *hocampus* has the potential to be scaled to a more global scope without sacrificing its advantages in the realm of data privacy. It can be also be connected with other platforms that work on an open-source basis and inside the academic system. Identity management systems such as *Shibboleth* can ensure a safe login for all students, tutors and professors of different institutions [30]. The COVID-19 pandemic has shown a huge difference in e-learning capabilities of different institutions and even countries [16,27]. Thus, it not only poses a hurdle but also highlights the need for global solutions and practices. Leaving organizational problems aside, a global social learning platform would allow 21st century skills to flourish: collaboration and communication between students at different universities, even countries, on one platform. A potential digital accumulation of information will be established that can be critically analyzed and refined by the community. It would be a place in the digital realm where students could live their creativity. This might be a utopia never to be realized, but it is a vision worth striving toward.

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References

1. Tomczyk, Ł.; Potyrała, K.; Włoch, A.; Wnęk-Gozdek, J.; Demeshkant, N. Evaluation of the Functionality of a New E-Learning Platform vs. Previous Experiences in E-Learning and the Self-Assessment of Own Digital Literacy. *Sustainability* **2020**, *12*, 10219. [CrossRef]
2. Pozdeeva, E.; Shipunova, O.; Popova, N.; Evseev, V.; Evseeva, L.; Romanenko, I.; Mureyko, L. Assessment of Online Environment and Digital Footprint Functions in Higher Education Analytics. *Educ. Sci.* **2021**, *11*, 256. [CrossRef]
3. Aravena-Gaete, M.; Campos-Soto, M.N.; Rodríguez-Jiménez, C. Learning Strategies at a Higher Taxonomic Level in Primary Education Students in the Digital Age. *Sustainability* **2020**, *12*, 9877. [CrossRef]
4. Domínguez-Lloria, S.; Fernández-Aguayo, S.; Marín-Marín, J.-A.; Alvariñas-Villaverde, M. Effectiveness of a Collaborative Platform for the Mastery of Competencies in the Distance Learning Modality during COVID-19. *Sustainability* **2021**, *13*, 5854. [CrossRef]
5. Kerres, M.; Hölterhof, T.; Nattland, A. Zur didaktischen Konzeption von 'Sozialen Lernplattformen' für das Lernen in Gemeinschaften. *MedienPädagogik. Z. Theor. Prax. Medien* **2011**, 1–22. Available online: www.medienpaed.com/article/view/196/196 (accessed on 14 September 2022). [CrossRef]
6. Selwyn, N. *Education and Technology. Key Issues and Debates*; Continuum International Pub. Group: New York, NY, USA, 2011.
7. Dittler, U. Einleitung. In *E-Learning. Digitale Lehr- und Lernangebote in Zeiten von Smart Devices und Online-Lehre*; Dittler, U., Ed.; De Gruyter: Berlin, Germany, 2022; pp. XI–XVII.
8. Nieto-Márquez, N.L.; Baldominos, A.; Soilán, M.I.; Dobón, E.M.; Arévalo, J.A.Z. Assessment of COVID-19's Impact on EdTech: Case Study on an Educational Platform, Architecture and Teachers' Experience. *Educ. Sci.* **2022**, *12*, 681. [CrossRef]
9. Ming Wut, T.; Wing Lee, S.; Xu, J. How do Facilitating Conditions Influence Student-to-Student Interaction within an Online Learning Platform? A New Typology of the Serial Mediation Model. *Educ. Sci.* **2022**, *12*, 337. [CrossRef]
10. Krause, M. Soziale Lernplattformen für Hochschulen. Kooperation, Privatheit und Forschungspotenziale am Beispiel von Campus. UP. *heiEDUCATION J. Transdisziplinäre Stud. Lehr.* **2020**, *5*, 57–80. [CrossRef]
11. Dittle, U.; Kreidl, C. *Hochschule der Zukunft. Beiträge zur Zukunftsorientierten Gestaltung von Hochschulen*; Springer: Wiesbaden, Germany, 2018.
12. Blossfeld, H.-P.; Bos, W.; Daniel, H.-D.; Hannover, B.; Köller, O.; Lenzen, D.; McElvany, N.; Roßbach, H.-G.; Seidel, T.; Tippelt, R.; et al. *Gutachten Digitale Souveränität und Bildung*; Vereinigung der Bayerischen Wirtschaft e.V.: Münster, Germany, 2018; Available online: https://www.aktionsrat-bildung.de/publikationen/gutachten/gutachten-digitale-souveraenitaet-und-bildung.html (accessed on 14 September 2022).
13. Milhajlović, D. Kommunikation, Kollaboration, Kreativität und kritisches Denken–mehr als Buzzwords. In *Routenplaner #digitaleBildung. Auf dem Weg zu Zeitgemäßer Bildung. Eine Orientierungshilfe im Digitalen Wandel*; Krommer, A., Lindner, M., Mihajlović, D., Muuß-Merzholz, J., Wampfler, P., Eds.; ZLL21: Hamburg, Germany, 2019; pp. 146–155.
14. Gnahs, D. *Kompetenzen–Erwerb, Erfassung, Instrumente*, 2nd ed.; wbv: Bielefeld, Germany, 2010.
15. Stifterverband für die Deutsche Wissenschaft. *Hochschulbildung für die Arbeitswelt 4.0. Jahresbericht 2016*; Edition Stifterverband: Essen, Germany, 2016.
16. Ter Beek, M.; Wopereis, I.; Schildkamp, K. Don't Wait, Innovate! Preparing Students and Lecturers in Higher Education for the Future Labor Market. *Educ. Sci.* **2022**, *12*, 620. [CrossRef]
17. Loderer, K.; Pekrun, R.; Frenzel, A.C. Emotionen beim technologiebasierten Lernen. In *Handbuch Bildungstechnologie. Konzeption und Einsatz Digitaler Lernumgebungen*; Niegemann, H., Weinberger, A., Eds.; Springer: Berlin/Heidelberg, Germany, 2020; pp. 417–437.
18. Blair-Earlys, A.; Zender, M. User Interface Design Principles for Interaction Design. *Des. Issues* **2008**, *24*, 85–107. [CrossRef]
19. Seidl, R. Grafikdesign: Eine Einführung im Kontext multimedialer Lernumgebungen. In *Handbuch Bildungstechnologie. Konzeption und Einsatz digitaler Lernumgebungen*; Niegemann, H., Weinberger, A., Eds.; Springer: Berlin/Heidelberg, Germany, 2020; pp. 439–478.
20. Klee, W.; Krommer, A.; Wampfler, P. Distanzlernen–didaktische Hinweise. In *Hybrides Lernen. Zur Theorie und Praxis von Präsenz- und Distanzlernen*; Klee, W., Wampfler, P., Krommer, A., Eds.; Beltz: Weinheim, Germany, 2021; pp. 18–24.
21. Stark, L.; Park, B.; Brünken, R. Emotionen beim Lernen mit Multimedia. In *Digitalisierung und Bildung*; Ladel, S., Knopf, J., Weinberger, A., Eds.; Springer: Wiesbaden, Germany, 2018; pp. 141–158.
22. Bloom, B. *Taxonomy of Educational Objectives. The Classification of Eductional Goals. Longmans*; Green: New York, NY, USA, 1956.
23. Vygotsky, L.S. *Mind in Society. The Development of Higher Psychological Processes*; Harvard University Press: Cambridge, MA, USA, 1978.
24. Piaget, J. *Construction of Reality in the Child*; Routledge and Kegan Paul: London, UK, 1957.
25. Bruner, J.S. *The Process of Education*; Harvard University Press: Cambridge, MA, USA, 1960.

26. Edelsbrunner, S.; Steiner, K.; Schön, S.; Ebner, M.; Leitner, P. Promoting Digital Skills for Austrian Employees through a MOOC: Results and Lessons Learned from Design and Implementation. *Educ. Sci.* **2022**, *12*, 89. [CrossRef]
27. Rodríguez, M.L.; Pulido-Montes, C. Use of Digital Resources in Higher Education during COVID-19: A Literature Review. *Educ. Sci.* **2022**, *12*, 612. [CrossRef]
28. Zhang, T.; Shaikh, Z.A.; Yumashev, A.V.; Chłąd, M. Applied Model of E-Learning in the Framework of Education for Sustainable Development. *Sustainability* **2020**, *12*, 6420. [CrossRef]
29. Arnold, P.; Kilian, L.; Thillosen, A.; Zimmer, G. *Handbuch E-Learning. Lehren und Lernen mit Digitalen Medien*, 5th ed.; Bertelsmann Verlag: Bielefeld, Germany, 2018.
30. The Shibboleth Project. Available online: www.shibboleth.net/about-us/the-shibboleth-project/ (accessed on 14 September 2022).