IO 4: Comprehensive package of materials that are available online in a separate learning platform - Methodological Guidelines

1. Introduction

At least during the pandemic, digitalization has reached education and teaching of law at universities. However, the switch to digital formats confronts teachers and students with completely new challenges and often leads to frustration. However, a successful implementation of digital university teaching offers many advantages. Time- and location-independent courses enable learners and teachers to design the individual learning process themselves and adapt it to their own needs. [1] At the same time, digitalization creates more opportunities to implement interactive teaching methods increase the motivation and commitment of the learners. They process the content within greater depth and internalize it better through active work. [2] In order to ensure greater learning success, it is important that face-to-face formats are not simply transferred to the digital world. Rather, detailed planning (2.), step-by-step implementation (3.) and comprehensive reflection and evaluation phases (4.) are required to take into account the specifics of digital teaching and the needs of the learners.

The following guidelines are intended to serve as an orientation for teachers to digitize content successfully in the form of asynchronous e-learning self-study courses. This is based on the digital implementation of the criminal law part of the interdisciplinary lecture "Digitalisierung und Recht", which has been held at the University of Konstanz since 2021 in a hybrid or present format and is supplemented by digital self-learning units.[3] The digital elements were created individually for each lecture unit using the tool Articulate360, prepared and tested with students from all departments at the University of Konstanz. The experience gained from this project has been incorporated into these guidelines. It should therefore be pointed out here that the concrete implementation and design of such projects always depends on the individual course, the learners, and the teacher. This guide can therefore only show a general possible way of implementing such a project and cannot provide universal instructions with a guarantee of success.

[1] Overview of the advantages and disadvantages, *Zimmermann/Aksoy,* Kompetenztrainer Rechtsdidaktik, 2. edition 2023, pp. 168 ff.
[2] *Osterroth*, Basiswissen – Hochschullehre, 2021, p. 51; on the learning theories, *Arnold/Kilian/Thillosen/Zimmer,* Handbuch E-Learning, 5. edition 2018, pp. 123 ff. with further evidence.
[3] https://www.jura.uni-konstanz.de/digitalisierung/lehre/aktuelle-lehrveranstaltungen/adilt/ (12.6.2023).

2. Basic considerations **prior to** creation

An e-learning course requires a lot of planning in advance. However, before starting with the content, the following basic considerations should be made:

(1) Definition of teaching and learning objectives

Every course aims to provide learners with certain contents and skills. These objectives are the starting point for planning and designing a course. In a first step, before starting with the concrete planning, it must be determined which demands are to be made on the learners and what the learners should have internalized at the end of the course.[4] The learning objectives should be individually and precisely tailored to the course. General objectives should be set for the entire course as well as concrete individual objectives for each module and (self-study) unit.

The learning objectives of higher education didactics according to Bloom's taxonomy[5] can serve as orientation.

Level	**Learning Objective[6]**
1 Remembering	Pure reproduction of knowledge Enumerating/mentioning content
2 Understanding	Explanation and description of content Definition of terms Summarizing knowledge
3 Apply	Use/transfer/execute knowledge and skill
4 Analyzing	Making outlines/distinctions Organizing/combining learned content
5 Evaluate	Propose/develop/elaborate different aspects
6 Develop/Create	Planning/selecting/producing knowledge Appraising issues Decisions on specific issues

Fig. 1: Taxonomy according to *Bloom*, further developed by *Anderson* and *Krathwohl*[7]

[4] In detail *Reichelt/Kämmerer/Finster*, Lehrziele und Kompetenzmodelle beim E-Learning, in *Niegemann/Weinberger* (eds.), Handbuch Bildungstechnologie, 2020, pp. 191, 192 ff.
[5] *Bloom/Engelhart/Furst/Hill/Krathwohl*, Taxonomy of educational objectives. The classification of educational goals. Handbook I: The cognitive domain, 1956.
[6] In detail *Zimmermann/Aksoy,* (fn. 1), p. 27.
[7] *Anderson/Krathwohl*, A taxonomy for learning, teaching and assessing. A revision of Bloom's taxonomy of educational objectives, 2001, summarized in *Volk,* Ordnung von Lernzielen – Ordnung des Wissens. Die Bedeutung der Taxonomie von Bloom für die Wissenschaftlichkeit und Praxis der Hochschuldidaktik, in: *Tremp/Eugster* (eds.), Klassiker der Hochschuldidaktik, 2020, pp. 219, 223 ff.

However, these are only intended to provide indications and examples; the objective categorization of learning objectives cannot reflect the individual learning process.[8] It must be taken into account that learning is not a linear process and depends on numerous factors and interactions between teacher and learner, e.g. subject matter, teaching settings, motivation to learn, available resources, prior knowledge, social environment, educational level. These must be considered when defining the learning objectives.[9] The learning objectives should be **smart**. In other words, make sure that they are formulated in a sufficiently concrete way (**s**pecific), that the learning progress is **m**easurable, that the learning objectives are specifically tailored to the target group and that they are also relevant to the learners in the long term (**a**ttractive), that the requirements are not too high (**r**ealistic) and that they can be implemented within a limited period of time (**t**ime-related).[10]

The learning objectives should be communicated transparently to the learners so that they know what expectations they are exposed to, can understand what the individual elements of the e-learning units are for and thus control their own learning process.[11]

(2) Analysis of the target group[12]

The implementation of learning objectives depends largely on who they are addressed to. It is crucial to meet the needs of the learners to deliver content in a sustainable way and to ensure learning success.[13] This requires an analysis of the target group in advance. The teacher must be aware of the learners' level of knowledge, what skills they already have and what content they have already learned. Furthermore, personal factors of the learners such as social and cultural background also play a role in assessing the learning process. The location and time independence of digital formats means that the audience is more diverse, so personal factors differ more often. It is therefore even more important not to make any broad assumptions. Rather, different "learning personalities" that are represented in the target group should be identified, so that the learning units can be better tailored to individual needs and the requirements of the courses can be adapted accordingly.[14]

[8] *Volk* (fn. 7*),* p. 225.
[9] *Volk* (fn. 7*),* pp. 229 f.
[10] *Heinrich Böll Stiftung,* KommunalWiki: SMART-Ziele, https://kommunalwiki.boell.de/index.php/SMART-Ziele#:~:text=SMART%20ist%20die%20Abkürzung%20für,attraktiv%2C%20realistisch%20und%20terminiert%20sein (11.6.2023).
[11] *Reichelt/Kämmerer/Finster* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 195 f.
[12] See https://community.articulate.com/articles/how-to-do-an-e-learning-audience-analysis (11.6.2023).
[13] See *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 161.
[14] *Osterroth* (fn. **Hiba! A könyvjelző nem létezik.**), p. 50.

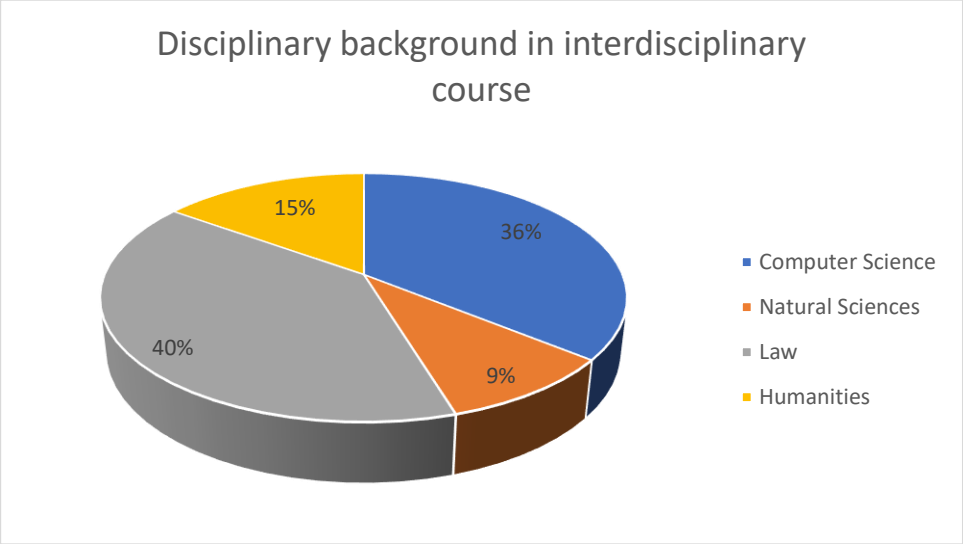

Fig. 2: Disciplinary Background in the lecture „Digitalisierung und Recht“, University of Konstanz, summer term 2023

Thus, the interdisciplinary course "Digitalisierung und Recht" at the University of Konstanz had to address the different levels of knowledge of the individual learners. The non-lawyers had to be taught the basics of legal work and thinking, and at the same time the course had to meet the expectations of the lawyers to solve and discuss demanding legal problems to the same extent. This was ensured by an asynchronous introductory course for non-lawyers prior the first lecture unit and in-depth excursions in self-study courses for lawyers.

In this way, solutions can be found for various divergences within the target group. However, this requires close communication between learner and teacher.

(3) Determining the framework conditions

Digital courses take place in a different teaching and learning environment than face-to-face courses and therefore require special prerequisites so that the implementation can succeed at all. First and foremost, the technically necessary resources must be available to the teacher and the learners. [15] In the case of digital self-learning courses, they must each have access to computers or laptops, at least a stable internet connection at times, and possibly also certain programs to be able to access the learning materials at all. To keep the obstacles of digital teaching as low as possible, it is advisable to use programs that only require access by the teacher and enable easy distribution of the materials created with them. For example, Articulate360 made it possible to easily export the self-learning courses for the lecture "Digitalisierung und Recht" to the learners via a link. Furthermore, the university's own infrastructure with the ILIAS learning platform could be used to organize the course.

[15] In more detail *Zimmermann/Aksoy,* (fn. 1), pp. 171 f.; *Arnold/Kilian/Thillosen/Zimmer* (Fn. 2), p. 120.

Barrier-free accessibility to learning materials also plays a role in digital teaching to enable inclusive and equal higher education. When creating e-learning courses, particular attention must be paid to ensuring that the courses can be used and accessed on different devices (laptop, mobile phone, tablet). Various tools can be used to make the material accessible to learners with physical disabilities, including screen readers for learners with visual impairments, subtitles or transcripts for learners with hearing impairments.[16] For the rest, please refer to the Guide to Digital Accessibility in the Higher Education Context of the Hochschulforum Digitalisierung.[17]

In addition to the technical requirements, there is also a need for time availability of the teacher as well as of the learners.[18] The creation of online courses takes an extraordinarily large amount of time, especially if it requires prior training in software programs for the creation of such courses. The teacher must therefore be sure to plan enough time and personal capacity to convert the teaching content into digital form. Also, the time requirements for the learners must be considered. Depending on whether the self-learning units are intended to completely replace the face-to-face course or only supplement it, the time required for the learners to complete the course must be kept within reasonable limits. If the time requirements are too high, motivation will give way to frustration. In this respect, it is also advisable to maintain contact with the learners and to regularly ask for feedback to be able to make appropriate adjustments.

In this context, the financial framework must also be carefully defined.[19] Personal costs must be included, as well as costs for software programs or hardware for use in teaching.

Once all these preliminary considerations have been made, the actual conversion of the content into digital form can begin.

3. Procedure **during** the creation

During the creation of an e-learning course, everything revolves around the learning objectives defined above. These are the starting point for the arrangement of the content and the development of the concept and at the same time the goal of the learning process. The teacher should therefore check and reflect after each step whether the result ensures and promotes the achievement of these goals. Regular exchange with colleagues is particularly recommended at this point.

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[16] detailed *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 121 ff.
[17] https://hochschulforumdigitalisierung.de/sites/default/files/dateien/HFD_AP_66_Leitfaden_Digitale_Barrierefreiheit.pdf (6.6.2023).
[18] *Reinmann-Rothmeier*, Didaktische Innovation durch Blended Learning. Leitlinien anhand eines Beispiels aus der Hochschule, 2003, pp. 89 ff.; *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p.120.
[19] *Reinmann-Rothmeier* (fn. **Hiba! A könyvjelző nem létezik.**), S. 89 ff.; *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p.120.

(1) Overall course design

If an entire course consisting of different modules is to be converted to digital, it is advisable to create a separate self-study unit per module for the sake of clarity.[20] For this purpose, an individual concept must be developed for each unit (see 3.(2)-3.(4)). The basic course design, however, should be defined uniformly across the board; if certain design specifications are already defined in advance for all courses, the implementation of the individual e-learning units will also be simplified. For this purpose, a design guideline or a master slide set can be developed, which can be used as a template for each unit. This should determine, among other things:[21]

- Language of the course, e.g. German/English
- Font, font size and formatting of texts and headings, e.g. Arial 11, justification
- Color scheme, e.g. corporate design guidelines of the university
- Size of images/videos and interactive elements
- Design of interactive elements, e.g. use of similar symbols, same start/feedback/results slides, color schemes
- Design/labeling of buttons
- Design of navigation in the course, e.g. table of contents as sidebar to select chapters, next/back buttons
- Display of learning progress
- Learner freedom, e.g. unlocking all chapters from the beginning so that the learner is free to decide what to do first/where to start vs. clear guidelines/unlocking of chapters only after previous ones have been fully completed

These guidelines can and must be modified in the modules to meet individual learning objectives and content. However, it is helpful to establish the general basic structures before the individual modules are developed to increase efficiency in the creation and to improve the learning experience through a uniform overarching learner-friendly design.

(2) Individual content elaboration

The following sections will now deal with the development and creation of individual self-learning units, i.e. specifically with the creation of an e-learning course for a concrete topic. In a first step, the teacher must develop and compile the concrete content

[20] *Articulate*, 5 highly effective strategies for creating engaging E-Learning, 2018, p. 12. https://community.articulate.com/e-books/5-highly-effective-strategies-for-creating-engaging-e-learning (11.6.2023).
[21] See https://community.articulate.com/articles/e-learning-style-guide (12.6.2023).

that is to be taught. It must be considered that online self-learning materials must present content in a much more equalized way than it is conveyed to the learners in face-to-face lectures. Otherwise, there is a risk that learners will be overloaded with information that cannot be processed. Therefore, the focus must be placed on creating the most stringent possible arrangement and structure of the content, which is directed linearly towards achieving the learning objective. Superfluous digressions and information should be omitted, and the focus should be on conveying a basic understanding of the core ideas of the course. More in-depth learning can be implemented via links to further material or as optional excursions, so that each learner can develop his or her skills individually.

(3) Concept development: Creating a storyboard

The core of the development of an e-learning course is the creation of a storyboard or implementation plan.[22] This serves as a script for the online course that will be created later and therefore contains the entire concept for the implementation of such a course, i.e. all contents, elements (pictures/quizzes/interactive modules etc.) and stage directions (see **Appendix 1**).

The aim of the storyboard is, on the one hand, to create concrete instructions to facilitate the later implementation, and on the other hand, it should contain the didactic concept for achieving the learning objective in a clearly structured form. The teacher must therefore have the objective in mind when creating the storyboard and work out the didactic structure of the module based on this.

(a) Basic Structure

For e-learning materials, task-oriented didactics are particularly widespread.[23] The key question that the teacher has to ask him/herself, based on the learning objective, is: "What tasks should the learners do in order to acquire the corresponding competences that are to be taught?“.[24] These tasks are at the center of the planning process of the e-learning course.

Thus, one answer to this question in the context of the course "Einführende Grundlagen" as part of the lecture "Digitalisierung und Recht" on the basics of law for non-lawyers was: "The learners should learn the legal methodology (learning objective). In order to acquire this competence, they must solve a case in a legal manner (task)." The focus of such a course would therefore be on solving a legal case.

[22] Also *Arnold/Kilian/Thillosen/Zimmer* (fn. 2), pp. 214 f.
[23] On the theoretical foundations, *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 166 ff.
[24] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 166.

If non-lawyers are directly confronted this task, most of them will quickly give up in frustration. To keep learners motivated, a very challenging task needs to be broken down into smaller steps and the learner needs to be guided through step by step. The task of solving a legal case must therefore begin with the learner being asked to choose a norm that fits the facts of the case and then, of course, after the terminology has been explained, to find the elements of the offence and subsume them etc. At the end of the course, the learner should then be able to solve the task even without guidance from the course creator.

This gives the basic structure of the storyboard, which needs to be filled in with details in the next step.

(b) Individual elements

Now it is time to find an adequate implementation[25] for the many small tasks in the e-learning course, that meets the needs of the learners, i.e. that is not too demanding, but at the same time keeps them motivated,

It must be determined where the learners need which information, support and hints to be able to solve the concrete subtask and which they should work out themselves. Pure text components, which are certainly necessary at one point or another, should be kept as short as possible and designed as learner-friendly as possible, e.g. as short and precise info boxes. This includes an appealing design with easy-to-read fonts, font size and spacing, comprehensible formulation with uncomplicated sentence structure and illustration with concrete examples, connections and contradictions.[26]

The presentation of content that is not learner-friendly slows down the learning process and distracts the learner's focus from the learning content. To implement an e-learning course in such a way that the learners can concentrate as intensively as possible on the content, it is necessary to focus on a varied design. The mixture of different elements activates the learners, can reduce the cognitive load and thus favor the focused examination of the content and its storage in the long-term memory.[27]

Pure text elements can therefore be stimulated with various other elements:

Pictures and moving images, i.e. animations and videos, attract attention and can support the learning process by presenting content in a visualized way and putting it into context. This enables the learner to better anchor the conveyed content.[28] In particular, animations depicting process sequences enable a better understanding of otherwise

[25] For more details on the concrete implementation see below 3.(4).
[26] In more detail, *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 184.
[27] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 205.
[28] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 188.

unobservable processes, especially if the learner can control the sequence of the animation himself.[29] Videos enable the combination with sound and writing and provide increased authenticity, which promotes deeper engagement with the content. Even better learning results can be achieved by combining them with interactive elements.[30]

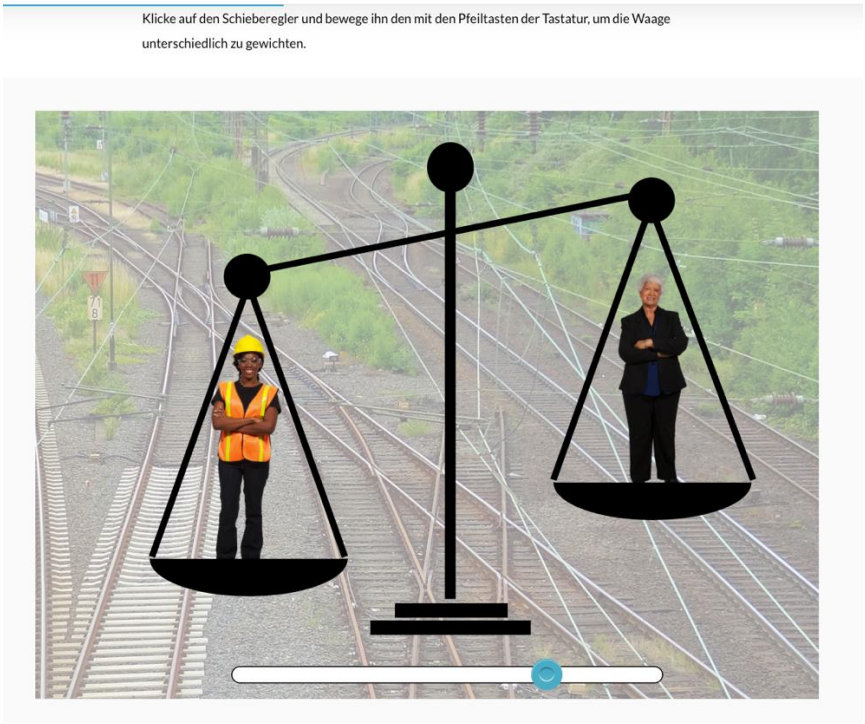

Fig. 3: Interactive animation depicting the trade-off of human lives in the context of a dilemma situation from the course. „Dilemma-Situation: Grundlagen“ oft he lecture“ Digitalisierung und Recht“, University of Konstanz

Scenarios can be implemented to illustrate processes and problems even more clearly and to address the learner directly. These are visual representations of a situation in which a problem arises that needs to be solved; very similar to an animation.

[29] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 192.
[30] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 193.

Fig. 4: Scenario from the course „Einführende Grundlagen“ of the lecture „Digitalisierung und Recht“, University of Konstanz

The learners are made to empathize and sympathize with the characters and are encouraged to put themselves emotionally into certain problem situations and to make decisions. As a result, they are actively engaged with possible solutions, have to make proactive choices and are also confronted with the consequences of their decisions.[31]

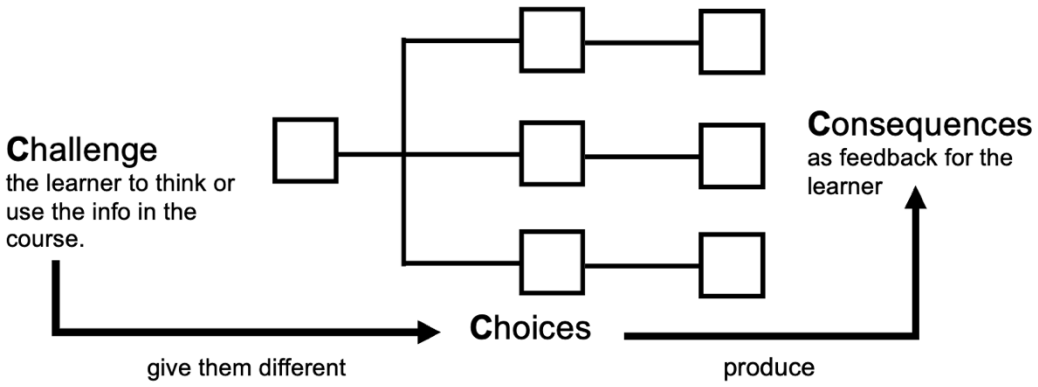

Fig 5: 3C-Model according to Tom Kuhlmann, Chief Learning Architect at Articulate[32]

In order to achieve this, it is important to make the scenarios as realistic as possible.[33] In addition, various other elements can be implemented in scenarios that help to solve

[31] See https://community.articulate.com/series/practical-instructional-design-how-tos/articles/7-tips-for-writing-effective-e-learning-scenarios (11.6.2023)
[32] See https://community.articulate.com/discussions/building-better-courses/3c-model (09.6.2023).
[33] See https://community.articulate.com/series/practical-instructional-design-how-tos/articles/7-tips-for-writing-effective-e-learning-scenarios (11.6.2023).

the problem presented. Playful concepts in particular serve to motivate learners by offering the prospect of small successes, e.g. achieving a certain number of points after successfully answering questions.[34] The learners take on a more active role and can actively test their own abilities and try things out. Through the use of search images or even entire game worlds, the curiosity of the learners is encouraged to explore the content to be taught themselves and to actively deal with it.[35]

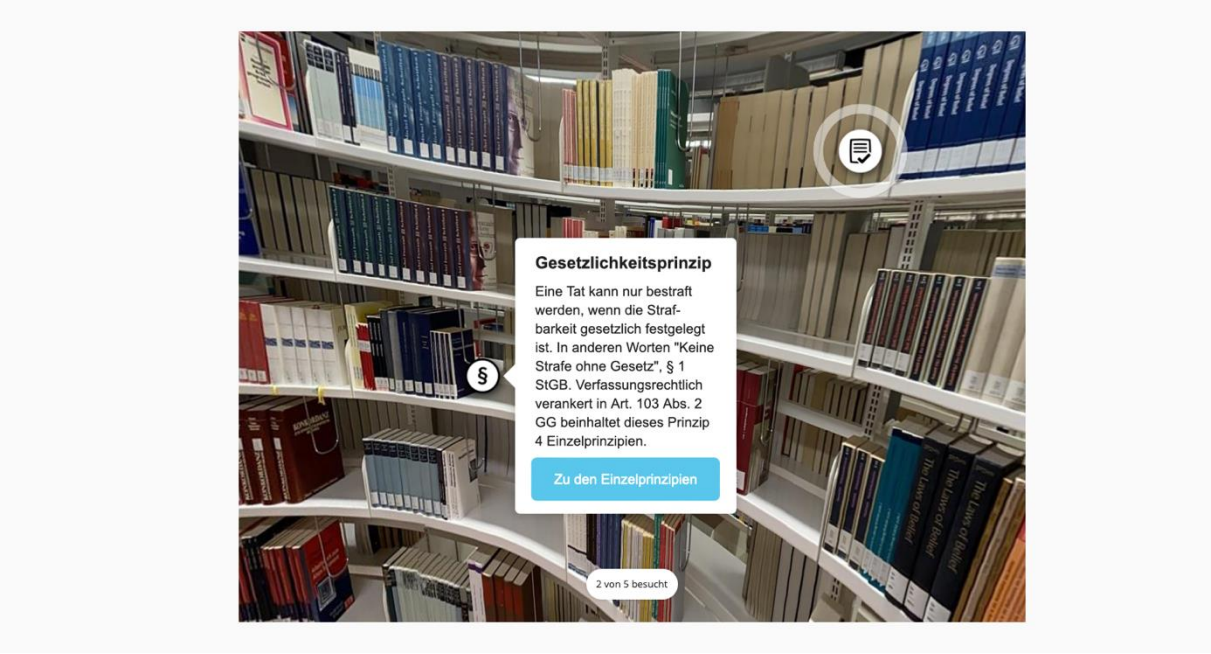

Fig. 6: Search image from the course „Einführende Grundlagen“ of the lecture „Digitalisierung und Recht“, University of Konstanz

When learners are confronted with an unknown problem, this not only draws attention to certain conflict situations, but also promotes creativity and personal responsibility in the search for a solution. This promises increased learning success.[36]

However, the coordination, combination and quantity of different elements must also be considered and brought into an appropriate relationship, so that there is no division of attention and (visual) overload of the learners.[37] Movements of elements can always lead to distractions at the same time.[38] The degree to which the individual elements are used must be based on prior knowledge, experience, the learning environment and the individual needs of the learners.[39]

(c) Elements for consolidating and testing knowledge

[34] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 151, 154.
[35] *Articulate* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 24 f.; *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 151 f.
[36] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 151.
[37] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 186 f.
[38] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 192.
[39] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 205 f.

To consolidate what has been learned and to be able to recall it in the long term, the content must be repeated regularly. Smaller quizzes at the end of each sub-chapter are particularly suitable for this purpose. In this way, the learners are encouraged to check their knowledge and the learning success can be assessed. At the same time, such mini quizzes at the end of a unit also serve to loosen up the course and relieve the learners.[40]

The quizzes do not have to consist of simple multiple-choice or yes/no questions, they can be enriched with scenarios, drag-and-drop elements (**Fig. 7** left), interactive animations, etc. The quizzes can also be used as a tool to help the students to find their own answers. Attention should be paid not to provide too many questions with predetermined answers.[41] The learners should be prompted to reflect on, apply and critically question the contents they have learned. For this purpose, free fields (**Fig. 7**, center) can be used. for the Moreover, the aim is not to give the impression that there is only one right or wrong answer to certain problems, but to encourage creative discussion and reflection by the learners. Direct feedback (**Fig. 7** right) on the answers helps learners to react to mistakes, to discover gaps in their knowledge and thus to control their own learning process.

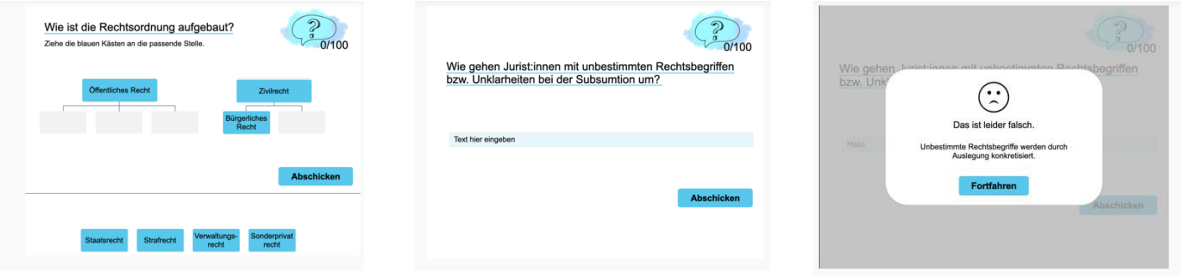

Fig 7: Excerpt from the final quiz from the course „Einführende Grundlagen“ of the lecture „Digitalisierung und Recht“, University of Konstanz

The quizzes can be designed to be used only for the learners' personal self-assessment or to test knowledge so that the teacher can record the learning progress and adjust if necessary.

To assess the learning success at the end of a course, both by the teacher as well as the learners, a final quiz can be used, which takes up the task set for the learners, depicts an overall picture of the contents covered and tests the learning objective and the competences to be imparted. The results of this can provide the basis for the evaluation and further development of the course.

(4) Individual design

[40] *Osterroth* (fn. 2), pp. 65 f., 101 f.
[41] See *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 332 f.

Once the storyboard has been created in detail, it must be implemented in the e-learning course. It must be taken into account that the concrete course design also has an impact on the learning success beyond the overall course design (3.(1)). Attention should be paid to a learner-friendly course design that can be adapted to the learners' usage habits, e.g. through a good structure, symmetrical or radial design, harmonious coordination of forms and colors.[42]

Fig. 8: Symmetrical design for comparison from the course „Dilemma-Situation: Grundlagen“ oft he lecture „Digitalisierung und Recht“, University of Konstanz

At the same time, the design can also convey information to the learners and control attention, e.g. through asymmetries, contrasts, colors that evoke certain associations.[43] With this in mind, it must be ensured that the course design is also conducive to achieving the learning objective and does not distract or overload learners.

Fig. 9: Use of the colors „red“ and „green“ to display the wrong and correct answers

[42] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 76; Articulate (Fn. 20), pp. 6 ff.
[43] Articulate (Fn. 20), p. 8.

To create a learner-friendly, cognitively relieving design, it is recommended, among other things,

- to avoid irrelevant words, images and sounds
- to ensure coherence between texts and images
- to create spatial proximity between related images and texts
- to present content simultaneously instead of successively
- to address multiple sensory modalities
- to include hints on the navigation and functioning of certain learning elements.[44]

The teacher must be aware, especially when planning the time, that the ideas that are recorded in the storyboard often cannot be realized in exactly the same way as intended. It requires a lot of experimentation and trial and error to make the implementation work without losing the focus on the ideas behind the storyboard and, most importantly, the learning objective.

4. Evaluation **after** creation

Once the complete storyboard has been implemented in the course, it is important to set up a feedback circle to check whether the preliminary considerations made at the beginning are reflected in the course. The measure of value of an e-learning course is the degree of competence gained by the learners.[45]

To set up an evaluation, the aim of such should first be defined and, depending on this, the target group should then be determined.[46] There is an infinite variety of possible objects and dimensions of evaluation. The following possible dimensions, listed as examples, can be relevant.[47] A selection must be individually adapted to the course and the modules.

- Is the design as a digital learning offer accepted?
- Do the learning objectives lead to the acquisition of the desired competences?
- Do the technical requirements serve the learning success?
- Does the didactic design promote learning success?
- Is the e-learning course designed in a learner-friendly way?
- Is the time required appropriate?

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[44] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 205 with reference to *Mayer*, The Cambridge Handbook of Mulitmedia Learning, 2. Aufl. 2014.
[45] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 205
[46] On the concept development of an evaluation *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), pp. 410 f. following *Stangel-Meseke/Wottawa*, Evaluation, in *Schorr* (ed,), Handwörterbuch der Anwgewandten Psychologie: Die Angewandte Psychologie in Schlüsselbegriffen, 1993, pp. 213 f.
[47] For more examples see *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 398.

- How is communication between learners and teachers organized?
- Are there any experiences of discrimination?
- ...

In the context of e-learning courses, a two-step approach is recommended. In a first step, the goal is to determine the learner-friendliness, the analysis of cognitive load in general as well as didactic methods and their success. For this purpose, exchange with colleagues is suitable; in particular, contact should also be established with the department for didactics department at one's own university. Care should also be taken to ensure that at least part of the control group has similar prior knowledge as the target group, so that the appropriateness of the requirements can be checked.
In the second step, the learning success should be evaluated to consider the various influences on the individual learning process, which are mainly based on the person of the learner. The structure of the evaluation must therefore be designed in such a way that the learners and the learning process are in the center.[48] By involving learners in the evaluation process, it should be made clear how and that they can influence the change and improvement of the learning offer.[49] This requires transparency about the evaluation process and actively engaging with learners to gather feedback on their experience of the course; preferably directly after they have completed it. This can be done by placing anonymous feedback forms at the end of the e-learning course. To obtain the most meaningful and useful assessment of the learners, the evaluation must not be limited to quantitative methods.[50] The learners should be motivated not only to make assessments on scales (requirements too high - requirements too low / time required too high - time required too low etc.), but also to make comments in free fields. The teacher should actively ask for suggestions for improvement and subjective assessments to encourage criticism.

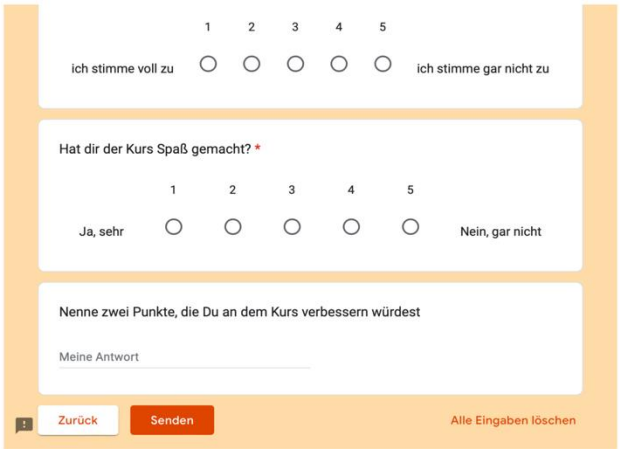

Fig. 10: Feedback form from the course „Einführende Grundlagen“ of the lecture „Digitalisierung und Recht“, University of Konstanz

[48] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 399.
[49] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 396.
[50] *Arnold/Kilian/Thillosen/Zimmer* (fn. **Hiba! A könyvjelző nem létezik.**), p. 396.

Feedback should not be sought only at the end of the course but, if possible, after each unit to actively respond to learners' needs and promote learning success.

5. Summary

Ultimately, an e-learning course can always be improved or changed; for time-economy reasons, trade-offs must be made in design, layout, and creativity. It is important that the learning objective pursued is in the foreground and the needs of the learners are considered. Therefore, a task-oriented approach is recommended, which teaches the competences needed to achieve the learning objective. Every element in the course should be directed towards promoting learning success, and a distracting and cognitively burdensome design should be avoided as much as possible. By allowing learners to work through the content themselves, especially through interactive and playful elements, rather than being passively confronted with it from the front, learning success is enhanced. If learners are enabled to control the learning process on their own responsibility and to shape it individually, this promises positive effects on motivation and commitment, so-called freedom to learn. The learning process needs to be negotiated between teacher and learner to ensure success. Communication with and transparency towards learners regarding the learning goals and requirements of knowledge transfer are mandatory prerequisites for successful digital teaching.

The teacher should take care to carry out regular evaluation processes during the course to ensure further development and improvement of the courses.

Appendix 1: Template of a storyboard for the creation of an e-learning course

Storyboard – *Name of the course*

Overall learning objective: _____
Basic task for competence transfer: _____

Table of contents
…

	Instructional Design/Content	**Stage directions/notes**	**(Sub-)Task**
I. I. 1 I. 1. a.	Heading Chapter 1 Subheading 1 *Subheading a* Concrete Content of the course, e.g. • Exact wording of the texts • Quiz questions and answers • Description of pictures/videos …	All information on implementation, e.g. • Description of elements, diagrams, and their functions • Objects that are to appear • Additional notes for the user, help texts, glossary, etc. …	Indication of the subtask for competence transfer
II.	Heading Chapter 2 …		

Example: Storyboard - Criminal Data Protection Law (excerpt)

Overall learning objective: Understanding of the content/scope of criminal data protection law/ Awareness of the problems

Basic task for competence transfer: Solving problematic cases with the legal text

	Instructional Design/Content	Stage directions/notes	(Sub-)Task
I.	Introduction to criminal data protection law…		
I. 1.	Term of data To start this course, we need to look at the term of "date". There are many ways of understanding this term. Some of them are listed below: • Technical data term • Broad data term • Colloquial data term **Quiz:** Which concept of data is followed by the majority in criminal law? a. Technical Data term **b. Broad data term** c. Colloquial data term d. Philosophical data term **Solution: b.** In all criminal law, the prevailing opinion is that a broad concept of data is used. If one searches for the word data in the StGB, one quickly ends up at **§ 202a Abs. 2 StGB:**	Insert notes on other data terms. Different cards to click on and turn over with the definition of the data terms on the reverse side. Fade in the text of the law	Assignment and application of legal terms in data protection criminal law

	To take a closer look at the individual characteristics of the term "data", click on the legal text:	Fade in the text of the law with mouseover, so that the definitions for - not immediately perceptible - stored - transmitted are visible.	

Anhang 2: Checklist Methodological Guide

I. Basic considerations

☐ Definition of teaching and learning objectives
(**s**pecific, **m**easurable, **a**ttractive, **r**ealistic, **t**ime related)

- ☐ Reproduction of knowledge
- ☐ Explanation and description of content
- ☐ Application of knowledge
- ☐ Analysis and organization of content
- ☐ Independent development and elaboration of specific content
- ☐ Production of knowledge/making decisions
- ☐ _____
- ☐ _____

☐ Analysis of the target group

- ☐ Prior knowledge: _____
- ☐ Personal circumstances _____
- ☐ Time requirements: _____
- ☐ _____
- ☐ _____

☐ Determination the framework conditions

- ☐ Technical Resources _____
- ☐ Accessibility _____
- ☐ Time capacity: _____
- ☐ Financial: _____
- ☐ _____
- ☐ _____

II. Creation

☐ Overall Course design

- ☐ Language of the course: _____
- ☐ Font type/font size/formatting (headings): _____
- ☐ Font type/font size/formatting (text): _____
- ☐ Color scheme: _____
- ☐ Defaults for images/videos/interactive elements: _____

_____

_____

- ☐ Design of the navigation: _____
  _____
  _____
- ☐ Display of the learning progress: _____
- ☐ (Un)locking the chapters: _____

☐ Individual content elaboration

☐ Concept development: Storyboard

- ☐ Basic task for learning the required competence: _____
  _____
- ☐ Breakdown into smaller tasks
- ☐ Planning implementation using different elements
- ☐ Incorporating revision and testing elements

☐ Individual Course Design

- ☐ Refrain from irrelevant elements
- ☐ Coherence between texts and images
- ☐ Spatial proximity of related elements
- ☐ Simultaneous presentation instead of successive presentation
- ☐ Appeal to several sensory modalities
- ☐ Hints on navigation and functioning of certain learning elements
- ☐ Use of color to support the learning objective/control attention
- ☐ _____
  _____
- ☐ _____
  _____

III. Evaluation

☐ Determination of the general evaluation dimensions:

- ☐ Acceptance of the digital design of the learning offer
- ☐ Learning objective/competence acquisition
- ☐ Technical requirements
- ☐ Didactic design
- ☐ Learner-friendly design
- ☐ Time required
- ☐ Communication between learners and teachers
- ☐ Experiences of discrimination
- ☐ _____
  _____

☐ _____

_____

☐ Internal feedback circle before publication
- ☐ Evaluation objective: _____
- ☐ Target group: _____

☐ Feedback circle with the learners after publication
- ☐ Evaluation objective: _____
- ☐ Target group: _____

Space for more notes: