


Evaluating and Improving Usability of OLAT

Online Learning Platform

OLAT - Online Learning and Training



The login interface features three buttons at the top: 'Anmelden mit Shibbole...' (with a building icon), 'Anmelden mit OLAT Konto' (with a right-pointing arrow icon), and 'Gastzugang' (with a person icon). Below these is a section titled 'OLAT Anmeldung' with the text 'Bitte wählen Sie Ihre Hochschule. Für die Authentifizierung werden Sie weitergeleitet.' and a dropdown menu currently showing 'Universität Zürich'. A blue 'Login' button is at the bottom.

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Department of Informatics
University of Zurich

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in the Subject of Business Informatics

by
Caroline Lottenbach
Weggis, LU, Switzerland
13-718-242



University of
Zurich^{UZH}



Supervised by
Chat Wacharamanotham

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Abstract

The goal of this bachelor thesis is to improve the usability of the online learning platform OLAT, currently used at the University of Zurich. Three different parts of OLAT version 10 were analyzed in this thesis. Namely the “Course overview” page, the “Course Editor”, and the course element task types available in the course editor.

The three areas of OLAT were addressed through interviews, survey, heuristic evaluation and prototyping. For the “Course overview” and the “Course Editor” the usability problems that were found are documented. Possible solutions to some of the problems of the “Course Editor” are provided in the form of prototypes and the differences of the task type course elements are elucidated.

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Chapter 1

Introduction

This bachelor thesis aims to improve the usability of the online learning platform OLAT which is currently used at the University of Zurich. In this chapter, we first describe the history of OLAT. This history provides necessary background to understand possible origins of usability issues that are investigated in this thesis. We then conclude this chapter by describing three problems which are the focus of this thesis.

1.1 About OLAT

OLAT stands for “Online Learning and Teaching”. Today OLAT is an online platform which is used by lecturers and students from several universities including the University of Zurich (UZH).

1.1.1 Short History of OLAT

The development of OLAT started in the years 1999. The objective was to improve the tutorial of the informatics lecture which was part of the basic studies of the economics and informatics degree. After a successful completion of the course the University of Zurich noticed the potential

of the e-learning platform OLAT and wanted to use it for the whole university. For this reason, OLAT was separated from the Institute for Informatics and became part of the Informatics Centre [Zentrale Informatik der Universität Zürich, 2017].

The original OLAT version was based on PHP, but for the purpose of a universal use, OLAT was redeveloped with Java and launched in June 2004. It was also published as an open source software. In 2006 a spin-off was founded which today operates under the name frentix. Until 2011 the UZH OLAT team and frentix worked together in close collaboration. After that frentix detached themselves from the UZH OLAT team and focused their development on the improvement and modernization of the graphical user interface (GUI) of OLAT, which was released under the name OpenOLAT. Meanwhile the OLAT team of the UZH worked primarily on the fulfillment of functional requirements of the UZH [Zentrale Informatik der Universität Zürich, 2017].

Until today several versions of OLAT were released and the platform is currently used by many lecturers and students of the University of Zurich and other Swiss Universities. In August 2016 the UZH OLAT team released the new OLAT version 10 which reintegrated parts of the OpenOLAT code to improve the usability of the user interface and to give OLAT a more contemporary look. The OLAT team now works on a continuous progression of OLAT, which includes among others the improvement of the user experience and usability of the system [Zentrale Informatik der Universität Zürich, 2017]. This bachelor thesis aims to improve the usability of the currently used OLAT version 10. In this thesis we simply will refer to this OLAT version as OLAT 10.

In September 2017, OLAT version 11 was released with changes in the user interface. However most of the findings in this thesis are still applicable.

1.1.2 Functionalities of OLAT

OLAT is used mostly by students and lecturers who handle their study related task via OLAT. It provides a wide range of functionalities that can be used.

Lecturers can create courses with OLAT and adjust them to their needs. They can upload all the documents that are important for their course, for example slides, readings, exercises, podcasts etcetera. OLAT is not only a platform for gathering and distributing knowledge, it also allows the lecturers to communicate with their students. Forum pages can be used to answer questions from students or important information can be shared by sending an email to all participants of a course. OLAT is also helpful for reviewing the performance of a student. It provides various ways to assign, correct, and score exercises of students. Another application of OLAT is the management of course members, teaching assistants and other participants.

Students use OLAT mainly to find and access their courses and the corresponding documents, to solve and upload exercises, or to ask questions in the course forums. But it is also possible to contact and chat with other students or to enroll in learning groups.

1.2 Problem Description

To define what parts of OLAT should be investigated Chat Wacharamonotham and the author, Caroline Lottenbach, had a Meeting with Sandra Bischof-Muheim a representative of the OLAT development team of the University of Zurich.

The main goal of this meeting was to determine which problems should be addressed by this thesis. Mrs. Bischof-Muheim referred to two different sources from where the OLAT team got feedback about the OLAT 10 version which was released at the end of August in 2016. One source is a survey that was conducted from the 23rd December 2016

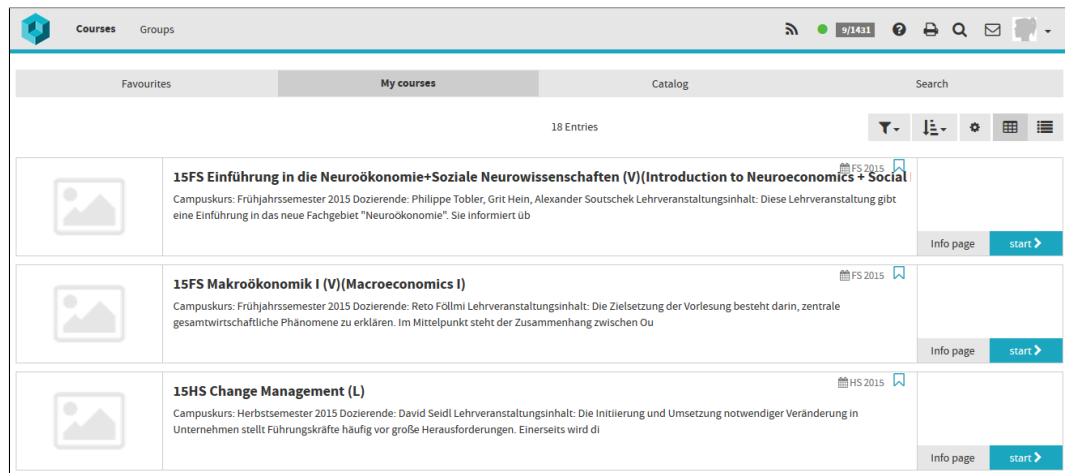


Figure 1.1: The Course overview page of OLAT version 10 which usability was criticized in the survey that the OLAT team conducted during winter 2016/2017.

until the 18th of February 2017. The survey was addressed to all OLAT users, including students, lecturers and other people that worked with OLAT, from a set of different Universities. The second place from where the OLAT team gets feedback from the users, is an online OLAT forum which is called “Sounding board”. On this board lecturers from different faculties can voice their thoughts and concerns. The OLAT team also organizes a workshop semi-annually to discuss ideas and current problems, which are used to improve OLAT.

During the discussion three major problems were defined, which will be investigated in this thesis. The problems are described in the sections below.

1.2.1 Course Overview

In the survey conducted by the OLAT team, the responses showed that the users rated the “Courses” page very badly. However, from the feedback of the users the OLAT team could not understand why this page got so much criticism.

The “Courses” page (represented in figure 1.1) provides an overview of all the courses that a student currently attends

or has attended in the past. In this thesis, we will refer to this page as “course overview”. This page is the start point for a student to navigate to a desired course. Therefore, the overview is crucial in finding the courses and is used almost every time students want to open one of their courses.

The OLAT team would like to understand why the course overview got such a poor feedback. This issue will be investigated in chapter 3 “4 Investigating the Problem with the Course Overview Page”.

1.2.2 Course Editor

Through the sounding board, OLAT found that a lot of lecturers have problems using the course editor. The course editor is a tool within OLAT which is used to create and edit courses (see figure 1.2)). Every course consists of several course elements. Various kinds of course elements with different functionalities exist and can be configured so that they fulfill the needs of the corresponding course.

The course editor is a tool that lecturers and their assistants use very often. The usability problems of the course editor are analyzed in chapter 4 “Evaluating the Usability of the Course Editor”.

1.2.3 Three Task Element Types

Within the course editor, the user can select different kinds of course elements to the course. From the Sounding Board, OLAT got the feedback, that the lecturers had difficulties when they wanted to create an assignment for their students.

In the current OLAT version there are three different course elements available to create an assignment. Lecturers found it difficult to understand the differences and intended use of each task type. The differences and usage

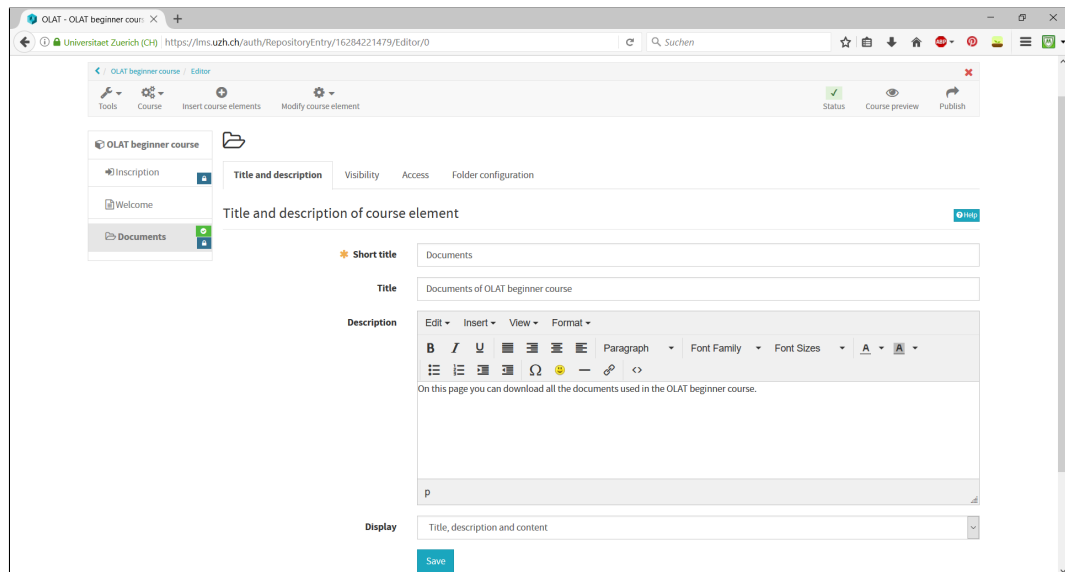


Figure 1.2: View of the course editor page which usage was reported as difficult and cumbersome by lecturers.

problems of this three course element types are addressed in chapter 5 “Finding out the Differences between the Task Elements”.

Chapter 2

Related Work

In this chapter the concept of four techniques that are used in this thesis, their advantages, and disadvantages will be elucidated.

2.1 Heuristic Evaluation

Heuristic evaluation is a usability evaluation method which was developed by Nielsen and his research team in 1990 [Nielsen and Molich, 1990]. This method uses a set of heuristics or design guidelines to evaluate a user interface (UI). The heuristic evaluation will be conducted by so called experts, who will solve a predefined user task and analyze the UI based on the given set of heuristics. The experts could either be real usability experts or coached users of the system that were sensitized on the heuristics that they are going to use.

To find as many problems as possible, multiple experts should conduct the evaluation and compare their results to define a list of features that violate one or several of the heuristics. More experts might find more usability problems, but they are also more expensive. Therefore, the number of experts is always a trade-off between the accuracy and completeness of the findings and the resulting costs.

Nielsen suggest that three to five evaluators should evaluate the UI. [Nielsen and Molich, 1990]

The procedure is usually the same. First, a briefing session will be held where the evaluators will receive clear instructions regarding their task. After that, the experts have time to independently inspect the UI with the given heuristics and note all the problems that they found. At the end, all the evaluators will discuss their findings together and prioritize the problems in a so-called debriefing session. [Preece et al., 2015]

The advantages of this evaluation method are relatively low costs and simple execution. In addition, heuristic evaluation is much less time-consuming than other evaluation methods where the user is included, so that a lot of usability problems can be found within a short time period [Galitz, 2007].

One of the disadvantages of heuristic evaluation is that the experts do not have the same view as the users. The evaluators might not detect some severe problems that users face. That's why the heuristic evaluation should not be used as a replacement of user testing, but as a supplement [Preece et al., 2015]. In a study it was even reported that experts predicted problems that did not exist, which turned out to be false alarms. Another drawback is that with this evaluation method it is difficult to identify fundamental design problems like missing interface elements or features, missing exits and general structural problems of the system [Galitz, 2007]. To minimize the amount of false alarms and improve the quality of the problems found during the heuristic evaluation, it is important to include several evaluators [Preece et al., 2015].

2.2 Interviews

Interviews are a common technique for knowledge gathering in various research disciplines. By seeking dialogue with different stakeholders, the interviewer is able to gain in-depth knowledge about a certain topic. In the context of

human-computer interaction interviews can be used during almost every phase of a research project. In the early exploration phase of a project, interviews can be used to get an initial overview of the problems and the situation of potential stakeholders, and deepen your understanding of their goals and needs at the same time. Ideally, the insight from the interviews would lead to some ideas for a new tool, which could solve the problems mentioned during the conversations. Interviews can also be applied during the requirements gathering phase. In this case the researcher wants to expand their knowledge of the user's real needs, problems, and current use of existing tools. A third way to apply interviews in a project is to use them to evaluate an existing prototype or finished product. During this phase, interviews give an insight into the perception of the user, can help to understand further problems that they have with the new product, and whether they generally like or dislike the product. [Lazar et al., 2010]

In general, four different types of interviews exist: fully structured, semi-structured, unstructured and group interviews. The purpose and the context of an interview defines which of the four interview types is most suitable [Preece et al., 2015]. Fully structured interviews have a fixed set of questions, which are always asked in the same order. There is no room for additional questions. The goal of a fully structured interview is to make the results from several interviews comparable and the analysis easier and more accurate. Semi-structured interviews use a predefined list of questions, which however can be asked in a variable order or supplemented with additional question. They are suitable to deepen the understanding of a certain subject, since additional questions for clarification are allowed, and it is possible to pursue interesting hints that came up during a discussion. Unstructured interviews often only use a list of topics or questions to start the conversation and then let the interview partner lead the discussion, so that he or she can choose the subjects that would be discussed. The biggest utility of this technique is that the interviewee can focus on the topics he or she finds most interesting. Such open-ended interviews are especially useful as a starting point, when the researcher is unfamiliar with the topic [Lazar et al., 2010], since they can generate rich data [Preece

et al., 2015]. Group interviews, sometimes also named focus groups, are conducted with several people at once. The participants should be chosen so that they represent the target population [Preece et al., 2015]. The benefits of such group interviews are that a wide range of opinions can be collected at once. During the discussion similarities and differences between options can be recognized, and the participants might animate each other's thinking. [Lazar et al., 2010]

As a general rule, the more open or less structured an interview, the more challenging it is to conduct. The same applies for the analysis of the generated data. Structured interviews are easier to analyze and compare while the results of open-ended interviews are very hard to assemble. The execution of group interviews is also very demanding, and the findings are usually tough to interpret and compare. [Lazar et al., 2010]

One big advantage of interviews is their flexibility. They are a very strong and effective tool to increase the knowledge and understanding of a chosen subject. Researchers can get in-depth knowledge of the problems, needs and views of their potential user group, by using open ended and exploratory questions. [Lazar et al., 2010]

On the other hand, the conduction of interviews often costs quite an effort. Conducting the interviews, transcribing and analyzing the data usually takes a lot of time, especially if an unstructured interview is conducted. So, time is definitely a limiting factor when using interviews. Another constraint is that the data-collection through interviews is detached from reality. During the interview participants need to remember the task or the situation that they are asked about, and it is possible that they forget something or recall something imprecisely or falsely. A possible solution to avoid this is to combine interviews with observations of the users. [Lazar et al., 2010]

2.3 Survey

A survey “is a well-defined and well-written set of questions to which an individual is asked to respond” [Lazar et al., 2010].

Using a survey is an easy and cost-efficient way to get responses from a large number of people. It is often used to gather statistically comparable data. A survey is similar to the questionnaire of a structured interview. When choosing between these two options, you have to consider the motivation of the participant to share certain information. Is he motivated enough to answer the questionnaire, then a survey should be used [Preece et al., 2015]. But if participants need to be pushed to answer certain questions, then they will more likely give them in a face-to-face interview. Interviews are also more effective in getting answers to open-ended questions. In a survey, respondents often won't write as much information as they would while speaking. Nevertheless, surveys are often used not because they are the best method, but the cheapest and quickest. They also allow the gathering of data from geographically distant participants who live in other time zones, whom it would otherwise be difficult to interview. [Lazar et al., 2010]

To gather valid data, the survey must be designed carefully. At the beginning the researcher should know exactly what he or she wants to find out and which root question should be answered through the survey. When the goal is clear, a set of questions need to be defined [Shneiderman and Plaisant, 2010]. Since the participant will fill out the survey independently, the researcher cannot explain the task or clarify misunderstandings as in an interview. That's why the questionnaire of a survey needs to be designed more carefully than the one for an interview [Preece et al., 2015]. Questions and instructions should be as specific and as distinct as possible [Shneiderman and Plaisant, 2010]. Negative questions should be avoided since they can confuse the respondent, which might lead to him/her accidentally giving a wrong answer. The questions should be posed as neutral as possible, because biased questions lead to biased answers, which would falsify the results [Lazar et al., 2010].

It is highly recommended to let colleagues review the survey and pilot test it with a small sample of users, to correct possible flaws [Shneiderman and Plaisant, 2010].

A survey is an efficient way to gather a large number of feedbacks while keeping the costs relatively low. A well structured, pre-tested and understandable survey is able to gather responses with a high level of validity, which then can be used to make statistically accurate estimates. [Lazar et al., 2010]

On the other hand, results of surveys that aren't carefully designed can be of questionable validity. While surveys are good at catching the big picture, the responses that are collected through surveys are often superficial, and it is difficult to gain in-depth knowledge through it. Another disadvantage of surveys is that follow-up questions in the cases of unclear responses or the detection of interesting phenomena is often not possible. [Lazar et al., 2010]

2.4 Human-Centered Design Process

The human-centered design process is a technique used to ensure that a product meets the needs of the users and has a good usability. The process contains of four different activities which are repeated iteratively until the results are satisfying. The process starts with the observation of the initial problem. The second step is to generate different ideas which could be used to solve the problems found. In the end some of the ideas found in the second step will be prototyped and then tested with the user in a final step. The problems that are found during the testing phase will then be observed again, new ideas will be generated and prototypes are built based on these ideas. The testing of the second iteration of prototypes will then decide if a third iteration will be needed. The cycle will be repeated as many times as necessary. The idea behind this technique is to rapidly prototype and test ideas, and thereby enable a continuous improvement of the system or product. [Norman, 2013]

This technique really focuses on the real needs of the users. With the repeatedly inclusion of the users the usability and understandability of a product can be ensured. Low fidelity prototypes also allow the developers to try and evaluate a lot of different ideas in a relatively short time, and the best of those ideas then can be combined into one solution. [Norman, 2013]

In reality the time and money that is needed to conduct several iterations to get the design right, is seldom available. Planning and managing of an iterative design process is more challenging than a liner development process. Scaling the process to handle large and complex projects is difficult, which is another disadvantage of the human-centered design process approach. [Norman, 2013]

Chapter 3

4 Investigating the Problem with the Course Overview Page

In this chapter the reasons for the bad rating of the course overview will be analyzed.

3.1 Methodology

To investigate the problem with the course overview we decided to use a survey to get more feedback from the students. The goal of this section is to find out why this page was rated so badly in the evaluation that was conducted during December 2016 to February 2017.

In a first step we re-analyzed the data that was gathered by the OLAT team of the University of Zurich through the survey about OLAT version 10 (see chapter 3.2 “Re-analysis of existing Survey Data”). We collected all the comments that were related to the course overview. Based on these first insights several interviews with students were conducted to understand their point of view and possible problems they had with the usage of the course overview (see chapter 3.3 “Interview with Students”).

The questions of the survey then were based on our insights from the data re-analyzation and the interviews with the students. To ensure that the questionnaire was clear and understandable, the survey was pilot tested and improved before being published officially.

The following analyzation of the study had the goal to find any usability problems and determine how students worked with the course overview. To end this work package, some suggestions for solutions are presented which the OLAT team could use to improve the course overview. The finding from the survey are documented in section 3.4 “Online Survey for Students”.

3.2 Re-analysis of existing Survey Data

After the release of OLAT version 10 in the end of August 2016 the OLAT team conducted a survey about its usability. Between the 23rd December 2016 and the 18th of February 2017 students, lecturers and other OLAT users from different Universities which used OLAT could voice their opinion about the new OLAT version by filling out the survey.

In the end 921 people participated in the survey and 782 of them handed in a completely filled out questionnaire. The biggest group of participants came from the University of Zurich (714 responses). Further responses came among others from the University of Lucerne (31 responses), the University of education of St. Gallen (31 responses), the University of Basel (21), the ETH Zurich (10 responses) and the University Hospital Zurich (7 responses). [Villars, 2017] We used the original data that was gathered in the survey as a starting point for the evaluation of the user interface of the course overview.

To analyze the data, we first collected all the comments which were related to the course overview. In a second step the messages were compared and similar comments were coded into short statements. In the following sections the most important statements that were found in the data are listed. The whole list of statements concerning the course

overview is included in the appendix under the section A “Findings from data re-analysis of the OLAT usability survey”. The brackets at the end of each statement indicated how often the statement was mentioned.

Comments about the courses displayed on the course overview

- The display of old courses is disturbing/irritating. (20)
- Enrolled courses should be displayed automatically. (13)
- Only the current courses should be displayed. (10)
- Old, outdated courses should be deleted. (6)
- The access to old courses is good/helpful. (6)
- You should be able to fade out old courses. (3)
- The freshest courses should be displayed at the top. (2)
- Some courses are listed twice. Each course should only appear once. (2)
- Students should be able to define the order of the courses themselves. (2)
- Terminated courses should be displayed at a separate location. (1)
- Only attended courses should be displayed. (1)
- The sorting of the courses in the course overview is not good. (1)

The opinions about which and how the courses should be displayed on the course overview are divided. OLAT 10 displays all the courses that a student has ever taken under the “My courses” tab of the course overview and the courses are per default alphabetically ordered. This issue will be addressed with the survey. The findings are discussed in section 3.4 “Online Survey for Students”.

Comments about the favorites function

- Favorites are helpful. (16)
- Marking courses as favorites is cumbersome/annoying. (2)
- Favorites of courses and groups should be displayed on the same page. (2)
- Students should also be able to mark sub-folders as a favorite. (1)
- Marking favorite courses is too easy. (1)

Another point that was mentioned several times is the function to bookmark courses as favorites. With the survey we tried to find out if the favorites function was known by everyone, how the function is used by students and if the function supports the usability of the course overview page. This topic will be discussed in the section 3.5.5 “Favorites”.

Other usability issues related to the course overview

- The course overview of OLAT 10 is more confusing than the previous OLAT version (OLAT live). (23)
- The representation of OLAT 10 is clear/clearer. (6)
- Labelling of the offered lectures is not clear (e.g. course names start with a number). (3)
- The filter options in the course overview are not good/helpful. (2)
- The information about the lectures (e.g. room, course name) is helpful/good. (1)
- It is not clear which are the current and the outdated courses. (1)
- The operation of the system is not intuitive. (1)

- The function of the button “Start course” is not clear. (1)
- The button “Start course” is unnecessary. The course should automatically open if it is clicked. (1)

Comments about different parts of the course overview page were made. We will only investigate the comments that are directly connected to the “My courses” page of the course overview. Some of the points mentioned above were mentioned only once, but they could still have an influence on the usability of the page. We wanted to find out how other students think about the issue listed above and thus considered them in the survey.

3.3 Interview with Students

In addition to the data analysis we conducted three interviews with students. We did this to deepen our understanding of the students, their needs, and current use of the course overview page. The re-analyzation of the existing data already provided some valuable insights. Goal of the interviews was to find any similarities or discrepancies in the answers in comparison to the findings of the survey.

3.3.1 Approach

We used semi-structured interviews, because we already had a rough idea of the areas that caused problems for the students. The semi-structured approach allowed asking follow-up questions on interesting responses. Because only three interviews were scheduled, the complexity of the evaluation was manageable.

The interviews were conducted with three bachelor students of the University of Zurich. All the students were members of the Faculty of Arts and Social Sciences but majored in another subject. Two of the three students were

female and one was male. All of them have different major and minor subjects. For privacy reason we will refer to them as P1, P2, and P3:

- P1 (female), major: philosophy, minor: physics
- P2 (female), major: psychology, minor: ethnology
- P3 (male), major: political sciences, minor: geography

Each interview took approximately 30 minutes. The interview was sectioned into four topics. We first talked about the general OLAT usage of the interviewees. We asked them for what they use OLAT and how often they use OLAT. In the second section we wanted to learn more about the students' opinions and usage of the course overview page. We asked for example what they liked or disliked about the page, how they find their courses, and which supporting functionalities of the course overview they do use. We then showed the students' screens of the new OLAT version 10 and OLAT live to find out, if they knew both versions. We then asked the students to voice their opinions about each version, and tell us which one they preferred and why. At the end, we collected demographic information on their study subjects, their number of semesters and type of degree.

3.3.2 Findings

Since we used semi-structured interviews, the conversations were not exclusively about the course overview page. Answers and inputs that were not related to the course overview will be ignored in this following section.

General OLAT usage All of the three students frequently used OLAT to access their courses, but it is important to mention that they mainly use OLAT during the lecture and exam period. During the semester holidays students rarely visit OLAT.

The interviewees used OLAT primarily to download course documents, stream pod-casts or hand in exercise solutions. P2 mentioned that she has to solve online quizzes for some courses and P1 uses the forum page of courses often to discuss lecture specific content of her philosophy classes.

The participants mentioned that they found the automatic log-out of OLAT after a certain time bothersome. Especially when solving an online quiz or a task where you need to look up things in the lecture slides or have to do some additional research which takes longer, then you will be logged out several times before you can finish the quiz.

Usage of the course overview Through the interviews we found that not all the students use the course overview in the same way. All of them need to access their courses through this page, but the way they organize their courses varies. P3 for example customized the course view and used the list view to get a better overview of his courses and to quickly find the corresponding course. P1 bookmarked important courses and accessed them through the “Favorites” page. And P2 did not use any additional functions to find her courses quicker.

At the beginning of the semester, the students sometimes need to use the search function to find their new OLAT courses. Campus courses will be displayed automatically under “My courses” if the student has booked them in the module booking tool. All three interviewees appreciated this function a lot. Other courses must be found using the “Catalog” or “Search” pages. Since most of the offered courses are campus courses, students seldom need to search for other courses. But if they have to do so they rather use the “Search” than the “Catalog” page. One of the students didn’t even know that the “Catalog” page existed let alone knew what this page could be used for. P3 stated that the search function on the “Search” page was not good. To find the courses, you often needed to enter the exact course title otherwise a lot of irrelevant courses will be presented. Oftentimes the suggested courses are not ordered by the semester which makes the localization of the correct course very tedious.

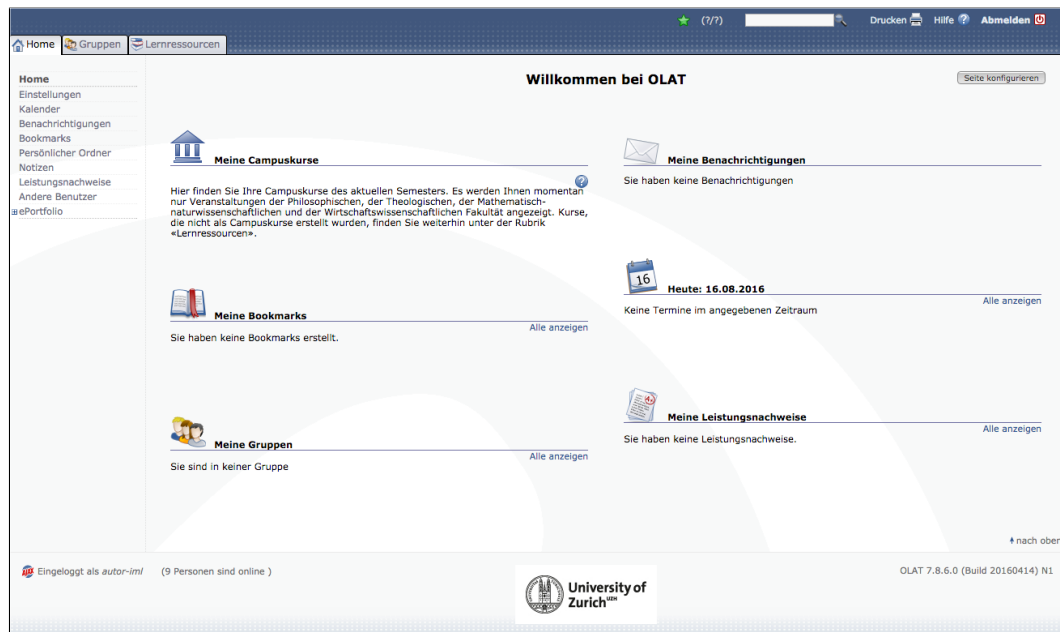


Figure 3.1: Starting page of the OLAT live version, preferred by P2 because of the overview that the page provided.

Comparing the new OLAT version 10 with the OLAT live Generally, all three students found OLAT a useful tool. They appreciate, that the information of most of their courses are gathered at the same place, so that they do not need to work with a different tool for every course. They would prefer, if all the lecturers would work with OLAT.

Two out of three liked the new design that was introduced with OLAT 10 better than the previous one. P2 found the design of the previous OLAT live version more appealing than the new one. The main reason for this was the missing starting page of OLAT live 3.1, which among other functions provided an overview with links to the courses, groups, and bookmark pages.

P3 approved that OLAT 10 allows the use of the back function in the browser, which wasn't possible with the old versions. The new responsive design was also appreciated. With this the usage of OLAT with a smartphone became much more user friendly.

P1 still missed the option that OLAT could be opened in several browser tabs at the same time. At the moment OLAT 10 can only be opened in one tab. But it was welcomed that in the new OLAT version 10, less clicks are used to log in and access a course.

Opinions about the course overview of OLAT 10 The students found it very helpful that booked campus courses are automatically displayed in the course overview, but they criticized that some courses are listed twice (P3) while only one of them can be opened and the other is marked as “in progress”. P1 mentioned that her physics lecturers do not use OLAT, but sometimes a course with the corresponding title appears in her list even though the lecturer will never fill the course with content. Another point that all of the students were irritated by was the order of the course. As a default the courses are ordered alphabetically by their course title. All students found this arrangement not very useful. They would rather like to have the courses ordered by their actuality, so that the courses from the current semester appear on the top. P1 even stated that she doesn’t want to see her old courses, since she doesn’t use any of them. After several semesters the list of courses becomes very long and confusing. It was also mentioned that courses that are labeled as “in progress” and therefore aren’t accessible, shouldn’t be displayed in the course overview because their visibility is pointless.

P1 likes the bookmark function. She uses bookmarks to mark her current courses and access them under the “Favorites” page instead of the “My courses” page. The information about the semester in which the course takes or took place is perceived as very helpful by the students. P1 wished for more information about the lecture on the overview page, while P3 thought that the image of the course is unnecessary. Almost no lecturer adds an image to his course, furthermore an image itself does not provide much information about the course, and the place could be used to display more valuable information.

Other insights Throughout the discussion with the three students we found that the structure of the courses in OLAT does vary a lot. The configuration and setup of a course has a big impact on its usability. For example the naming of the courses by the lecturer is very important. Courses with numbers and abbreviation in their titles are harder to spot in the course overview. Additional information like the semester, the name of the lecturer, or the room number is also helpful for the students.

P2 pointed out that very long course titles sometimes overlap the semester declaration on the right upper corner of the course field, which is unaesthetic. P3 found that a short tutorial or introduction of the OLAT system would be helpful. Especially for new students which are not familiar with the system. It could also be used to highlight changes and improved functionalities of OLAT after a new update.

3.3.3 Implication for the survey questionnaire

The interviews improved our understanding of the student's needs and their usage of OLAT. Some issues that occurred in the survey data (analyzed in section 3.2 "Re-analysis of existing Survey Data") were also mentioned during the interview. One of them is the use of bookmarks and the "Favorites" page (see section 3.5.5 "Favorites"). Another is the information about the courses that are displayed (see section 3.5.4 "Course Information"). Several questions that address these issues were included in the survey.

Since the personal opinions about design and usability of the course overview page vary, we included several of the statements that were made in our survey, to see how strong other students agree or disagree with them (see section 3.5.2 "General OLAT 10 Usage"). Another point that is addressed with the survey, is the question about the selection and order of the courses displayed on the course overview page. Do students only use their current courses or if not, how should the courses be ordered? (For more information see section 3.5.2 "General OLAT 10 Usage")

Through the discussion with the students we discovered that not all of them knew the functions that are provided on the course overview page. As a result, we started to wonder which functions were actually known and used by the students and why. The course overview provides several ways to customize the view, a button to bookmark courses, and an “Info Page”-button which leads to a page which displays additional information of the course. With the survey we tried to find out, which of these functions are known and used by the students and why (see section 3.5.8 “Info Page”).

With the survey we wanted to focus only on the “My courses” or course overview (as we call it) page. Issues that are related to other parts of the “Courses” section of OLAT, like the improvement of the searching option or the inclusion of a short tutorial about the usage of OLAT, are not addressed in the survey. Finding out how a course should be structured so that the usability is good, is also out of the scope of this thesis.

3.4 Online Survey for Students

Since the first survey about OLAT 10, which the OLAT team conducted during the winter semester break of the year 2016/2017, shows that a lot of students didn’t like the new course overview, we decided to further investigate the reasons why this page got so much criticism.

The University of Zurich is the biggest university of Switzerland and counts more than 25’000 students [Fuchs et al., 2016], and most of them use the course overview on a regular basis. Possible changes of the course overview therefore affect a lot of people and the impact of such changes should not be underestimated.

3.4.1 Approach

Since the responses of the survey were handed in anonymously, we couldn't contact the people that criticized the course overview to ask about their reasons. Instead, we tried to get a high number of student opinions so that our findings are based on the feedback of a large user group. With that the risk of biased findings due to a small sample of answers could be minimized.

An online survey was chosen, because this technique allowed collecting feedback from a lot of people, while the costs for time and labor were kept relatively small compared to other techniques like interviews, or workshops.

The questionnaire was available in two languages English and German. To ensure that the questionnaire was clear and understandable, the survey was pilot tested by five students, revised by professor Wacharamonotham. The online survey was adjusted several times before being published officially.

Our population of interest includes students of the University of Zurich which have already worked with OLAT 10 at least once. To reach these students we distributed the survey mainly through Facebook groups as well as word-of mouth recommendation. We therefore have a non-probabilistic sampling. The responses of the survey are therefore biased based on the groups that we approached with our survey. In this thesis it would have been possible to do a probabilistic sampling, because the number of students who study at the University of Zurich, their majors and degree are known. It would have been possible to distribute the survey among a representative sample of students by an email sent by the rectorate's service. However, we rejected this approach because the rectorate charges a fee for every sent email and for this bachelor thesis no extra funding was provided.

We are aware that our approach lacks statistically representative answers. However, we accepted this drawback since our goal was not to get an exact population estimate but

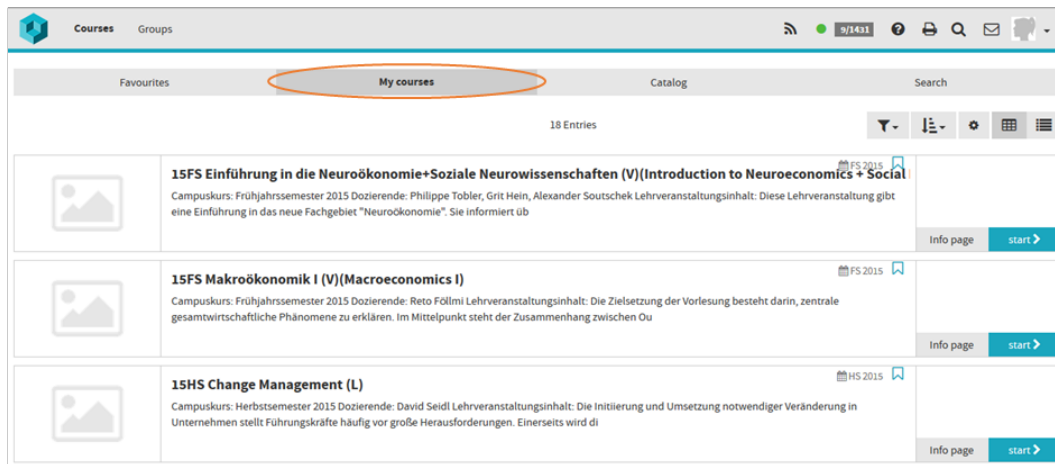


Figure 3.2: The “My courses” page which was analyzed in the survey.

rather an idea about possible usability problems the students have. For this approach we found that the distribution of the survey through social media most effective.

To motivate the students to fill out the survey we offered all participants to take part in a raffle where they could win 1x 25.- CHF and 2x 10.- CHF gift cards for Migros or Coop. The survey was published on the 11th of August 2017 and open until the 17th of September.

3.4.2 Structure of the Survey

With the survey we wanted to address several issues that we found either with the re-analyzation of the data or through the interviews. To reduce the scope of the survey we decided to focus only on the “My courses” sub-page of the “Courses” section (figure 3.2). The students need to visit this page in order to open one of their courses. Only if they have bookmarked all their courses, they can use a different approach through the “Favorites” page that has an identical structure to the “My courses” page.

To investigate the user interface of the “My courses” page, or “Course Overview” as we call it, we structured the questionnaire into seven areas. Each area examines another part

of the user interface and includes several questions. In addition to those seven areas, we also included some demographic questions and an open question for further feedback about OLAT 10 at the end of the questionnaire.

The full questionnaire is included in the appendix under the section B “Survey about Usability of Course Overview”. The different sections and a short description of their content are listed below:

- General OLAT 10 usage
Questions to check if the students have ever worked with OLAT 10, to find out how often they use OLAT, and which courses that they use the most.
- Opinions about the course view
Some general statement about the course overview, to find out how strong the students agreed with them
- Favorites function
Questions to find out if the students know how to bookmark their courses, if they use this functionality, and how they use it
- Course information
Questions to determine which information of a course are important to students
- Functions of the course view
Inquiry to find out, which buttons respectively functions are known by the students
- Navigation to individual courses
One question to determine which label would be best for the button that opens the corresponding button
- Info page
Question to determine how often the “Info page” of the courses are visited and for what reason
- Demographic information
General questions about study related information of the participants

- Other comments
Room for further comments about the course overview or OLAT 10

3.5 Findings from the Survey

Between the 11th of August and the 17th September 80 surveys were filled out by students of the University of Zurich. 15 responses were filled out in English and the other 65 participants answered in German. In cases where the feedback of the English and German responses differs remarkably the answers were examined separately, otherwise the responses will be treated the same way.

From these 80 answers 79 were valid. Only one of the German respondents had never used OLAT 10 before and was therefore inhibited to fill out the remaining questions. The insights of the evaluation of the responses will be elucidated in the next section. For every area of the "Course Overview" that was investigated, our motivation and the questions that we wanted to answer are described first, followed by the results that we found through the analysis of the responses.

All responses of the survey are accessible on the CD included in the back of this thesis (see section G "Content of the CD").

3.5.1 Demographic Information

Problems and Motivation

We included some demographic questions about the students in the survey to verify the validity of our findings. We tried to reach students from various study areas so that our findings represent the opinions and problems of a diverse group.

To get an idea about the students' background we included some demographic questions about their study topic at the end of the survey.

Findings

We found that approximately two thirds of the participants were inscribed in a bachelor degree and one third in a master degree, but we also got two responses from doctorands and even one from a student which had already finished his degree.

All students who have filled out the survey were inscribed longer than a year at the University of Zurich. Over 85 % of all responses came from students who had been studying at the University of Zurich for one to five years. The participant who has been enrolled the longest at the University started in autumn 2006. Most of them thus have probably also used the previous OLAT version.

The survey was filled out by students of various faculties. The biggest part (around 65%) of the students' study at the Faculty of Arts and Social Sciences and around 15 % study at the Faculty of Business, Economics and Informatics. Students of the Faculties of Law, Medicine, Science, and Vet-suisse are also represented in the answers (figure 3.3). The only faculty from which no student participated in the survey is the Faculty of Theology.

Between the English and German responses, a clear difference between the distribution of the faculties is visible (figure 3.3). Over 90% of the English responses were filled by students from the Faculty of Arts and Social Sciences. This unequal distribution could correlate with the fact that the English Language and Literature degree is part of the Faculty of Arts and Social science.

The study-oriented background of the participants does surely correlate with the pages on which the survey was published. The responses were generally higher in cases where the link to the survey was posted into an official and

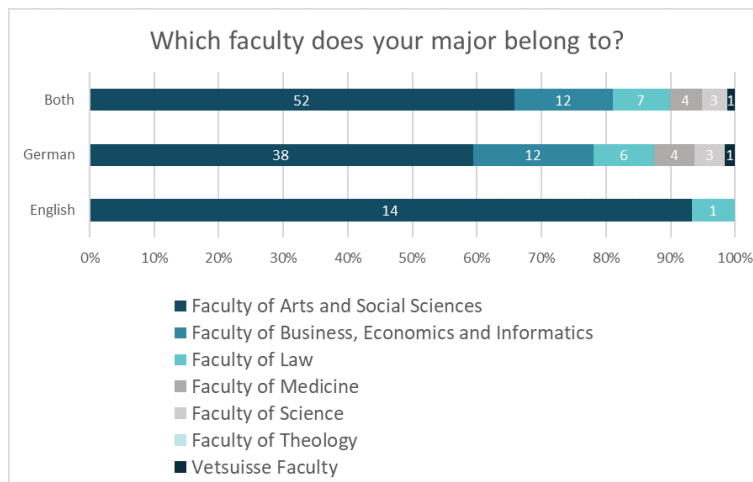


Figure 3.3: The distribution of the faculties of the students shows that the allocation is differs between the English and the German version. ($N_{\text{Both}} = 79$; $N_{\text{German}} = 64$; $N_{\text{English}} = 15$)

(most of the time) closed Facebook group, where students from the same major could communicate with each other.

We aimed to recruit students from as many different backgrounds as possible and the data shows that we partially reach our goal. Students from various degrees, faculties, and affiliation duration filled out the survey. Although the opinions of students of the Faculty of Arts and Social Science are over represented in our findings we also reached students from other faculties, except of the Faculty of Theology, which indicates that a certain diversity of viewpoints are included in the results that are discussed in the next sections.

3.5.2 General OLAT 10 Usage

Problems and Motivation

In this section we asked some more general questions about how the students used OLAT 10. Since the whole survey is

particularly about OLAT version 10, we asked a question to check if they have ever worked with this version. Students who have never used OLAT 10 were not allowed to answer the remaining questions of the survey.

We were also interested how often the students used OLAT to see how important this program is to the students. Our hypothesis was that most of the students would use OLAT several times a week or more frequently during the lecture period.

Another issue that was investigated in this section is the discussion about old courses that are displayed in the course view. In the survey that the OLAT team conducted in the winter semester break 2016/2017, a lot of comments were made about old courses that are displayed on the course view. 20 people found their display disturbing while six found that it was nice to also see old courses. The interviewees also mentioned that they are more interested in their current courses and that they do not use their old courses anymore, therefore the order of the courses should display the newest courses first.

Our hypothesis was that students do not use their old courses anymore and they could therefore be eliminated from the course overview. To corroborate or disprove this hypothesis the students were asked to state how often they used courses from the current and previous semesters.

Findings

The responses showed that during the lecture period a clear majority (approximately 84%) of the students use OLAT several times a week or more frequently (see figure 3.4), which confirmed our assumptions. This is important to notice since improvements of OLAT and particularly improvements of the course overview could lead to considerable time savings for the students.

Based on the insights from the data re-analysis and the interviews with students, we hypothesized that old courses

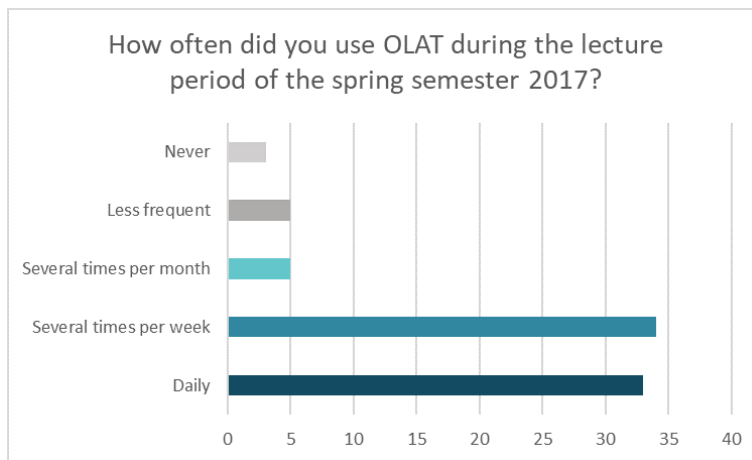


Figure 3.4: This diagram shows that most of the students use OLAT several times a week or more frequent during their lecture period. (N = 79)

are not used anymore by the students and therefore could be eliminated from the course overview. To answer this assertion the participants of the survey were asked to state how often they used courses from different semesters.

The responds showed that current courses are used more often than old ones. This set of facts is very visible in the figure 3.5. While courses from the current spring semester 2017 were used often or always by over 85% of the participants courses from the autumn semester 2015 (which date one and a half years back) were used often or always by only 15% of the students. In exchange almost 60% of the participants stated that they never or seldom use courses from the autumn semester 2015.

The data disproved our hypotheses that old courses are not used by students anymore. Even so we can now state that the older the course gets, the less often he will be used by students.

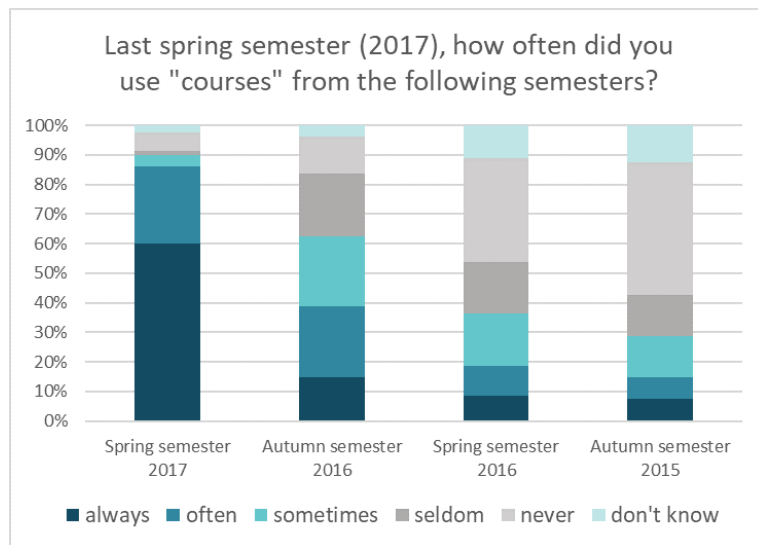


Figure 3.5: The diagram illustrates how often the courses from a certain semester are used by the students. (N = 79)

3.5.3 Opinions about the Course Overview

Problems and Motivation

In the data from the previous survey as well as in the interviews different opinions about the course overview were voiced. Some opinions contradicted each other, and other statements occurred only once. Because we couldn't determine the relevance of these declarations, we included them in the survey.

In this section the participants were asked to state how strong they agreed with the provided statements. The following statements were investigated:

- S1: The course overview is clear
- S2: The course overview is attractive
- S3: The color scheme of OLAT is pleasing
- S4: Under "My courses" I only want to see courses from the current semester

- S5: I like, that under "My courses" I can access courses from previous semesters
- S6: After logging in to OLAT, I would always like to get directly to the course overview
- S7: After logging in to OLAT, I would always like to get directly to my most recently used course

As a result, we hope to find out more about students' perception of specific parts of the course overview user interface.

To round out this section, the opportunity to give additional written feedback about the course overview was offered to the students. With this the students were able to voice other issues that weren't considered in this survey.

Findings

We will group our findings into three topics. The first topic covers the statements about the visual design, the second is about the courses that should be displayed on the course overview, and the third tries to find out on which page the students would like to land after they logged in to OLAT. Each statement will be cited, and the corresponding results will be discussed in the paragraphs below.

S1: "The course overview is clear." The responses showed that the number of students that rated the course overview as clear equals the number of students that found it unclear. In figure 3.6 it is visible that more people strongly disagree with the statement than strongly agree, but at the same time the number of people that agree with the above statement is bigger than the one that disagree. We could argue that answers that strongly agree or disagree weight more. In this case we would reason that the students perceive the course overview rather as unclear than clear, but a distinct conclusion can't be made. However, it is evident that the course overview has room for improvements since

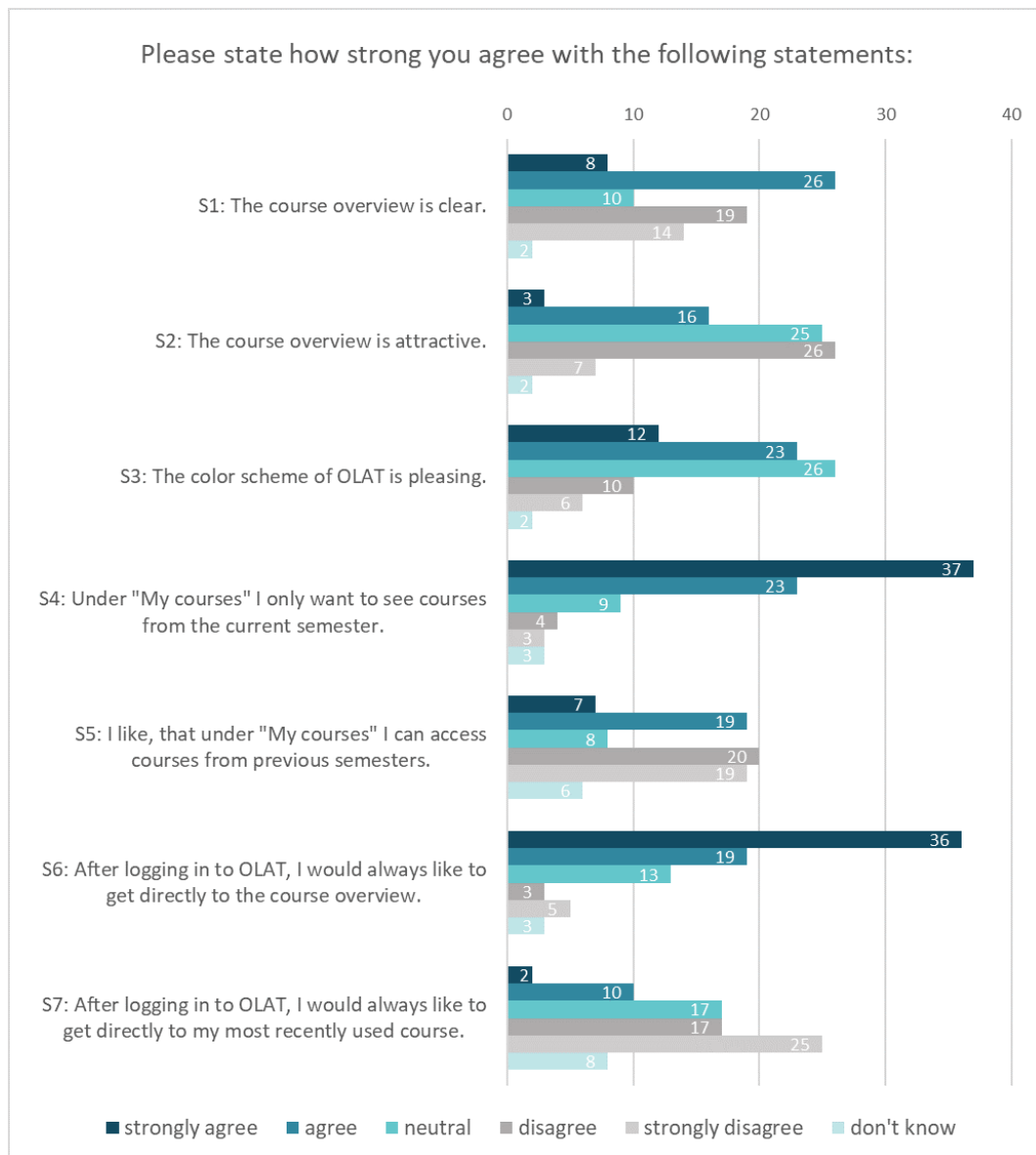


Figure 3.6: This graphic shows how many of the students that participated in the survey agreed or disagreed with the provided statements. The columns indicate the number of students that agreed or disagreed with a certain statement. (N = 79)

around 40% of the students disagreed with the above statement and found the course overview not clear.

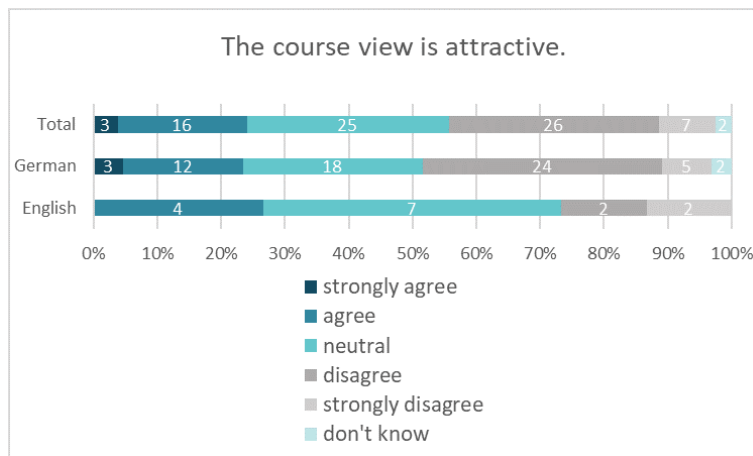


Figure 3.7: This graph shows that the opinions about the attractiveness differ between of the German and the English responses. ($N_{\text{Both}} = 79$; $N_{\text{German}} = 64$; $N_{\text{English}} = 15$)

S2: “The course overview is attractive.” For this statement, we are not able to make a distinct conclusion as well. Almost a third of all students took a neutral position and didn’t agree or disagree with the statement that the course overview is attractive. Even though 42% of the students disagreed or strongly disagreed with the statement and found the course overview unattractive, 30% is quite a big amount of indifferent opinions, which hinders us to make a clear statement.

When comparing the German with the English responses, it is prominent that the amount of neutral opinions from the English responses is proportionally bigger than in the German responses. Figure 3.7 also shows that in the German responses the students disagreed with the statement that the course overview is attractive almost twice as often as in the English responses. Nevertheless, 33% percent of the student that filled out the survey disagreed and 9% even strongly disagreed with the statement, therefore the design of the “Course Overview” definitely needs some improvements to be perceived as attractive.

S3: “The color scheme of OLAT is pleasing.” Regarding the statement that the color scheme of OLAT is pleasing, again a lot (30%) of neutral opinions were made (figure 3.6). Compared to the pervious questions the number of students agreeing to the statement is high. Around 30% of the student agreed and 15% strongly agreed with the statement that the color scheme is pleasing. We can therefore state that the color scheme is liked or at least not disliked by the majority of the students.

The appreciation of a design is a question of taste and for that reason it is difficult to please everybody. However, the responses to the three statements regarding the superficial design of the “Course Overview” are an indication that there is still some room for improvement.

S4: “Under “My courses” I only want to see courses from the current semester.” Looking at the data displayed in the figure 3.6, it is very apparent that the majority of the participants agreed with the statement. 46% of the students strongly agreed and another 30% agreed with the statement that only the current courses should be displayed. In total more than 75% of all students found that only the current courses should be included in the course list on the course overview. On the other hand, around only 9% of the students disagreed or strongly disagreed with this perception.

S5: “I like, that under “My courses” I can access courses from previous semesters.” It is very interesting to see that the results of this statement S5 are not as clear as in S4 (figure 3.6). S4 and S5 are in contrast to each other, because S4 states that only the courses from the current semester should be included in the “My courses” page while S5 argues that it is also nice to see older courses. The responses to S4 were quite clear, most people agreed with it, but for S5 the proportion of the answers that agree or disagree with the statement is more balanced than for the statement S4. Even so almost half of the students (49%) disagreed or strongly disagreed with S5 and found that they don’t like to access their old courses in the “Course Overview”. This corresponds with the findings from the interviews as well

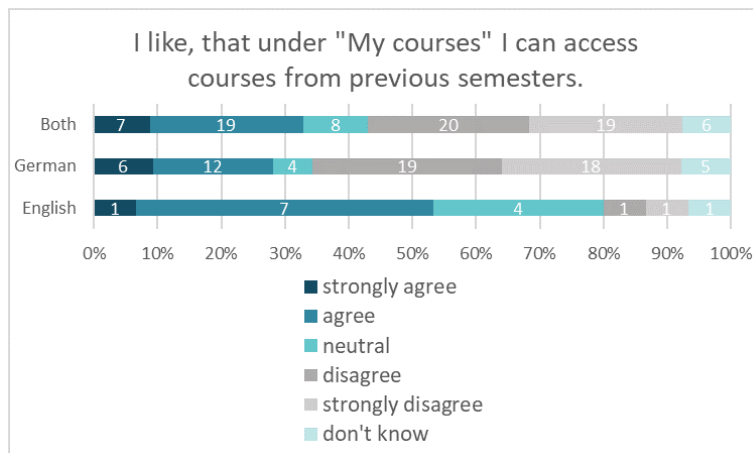


Figure 3.8: Students who filled out the English survey, liked the access of previous courses more than the ones which filled out the German survey. ($N_{\text{Both}} = 79$; $N_{\text{German}} = 64$; $N_{\text{English}} = 15$)

as the survey results, that older courses are not used as often as new ones.

We think, that the usage of old courses also depends on the field of study. If we compare the German and English answers to question S5 some major differences are revealed (figure 3.8). We know that a lot of English answers came from anglistic students and in contrast to the German answers over 50% of the English answers agreed or strongly agreed with the statement S5.

S6: "After logging in to OLAT, I would always like to get directly to the course overview." Looking at the information displayed in the figure 3.6, it is very apparent that the majority of the students that participated in this survey agreed with the statement that the course overview should be displayed after login into OLAT. 45% of the participants strongly agreed and another 24% agreed with the statement S6. The other responses were mainly neutral and only every tenth student disagrees or strongly disagrees with S6.

S7: “After logging in to OLAT, I would always like to get directly to my most recently used course.” Here again this two statements S6 and S7 were formulated such that they contradict each other. Statement S6 claims that the course overview should be used as a starting page and S7 suggests that after login the user should land on the most recently used course. For the question about the starting page the answers to S6 and S7 matched better. In S6 the majority of the students wanted the course overview as their starting page and the results of S7 support these findings, since most students (53%) disagreed or strongly disagreed with the statement S7 (figure 3.6).

It is also remarkable that with 10% the number of students that chose “don’t know” as an answer is quite high. This could either mean that they do not have an opinion about this statement or that they did not understand the question and therefore chose “don’t know” as a response.

To complete this section, relevant comments made about the course overview will be summarized below. These comments could be used as a starting point for further investigations and improvements of the course overview. The number in brackets at the end of the statements indicates how often they were mentioned. (Most of the comments are transcribed from German to English and rephrased a little, so that their context is more understandable.)

Comments that which concerns the design of the course overview:

- OLAT should follow the corporate design of the University of Zurich and shouldn’t use any color (turquoise) which is not related to the University at all as their primary color.
- It is sometimes a little bit confusing which courses are seminars or lectures.
- The image field on the left side is not necessary. (2)

- The image field is very nice if only more lecturers would use this functionality.
- The current default view of the course overview uses a placeholder for an image which is unnecessary since most courses do not have an image (why should they?). This is a waste of space and reduces the overview.
- The overview of the previous OLAT version was much better.
- Some titles of the courses have long sequences of numbers at the beginning, which's meaning is not clear for the student and which considerably impair the overview of the "Course Overview".
- The courses can also be displayed in a list view which is much clearer. This view should be used as a default setting of the course overview.
- The course description is not used in the (quick) course overview. The short version anyway isn't very informative.

The necessity of the image corresponding to a course as well as the relevance of other information will be discussed in the section 3.5.4 "Course Information", but it is interesting to already see that different opinions about the utility of this image exist.

Comments about the courses that are displayed in the course overview:

- The problem of the "Course Overview" is not that old courses are displayed in the "Course Overview", but rather that current and old courses are mixed together and appear in an unsorted order.
- The courses should be sorted by their actuality, so that the current courses appear at the beginning of the list and all the other courses can be found further down the list. (2)

- It would be better to have two separated folders. One with the current courses and one marked as “history” where all courses from previous semester are listed.
- It is confusing that newly bookmarked courses also appear in the course overview and not only in the “Favorites” page.

Comments about the starting page:

- I like that you get to the most recently used course after the login. From there you can for example navigate directly to the “News from subscriptions” page.
- I set the “Favorites” page as my starting page.

Other comments:

- I wonder why not all the lectures are linked with OLAT.
- To get a better overview of my current courses I mark them as favorites.

3.5.4 Course Information

Problems and Motivation

In the interviews as well as in the answers from the previous survey which the OLAT team conducted, it was mentioned that the image at the side of the course is unnecessary or in the previous survey it was mentioned that the difference between current and old courses is not visible. We wondered if the information that is available could be a reason for the bad rating of the course overview.

Since on the “My courses” page all courses are gathered, it is important that the overview of the courses is good, so that the students can access their courses easily. One principle of good user interface design is to provide only the

information that is necessary, because any additional information that is available can create an overflow and distracts the focus of the user from the important information [Nielsen, 1995].

With this part of the survey we wanted to find out the crucial part of information a student needs for his course overview. For this we asked the students to state how important certain information topics were for them. The course information topics that were rated by the students are the following:

- Course name
- Semester
- Lecturer
- Room
- Image corresponding to the course
- Day and time of the lecture
- Passed / Not passed
- Course description
- Favorites (Bookmark) marking
- Current course / Completed course
- Exam date
- Start and end date of the course

At the end of this section we also asked the students if there was any other information that they would like to see directly on the “Course Overview”.

Findings

The students could rate an information topic from very important to unimportant. Based on the answers from the

students (see figure 3.9) we categorized the course information the same way. For this we gave more weight to the responses “very important” and “unimportant” than to the other answers.

These findings should give an idea about the information of a course that is considered as important by the students and they can be used as a guideline for a possible redesign of the course overview. Information that is rated “very important” or “important” should be directly visible on the course overview. Any other information should be included with care since each additional information competes with the rest.

Responses that were given about specific information in the open comment section of this part are discussed under the corresponding importance category. The last paragraph of this section lists other information that students suggested to include on the course overview.

Very important information:

- Course name
- Semester
- Day and time of the lecture
- Exam date

The course name was by far rated as the most important information. The course name is crucial for the students to distinguish the courses from each other. In the comments that were made about the course overview which are discussed in the section 4.5.3, it was mentioned that cryptic token at the beginning of a course name impair the readability and the overview of the page.

Important information:

- Room
- Bookmark / Favorites marking

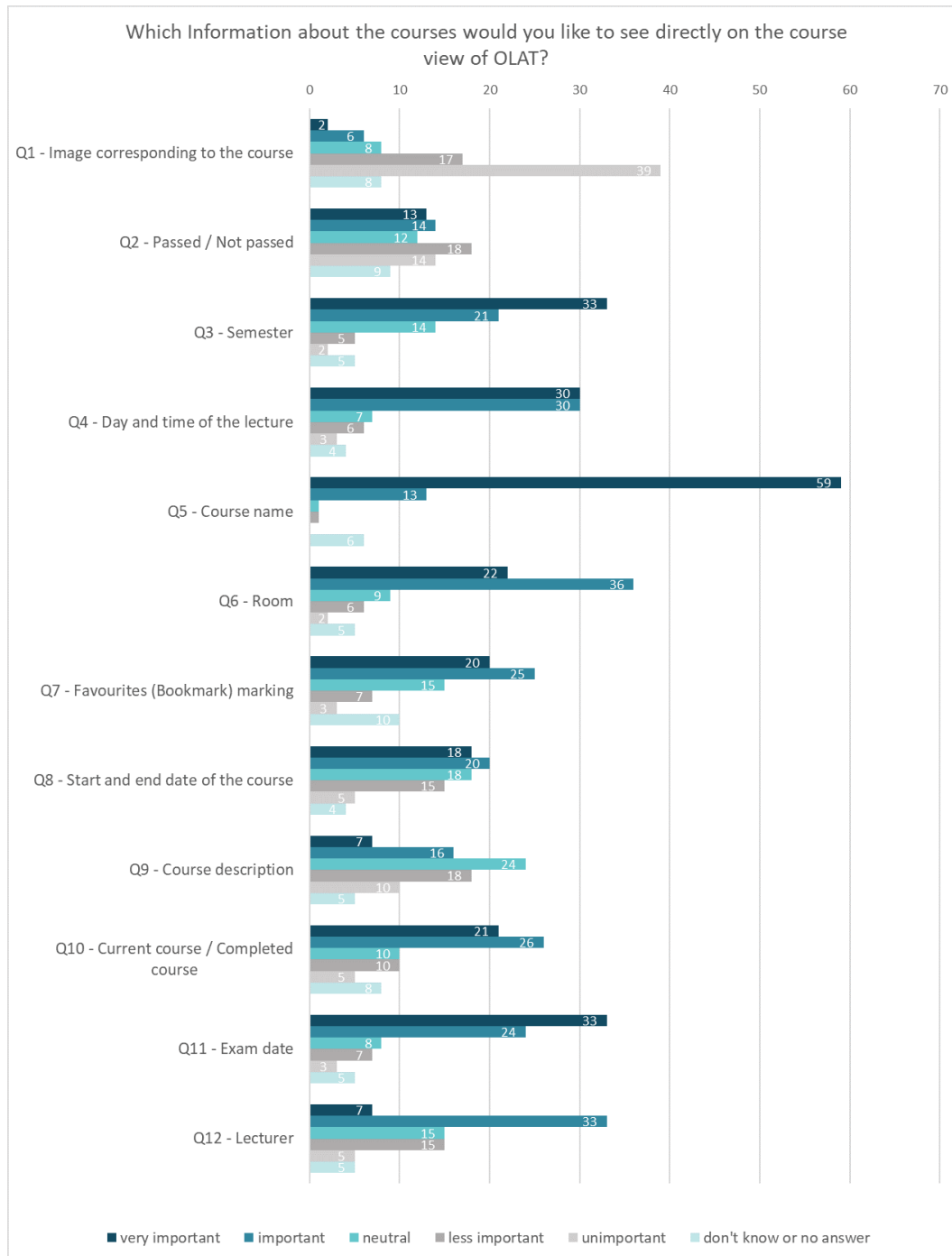


Figure 3.9: In this graph it is visible how important each kind of information is to the students.

- Current course / Completed course
- Start and end date of a course
- Lecturer

One student stated that information about the room couldn't be displayed because the lecture room sometimes changes, some lectures are broadcasted in several rooms, and because the room for a lecture or an exercise lesson often isn't the same.

Less important information:

- Passed / Not passed
- Course description

Unimportant information:

- Image corresponding to the course

The image that is displayed at the left side of every course is the only information that the majority of the students rated as unimportant. In the comments someone mentioned that the image is unnecessary and wastes a lot of space.

Suggestions of other visible course information that could be displayed on the course overview: (The number in brackets behind the items indicates how often a statement was mentioned. No number is listed, if the statement was mentioned only once.)

- Transcript of Records (in German: Leitungsausweis)
- Podcast for this course available or not
- ECTS-Points
- To Do's; e.g. homework outline
- New uploaded course documents

- Course type; e.g. lecture, seminar, exercise lesson, etc.
(2)
- Course participants

3.5.5 Favorites

Problems and Motivation

Through the interviews we found that not all of the students used the favorites function. The favorites feature was also mentioned several times in the survey that was conducted by the OLAT team (see section 3.2 “Re-analysis of existing Survey Data”). Some students found the favorites very helpful and other found that the usage of bookmarks is annoying and bothersome. Due to these discrepancies we decided to include a section about the favorite function in the survey.

First of all, we wanted to find out how many of the students currently know the favorite function. Then we asked the participants to rate the difficulty of marking a course as favorite. We did not only analyze how many students knew the bookmarking function but also how many actually used it, and which courses they normally bookmark.

Findings

The responses showed that around 30% of all students didn’t know that they can bookmark courses on the “Course Overview”. This amount surprised us, because it indicates that every third person has never noticed the small flag on the right corner (see figure 3.10) of the course overview or didn’t understand its meaning and functionality.

Interesting was the analysis of the second bookmarking question with focus on the userfriendliness of the bookmarking function. We noticed that the amount of “don’t

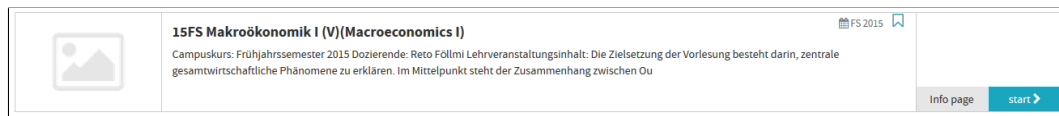


Figure 3.10: Courses can be bookmarked by clicking on the blue flag at the right upper corner.

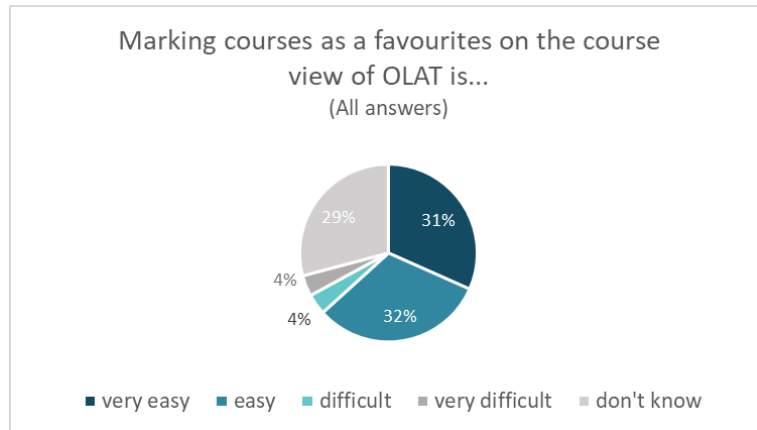


Figure 3.11: Diagram about the difficulty of bookmarking courses, including answers from students that didn't know the function before. (N = 79)

know" answers was disproportionately bigger (29%) than in the previous answers (see figure 3.11). When we took a closer look, we found that around 88% of the students that didn't know the bookmarking function before had answered "don't know" in this question. Analyzing the responses of the other questions that concerned the favorites function, we saw the same behavior. We therefore eliminated the responses from students that didn't know the function from the answers of the other questions of this section to get a better idea about how people who know how to bookmark courses work with this feature.

We found that 90% of the student that knew the favorites function found it easy (45%) or very easy (45%) to bookmark their courses (see figure 3.12). From the 55 participants that knew the favorites, 8 (around 15%) stated that they don't use bookmarks to organize their courses.

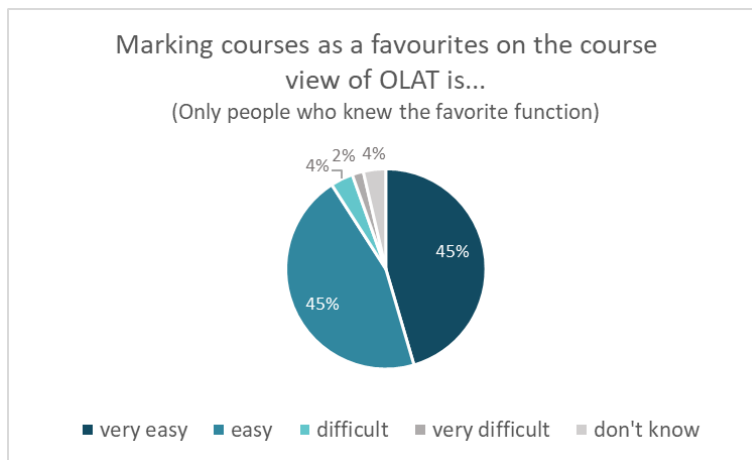


Figure 3.12: Diagram about the difficulty of bookmarking courses drawn by the answers of students who knew the function before. (N = 55)

From the 47 participants who knew and used the favorites function 85% only marked courses from their current semester as favorites and 11% bookmarked courses from various semesters (see figure 13.13). Two participants mentioned that they use the bookmarks differently. One student bookmarks courses that he or she is inscribed to but the corresponding course is not visible in the course overview, therefore he or she bookmarks these courses. Another student uses bookmarks for current courses and for some courses that he or she uses a lot.

To summarize, the bookmark flag is probably not very noticeable. Almost a third of the participants did not know that this functionality is available on the course overview. The users who knew the function found it easy to handle and most of them also used bookmarks to organize their courses. It is interesting that 85% of the students that work with favorites only bookmark their current courses.

In the section 3.5.2 “General OLAT 10 Usage” we found that the students primarily accessed their current courses and the older a course gets the less often students tend to use it. It was also mentioned several times that the courses currently aren’t ordered in a useful way for the students.

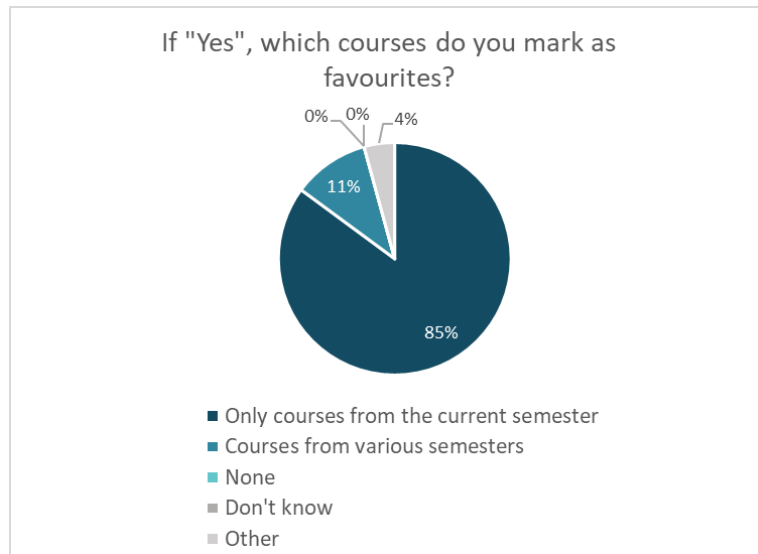


Figure 3.13: Graph that displays which courses, students who know and use the favourites function, do bookmark. (N = 47)

The courses should be ordered depending on their actuality so that the current courses would be displayed at the beginning of the list. The favorite function might have been a way to compensate for the unfortunate ordering of the courses and have all the current courses displayed at the same place with an easy access.

The bookmarking function is certainly useful to the students, even if the courses on the course overview would be ordered by their actuality. The favorite function is the only way to freely customize the courses that should be displayed.

3.5.6 Functions of the Course Overview

Problems and Motivation

On the right upper corner of the “course overview” a set of functions to customize the view is available (see figure

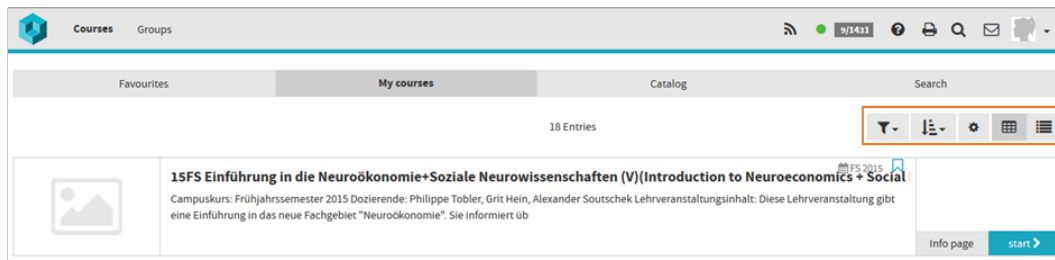


Figure 3.14: Five different functions to customize the course overview (framed in orange) are available.

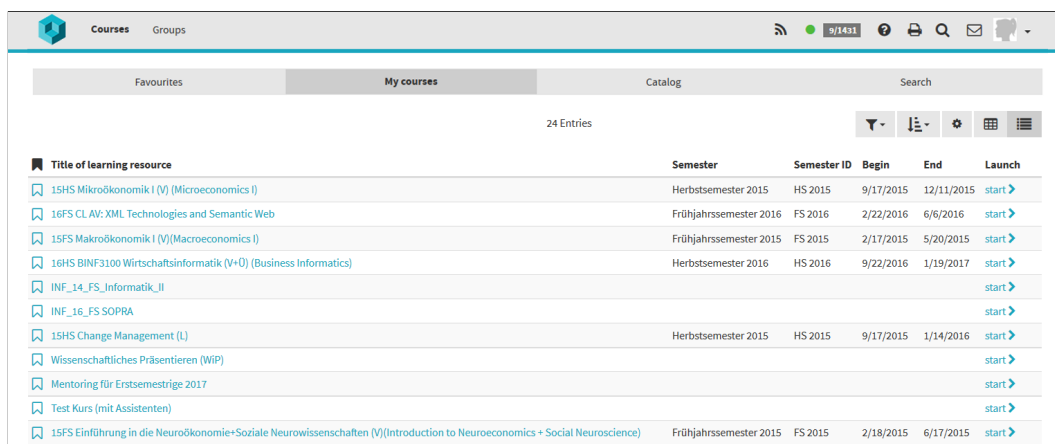


Figure 3.15: The list view of the course overview, where all the courses are displayed in a more compact form.

3.14). The first button seen from the left can be used to filter the courses by predefined criteria. With the second button the order of the courses can be changed depending on a set of specified parameters. The two buttons on the right side can change the view of the course overview. The second button from the right with the grid label is used as the default view, where the courses are displayed as tiles (see figure 3.15), that is why we will refer to it as “Tile View”. The button on the very right changes the view to a list of courses. In this thesis this view setting is called “List View” (see figure 16).

With the button in the middle with the gearwheel symbol the information that is displayed on the course view can be customized. It is important to mention that the settings of this function only affect the “list view” and have no effect

on the “tile view”, but the button is nevertheless visible on both views.

During the interview with the three students we found that not all students use additional functions to customize their course overview. Either the students do like the course overview as it is or they aren’t aware of the additional functions that are provided on the course overview.

To find out which view customization functions are known by the students, we asked them directly if they knew the function of each of the five buttons, and if they did the participants were asked to describe its functionality. This will give us an insight about the intuitively and comprehensibility of each button.

Findings

For each of the buttons that were described in the previous section we will show how many students stated to know the function. Then we will analyze the descriptions that were given by those who knew the function. With this we will see how many students not only know the button but also its functionality. To do this the answers were coded with corresponding labels so that the findings could be summarized.

Filter options Only around half (51%) of all participants stated to know the filter button. From those 51% four fifths associated the correct function “filter” with the button (figure 3.16). Other labels that were associated with the filter button are “sorting” (10%) and “filter of semester” which goes in the right direction but is not entirely correct.

To sum it up, it is apparent that the filter button and function is only known by half of the students, in exchange the ones who knew the button 82% of the time associated the correct functionality with it. This indicates that the meaning and usage of this button is clear, while the button itself might not be very noticeable.

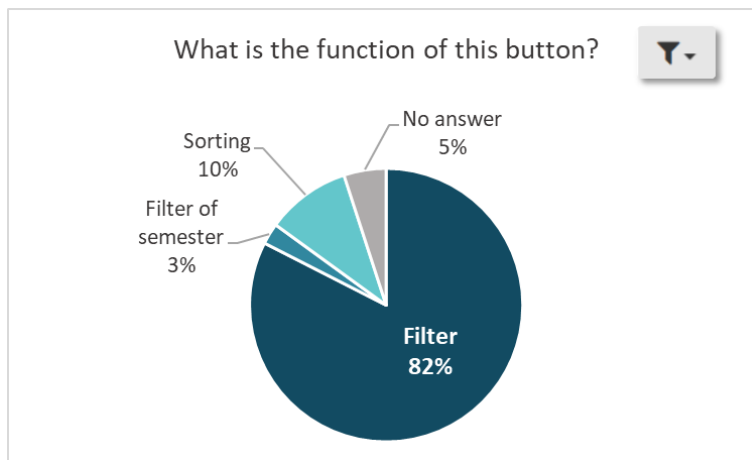


Figure 3.16: Most of the students associated the button with the correct “filter” functionality. (N = 40)

Sorting options The sorting button was only known by 41% of all participants. Fewer participants knew the sorting function than the filter function, but three quarters of them associated the button with the correct “sorting” function, and another 6% were quite close in their suggestions (figure 3.17). They related the button with a concrete sorting manner, once with an alphabetical sorting, and once with a descending sorting. Other suggestions for the button were to display the courses as a list, to recite the courses, and to extend the view.

Nevertheless, the meaning of the button seems to be clear to most of the participants that knew it. One answer included an interesting comment. It was stated that the sorting criteria of the “automatic” sorting option were not clear to the users. The student mentioned that it would be better to use a concrete criterion for each sorting option and use one of these concrete criterion as a default sorting.

Displayed information settings The responses showed that almost half of the participants (48%) knew the button with the gear label on it, which can change the information that is showed on the list view. We mentioned before that the button is visible on both views which can be confusing,

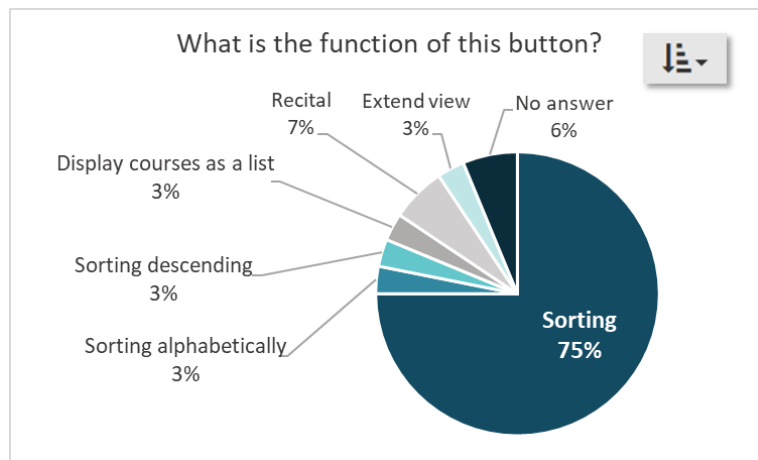


Figure 3.17: Three quarters of the students associated the button with the sorting functionality which is correct. (N = 32)

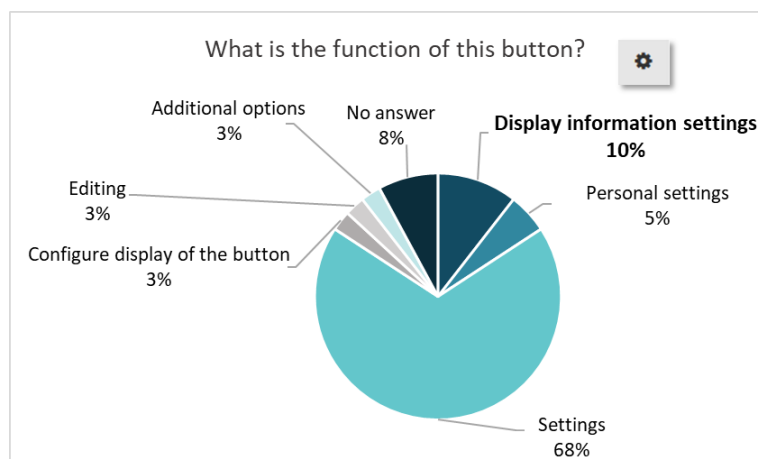


Figure 3.18: Only 10% of the responses associated the button with the correct “display information settings”. (N = 38)

because if you try to use it on the tile view, nothing will change.

The results that we got from the students who stated to know the button, reflected the confusion. 68% of them referred to this button as “setting” which is not completely

incorrect, but we considered this term as too vague (figure 3.18). A lot of applications (for example android) use the gearwheel symbol to indicate settings of the system or application. On the course overview, the settings are not for the whole OLAT system but rather to specially set the types of information that is displayed on the list view. Only 10% of the participants (4 responses) clearly associated this functionality with the gearwheel button. The other suggestions about the functionality of the gearwheel button, like “editing”, “personal settings”, or “configure display of the button”, underline the misinterpretation of this button.

One important change to reduce the confusion would be to only show “display information settings” button only on the list view, where it can actually be utilized. To account the OLAT team for their effort, we have to mention, that this change was already implemented in the newly released OLAT version 11. Nonetheless, we would highly recommend overthinking the labeling of this button, since the gearwheel icon can be associated with wrong expectations.

Tile view The data from the survey showed that only 40% of all participants knew the tile view function. The functionality of this button was often misinterpreted by the students that stated to know it. The feature that was associated with the button most often (36%) is the calendar, which is a completely wrong assumption (figure 3.19). Viewed without a context we have to admit that the symbol alone has some similarities to a calendar icon. But on the course overview, the icon is the symbol for the tile layout of the courses which is displayed per default. From the 40% of the participants that stated to know the functionality of this button, only 32% meaning 10 people described it correctly. Another 13% referred to the button as an option to change the view, which is close to the correct functionality.

It is possible that this button and its functionality is known by only a few people, because the tile view is used as a default display of the courses. Therefore, if the user has never used the list view, they would not know what the tile view button would do. However, it would be necessary to

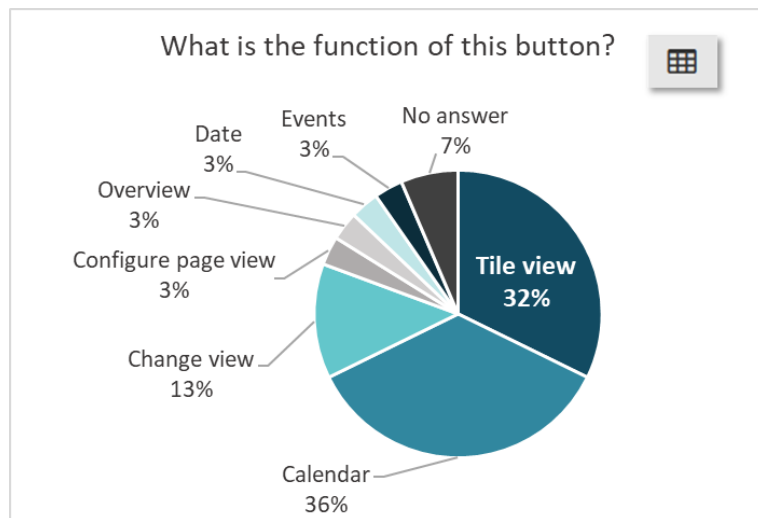


Figure 3.19: Surprisingly the button was associated most often with a calendar, and not with the correct tile view function. (N = 31)

redesign the icon of the button, because over a third of the people have associated a calendar function with it, which is clearly a wrong association.

List view The function of the list view button was least known. Only 32% of the participant stated to know it and a good half of them (52% more specifically 13 people) associated the button with the correct list view function (figure 3.20). Two other student referred to this button as a change view function. The other responses associated the button with various other functions, for example with a menu, the term overview, or with the sorting function.

Looking at the responses related to the two buttons which display the courses either as tiles or as a list, it is remarkable that both were known by less than half of the students that filled out the survey. Furthermore, the functions that the two buttons were associated with sometimes differed a lot from their actual functionality.

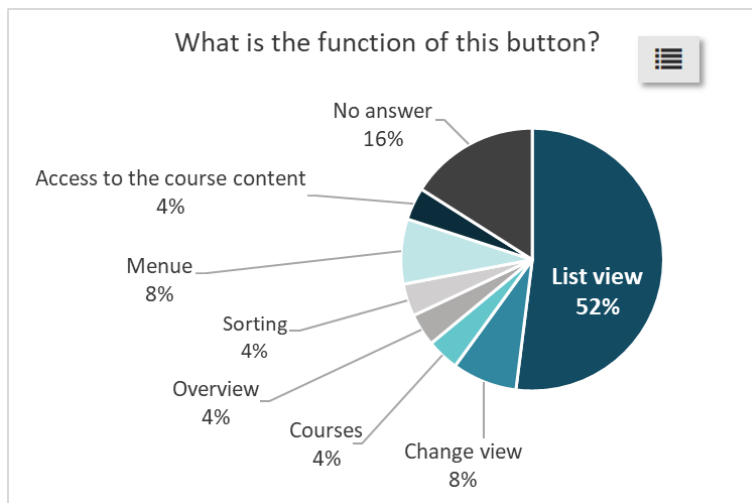


Figure 3.20: 52% of the participants that stated to know the list view button associated it with the correct functionality. (N = 25)

A possible reason for these responses could be that the functionality of the two view buttons is very similar. Each one displays the courses in another way. Besides this, only one button of the two is really usable at once, since one of the two views is always activated. It might be helpful to make this correlation between the views clearer by either highlighting the currently selected view better (at the moment the background of the active view button is slightly darker than the other) or by visualizing the connection between the buttons better. In OLAT 10 the two buttons who change the view from tile to list and vice versa do look the same as the other buttons. Another approach would be to use only one button with the functionality of switching between the tile and the list view.

Looking at the responses of all five buttons, it is noticeable that the more right a button is located, the less people knew its functionality. This could be a pure coincident, but it could also relate to the principle of simplicity [Nielsen, 1995] which says that the layout should be kept as simple as possible, which means that only necessary information should be displayed. In this case it would mean to only display functionalities that are available and necessary. In

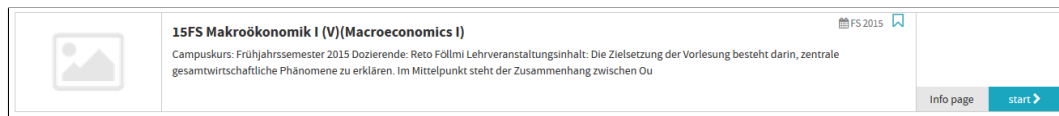


Figure 3.21: To open a course the user must click on the turquoise button which is labelled with “start”, one user found this naming confusing.

the tile view the number of buttons could be reduced if the gearwheel button, which cannot be used, wouldn’t be displayed, and if one button with the functionality of switching the view, would replace the two buttons that are currently used to change the layout of the page.

3.5.7 Navigation to individual Courses

Problems and Motivation

During the re-analysis of the answers of the previous survey that was conducted by the OLAT team, we found one comment which stated that the “start” label of the button (see figure 3.21), which leads the user to the corresponding course, is unclear.

Personally, we also found the naming misleading. The user won’t start the course new each time he logs in to OLAT. He does rather re-open a course.

We used the survey to check if other student also found the start label misleading and if there might be a better naming. We proposed the students five variations of the button, including the current “start” label. Because the survey was distributed in a German and an English version, we used two sets of labels, one with labels in German and the other with English labels. The options that the students could choose from are displayed in the figure 3.22.

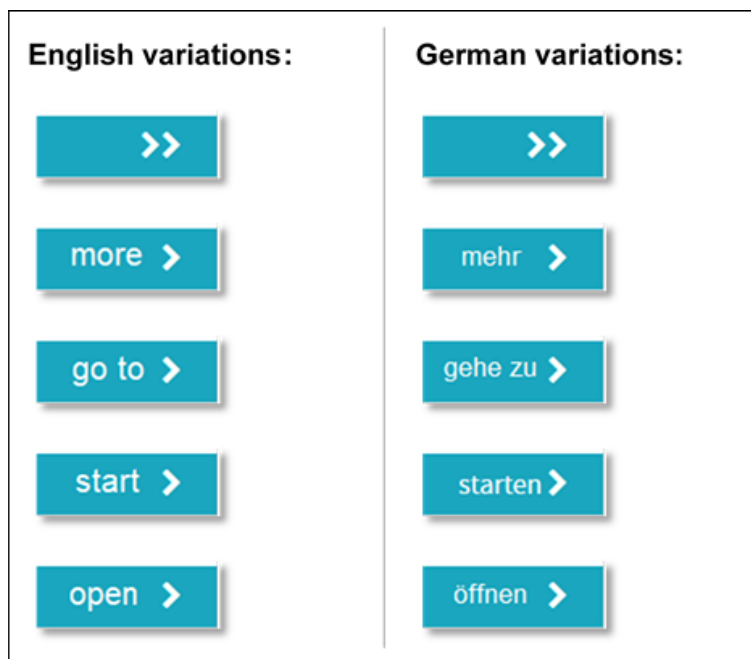


Figure 3.22: The students could pick one of the buttons displayed above. Depending on the language of the survey the students saw either the English or the German propositions.

Findings

The responses showed that the label "open" with 41% got the most votes. The "start" label with 24% got the second place (figure 3.23) and "go to" with 11% of the responses was liked the least.

The separate analysis of the German and English responses revealed different results (figure 3.23). Since more people filled out the German survey, the ranking of all the answers is similar to the outcome of the German answers. 47% of the German responses found the "open" (in German: öffnen) label most suitable for the button and 22% liked the "start" (in German: starten) label best (see figure 24). In contrast 33% of the participants who filled out the English survey preferred the term "start" the best, closely followed by the "¿¿" expression (22%) which only used two arrows

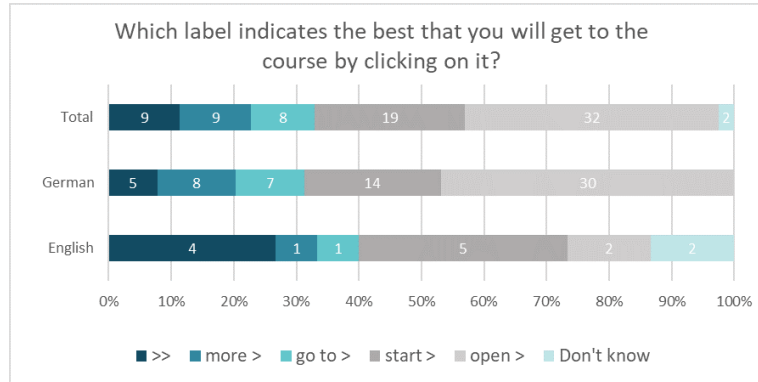


Figure 3.23: The different answers of the german and the english surveys are visible in this figure. ($N_{\text{Both}} = 79$; $N_{\text{German}} = 64$; $N_{\text{English}} = 15$)

as a label.

Since the outcomes of the findings strongly depended on the language in which the survey was filled out, it is difficult to make a statement about the best label for this button. Against our expectations the “start” label was chosen often, especially in the English survey. To find out which label indicates best that the course will be opened by clicking on it, further investigations would be necessary.

3.5.8 Info Page

Problems and Motivation

In the previous sections we examined the usage of additional functions that are available on the “course overview”. In the section 4.5.5 we investigated the usage of the favorites function and the section 4.5.7 analyzed if the students knew the five available functionalities to customize the course overview. With this section we wanted to find out how often and for what students used the “Info page”.

On the info page additional information about the course is

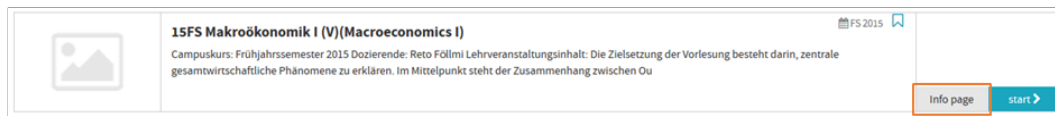


Figure 3.24: Each course has a corresponding Info page which can be accessed by clicking on the grey "Info page" button.

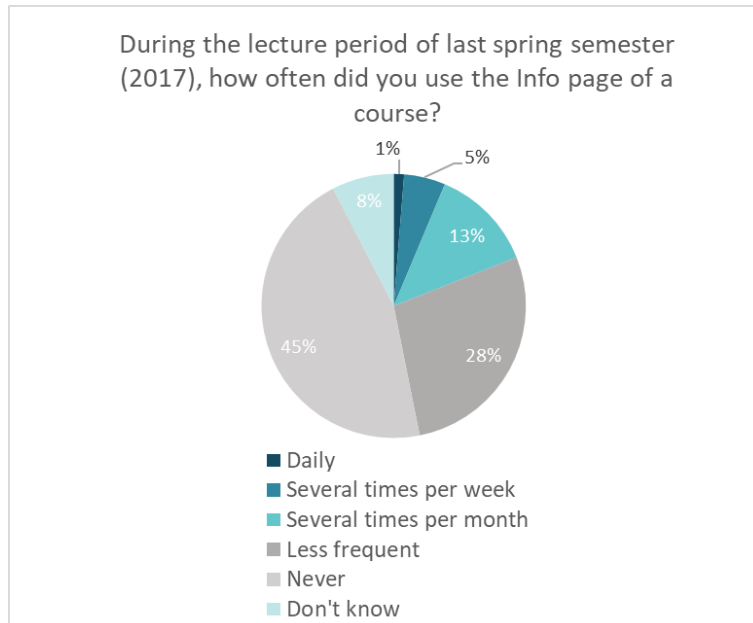


Figure 3.25: In this diagram it is visible that 45% of the participants never use the "Info page" of a course. (N = 79)

displayed. The button to access this page is located next to the turquoise "start" button (see figure 3.24).

Findings

The responses showed that most of the students rarely (28%) or never (45%) use the info page. Around 13 % of the participants stated to use the info page several times per month, 5% use this page several times per week, and only 1% respectively one person stated to use the info page daily (see figure 3.25).

From the comments we found that some students used the info page only at the beginning of the semester to check general information of the course. Two students stated that they use the info page only very rarely and one even mentioned that this page was unknown before to him or her.

Other information that students accessed through the info page are:

- Grading details
- Course syllabus and important deadlines
- Course lecturer
- Course description
- Download documents and upload assignment solutions
(We are not sure, if this is possible on the info page. It is possible that students confused the info page it with a general information page available on the course itself.)
- Room number
- To get the contact information of other students which are inscribed in the same course

The content of the info page of a course again depends largely on the information that was entered by the lecturer. The more information a lecturer includes on this page, the more benefit can students get out of it.

Since the info page is used infrequently we wondered, if the button which leads to the info page is too prominent. The info page button has the same size as the start button, although the start button is probably used almost every time a student visits OLAT, while the info page button is used much less frequent. To better utilize the available space and make it easier for student to open one of their courses, we would suggest to rearrange the two buttons, while making the info page button smaller and less prominent and the start button bigger and faster to click on.

3.5.9 Other Comments

Problems and Motivation

The content and scope of a survey is always a tradeoff between the amount of information that is retrieved and the time that it will take participants to complete the survey. Since most of our survey questions were close ended and very specific, we wanted to give the students the opportunity to give additional comments about the course overview or OLAT 10 in general, so that they could also express concerns about topics that weren't covered in the survey.

With this section we hoped to get new input for possible issues that should be investigated in the future.

Findings

15 students wrote additional feedback about the course overview and OLAT in general. In the sections below, we transcribed and rephrased interesting comments and ordered them into different categories.

Comments about the OLAT use of the lecturers:

- It would be helpful if the structure of all courses would be built in a logical way and consistently labeled.
- It would be great, if all the lecturers would use OLAT in a similar way.
- All faculties and lecturers should use OLAT for their courses.

Comments about the design of OLAT 10:

- The design could be better. Some elements do look alienated.

- OLAT should use the corporate design (e.g. colors, logos, fonts, etc.) of the University of Zurich.
- The color of the courses could differ from each other. I like it more colorful.
- The layout appears too cluttered.

Usability issues with the searching function:

- The searching function is not useful.
- The extended searching function is difficult to use.
- The searching function is confusing. I never find what I am looking for.

Other usability issues of OLAT 10:

- OLAT in general lacks clarity and is tedious to use.
- Switching between different layers is inconvenient.
- I would like to have several OLAT tabs open at the same time, which is not possible at the moment.
- The proof of performance (“Leistungsnachweis” in German) page is useless because the page is empty. The page instead could display the module booking / proof of performance view.
- The courses should be sorted depending on their semester, but for this all lecturers would have to enter the semester information into their courses.

As hoped, we got some interesting responses in this section. The answers can be used as a starting point for further investigations and improvements of OLAT. An issue that was mentioned several times in the comments and during the interviews with the students, is the bad performance and cumbersome usage of the searching function. This is definitely a topic that OLAT should try to address in future

releases. Another area that was partly covered in this thesis is the general design and layout of OLAT 10. The OLAT system provides a very large range of functionality which was accumulated through the years, so that its usage got more and more complex. The range of available functions sometimes is reflected in a complex and crowded user interface. We suggest the OLAT developers to be extra careful with the introduction of new features. A feature should only be implemented if necessary or if the feature brings a clear benefit to the users.

Students often stated that they wished that all lecturers would use OLAT to manage courses so that all information is gathered in one place. The responses underlined anew that the way a lecturer utilizes OLAT to configure his courses does matter. We do not know if guidelines for the lecturers exist, which would describe how a good course should look like. If such guidelines are available they should be checked and if necessary revised, and the lecturers should be remembered to observe these guidelines. In the case that no such document exists, we would highly recommend to create guidelines, preferably in collaboration with students.

To complete this section, we also need to state that several positive responses about OLAT were made. The students acknowledged the continuous improvement of the system, especially from the previous OLAT live version to the OLAT version 10.

3.6 Summary and Proposal for Solution

The initial goal of this section was to understand the problems that students had with the course overview. The fact that a lot of students disliked the course overview page of OLAT 10 was first noticed by the analysis of a previous survey about OLAT 10, conducted by the OLAT team during the winter semester break of 2016/2017.

The data from this survey was used as a starting point for further investigations of the course overview (see section

3.2 “Re-analysis of existing Survey Data”). Based on this findings, three interviews with students were conducted with focus on the course overview (see section 3.3 “Interview with Students”). The course overview is used almost every time a student wants to open a course in OLAT, which is one of the main reasons that the students use OLAT. Based on the frequency that this page is used, possible changes can have a big impact on the usability of OLAT. To gather as many opinions as possible and minimize the risk of wrong suggestions, we created and distributed a survey which included questions about different parts of the user interface of the course overview. In the following paragraphs we will summarize our findings which are mainly based on the results of the survey.

The survey about the course overview of OLAT 10 was filled out by 80 students, from which 79 responses were valid and analyzed. Through social media channels (mainly Facebook) and word-of-mouth recommendation, we reached students from six of the seven faculties which contributed to cover different viewpoints of the students.

We found that 84% of all students used OLAT several times per week or more frequently during the lecture period of the spring semester, which emphasizes the importance of OLAT for the students. The data also revealed that students use their current courses the most and the older a course gets, the less often it will be accessed by students.

With the questions of the survey we tried to address different parts of the course overview design. We wanted to find out which and how the courses should be displayed on the course overview. We investigated which information are important to the students and therefore should be visible on the page. In addition, some questions concerning the design and layout of the page as well as provided functions of the course overview were included in the survey.

As elucidated in the section 3.5.2 “General OLAT 10 Usage” we found that the older a course gets the less it will be used by the students. In the section 3.5.3 “Opinions about the Course Overview” the data then showed that around 75% of the students agreed or strongly agreed with the state-

ment that only the current courses should be visible on the course overview. Mixed answers were given to the questions if access to old courses is desired by students.

Because some students obviously access their old courses from time to time we would suggest keeping all courses displayed on the course overview. But for a further release the access to the current course of the semester should be simplified. One important step would be to order courses by semester on default, so that the newest courses would be displayed at the beginning of the list. In addition, current and previous courses could have a different look, so that the distinction is more obvious to the students.

In the section 3.5.4 “Course Information” the importance of certain course information was analyzed. The responses showed that the name, the semester, the day and time of the lecture, and the exam date of a course are the most important information for the students. The image corresponding to a course was clearly rated as useless and waste of space.

We asked different questions about the design and structure of OLAT 10 course overview. In the section 3.5.3 “Opinions about the Course Overview” we found that the opinions on the quality of the design of the page varied a lot. The amount of people that found the course overview clear and attractive wasn’t significantly bigger or smaller than the number of people that disagreed with these terms. Because we can’t clearly state that the course overview is perceived as attractive or clear, the user interface of the page has definitively some room for improvement. Issues with the design of the overview are the order of the courses, the information that are displayed for each course, and the obviousness of the functionality of certain buttons. We would suggest overthinking the layout of the course overview, more concretely the amount of space that is used for each course, if the information that is displayed for a course has a real benefit for the user, and how the default view can be optimized for the biggest part of the students. The last point is especially important because the results from the section 3.5.6 “Functions of the Course Overview” showed that the majority of the participants did not know the functions that were provided to customize the

overview.

Another focus point were the functions of the course overview page, including the bookmarking flag, the buttons to customize the view of the courses, and the “Info page” button which opens the info page of a course. We found that most of the students who knew the bookmarking function, found it easy to use, and mainly marked their current course with it. Analyzing the buttons of the course overview page we found following things: 30% didn’t know the bookmark function. Some Buttons are confusing to understand due to their design. Specially the “gear-wheel” and the tile view button were misinterpreted. The infopage button was never used by 45% of all students and therefore we recommend to rethink its prominent placement in OLAT 10.

For the further development of OLAT we would suggest to make the bookmarking function more noticeable, since it is a very simple way to highlight often-used courses and having them quickly accessible on the favorites page. Since other functions to customize the course overview aren’t well known and used, the importance of good default settings which match the needs of most students is highlighted again. This thesis can be used as a starting point to understand the needs and problems of the students better and match the user interface of the course overview accordingly.

In short, the course overview should enable the students to access the content of their courses quickly and as the name already indicated provide a good overview of their courses.

Chapter 4

Evaluating the Usability of the Course Editor

From the kick-off meeting with Mrs. Bischof-Muheim, we knew that lecturers had difficulties with the creation and configuration of their courses. This chapter describes the way we addressed this issue in this thesis.

4.1 Methodology

To explore the course editor UI and find potential usability problems Professor Wacharamonotham, Sandra Bisco, and Caroline Lottenbach agreed to use heuristic evaluation. The original idea was that the heuristic evaluation could be conducted quickly and the detected problems would then be used as a starting position for extensive prototyping and user testing to find a possible solution. Initially we planned that the result should be a high-fidelity prototype, which would be built by superficially manipulating the JavaScript code of the original OLAT page.

To conduct the heuristic evaluation, we first defined a set of heuristics, which would be used to evaluate the user interface of the course editor. In a second step, the user task for the evaluation was identified. The heuristic evaluation

itself was conducted with the help of Valérie Erb - a fellow student with some experience in human computer interaction methods.. We used the same heuristics and user tasks to do the evaluation, and discussed our findings afterward. Together we defined a list of problems and ranked their severity. The OLAT team then ranked each of the located problems by their simplicity to be fixed. A prototype with possible solutions was then created based on this list.

Due to limitations in time the final result is an interactive power point presentation which can be used as a reference for future improvements of OLAT. Implementing a solution through JavaScript would have been too time consuming.

4.2 Heuristic Evaluation

Only lecturers and their assistants have access to the course editor, since they are creating the courses. OLAT granted the authors special access to this editor tool.

4.2.1 Applied Set of Heuristics

A set of heuristics must be tailored to the user interface of interest. It is not recommended to use more than 10 heuristics, because the evaluator will have difficulties remembering them all during the evaluation process. On the other hand, the number of heuristics needs to enable the evaluator to properly discriminate the different causes of problems of each other. That is why most sets of heuristics include five to ten heuristics [Nielsen, 1995].

Sources

These six sources were used to define the set of heuristics which were used to evaluate the course editor:

1. Conceptual Design Heuristics from the book Interactive System Design [Newman and Lamming, 1995]
2. 10 Heuristics of Nielsen from his official web-page nngroup.com [Nielsen, 1995]
3. The eight golden Rules of Interface Design from the book Designing the User Interface [Shneiderman and Plaisant, 2010]
4. General Design Principles of the book The essential Guide to User Interface Design [Galitz, 2007]
5. 113 Design Guidelines for Homepage Usability from the official web page of Nielsen and his research group [Nielsen, 2001]
6. Ten Web Guidelines from the book Usability for the Web [Brinck et al., 2002]

Figure 4.1 shows a collection of rules that were gathered from the sources named above. The table is meant to give an overview of the guidelines that were considered for the final set of heuristics. For this purpose, only the titles of the guidelines are displayed in the table and the descriptions omitted. The full table with the descriptions is included in the appendix under the section C “Collection of Heuristics”.

Each column displays the guidelines from another source. Since a lot of guidelines or heuristics covered the same topic, similar guidelines were arranged in the same row of the table to give a better overview. The guidelines that are marked with a blue background were used in the final set of heuristics, which was used to evaluate the course editor user interface.

In the table 4.1 only the guidelines that were relevant for this thesis were included. The whole list of guidelines is accessible in the appendix [Reference to the full table in the appendix].

The following section will explain why the guidelines from figure 4.1 were considered to be more important and included in the set of heuristics.

	Conceptual Design Heuristics	10 Heuristics; Nielsen	The eight golden Rules of Interface	General Principles	113 Design Guidelines for	Ten Web Guidelines
1		Consistency and standards	Strive for consistency	Consistency and standards	Content Writing	Consistency and contrast
2		Aesthetic and minimalist design		Simplicity	Graphic Design	Simplicity
				Aesthetically Pleasing		Visual design
3		Visibility of the system status	Offer informative feedback	Visibility		
				Responsiveness		
4	When there is a choice, have the least surprising thing to happen to the user			Obviousness	UI Widgets	
				Predictability		
5				Directness	Navigation	Navigation
6			Design dialogs to yield closure			Appropriateness to task
7		Recognition rather than recall	Reduce short-term memory load			
8		User control and freedom	Permit easy reversal of actions	Recovery		
9		Help users recognize, diagnose, and recover from errors	Prevent errors	Forgiveness		Error handling
		Error prevention		Safety		
10	Promote the development of both novice and expert mental models	Flexibility and efficiency of use	Cater to universal usability	Flexibility	Tools and Task Shortcuts	

Figure 4.1: This table shows heuristics from different sources and the relations between them. The cells with blue background have been used for the heuristic evaluation.

A good application should be easy to learn, efficient to use and the user should enjoy using it [Interaction design]. For that reason every user interface should be designed as simple as possible and have a consistent layout throughout the whole application so that a user can quickly find the functionalities he or she is looking for. The symbols, buttons, descriptions and used terms should be clear so that it is obvious what you have to do and the results of a certain action are predictable. Providing feedback within appropriate time is another important factor for a smooth interaction between the user and the system. That's why the guidelines "Consistency and Standards", "Simplicity", "Visibility of the System Status", and "Obviousness and Predictability" were included in the set of heuristics to evaluate the user interface of the course editor. They apply to every user interface, but since OLAT is a big and complex system, it is even more important that the design fulfils these guidelines.

The creation, modification and publication of a course can be seen as one task with a set of steps that need to be done in a meaningful way. To check if the current course editor supports the current users and especially the new ones in performing these steps, the guidelines "Ease of navigation" and "Clear task flow" were chosen as well.

As mentioned before, OLAT is a big and complex application with a lot of functionalities. For a user it would be quite difficult to memorize all the different functions. That's why a consistent and meaningful design is very important. A good user interface should allow the user to focus on the task that he wants to perform. Navigation through the user interface should be intuitive, so that the user does not have to reflect about the next button that needs to be clicked. The guideline "Reduce short-term memory load" addresses the limited cognitive abilities of the human brain. Remembering information from one screen to another is tiring and error-prone. Within a big system like OLAT, this guideline could have a big impact on the productivity of its users.

Users are human and sometimes they make mistakes. A good system should enable the user to recover from an unwanted system state. The user should not lose his work because of a wrong action, a software or hardware problem.

While allowing recovery, it would be even better to prevent the user from making an error in the first place. Especially new users worry a lot about making a mistake. By providing easy and efficient recovery mechanisms, users can learn to handle the program through trial and error and exploration. Furthermore the user will navigate through the program much smoother, because he knows that the software will protect him from incorrect actions [The essential guide to user interface design]. Many lecturers work with OLAT and use the course editor to create and manage their courses. The guidelines “Allow recovery” and “Error handling” should address all problems that could lead to work loss or errors, so that future lecturers can work fearlessly and efficiently on their courses.

The University of Zurich is a huge organization, under which in the year 2016, 4'870 lecturers pursued their teaching and researching activities [Fuchs et al., 2016]. Lecturers are advised to use OLAT and everyone who wants to create or configure a course needs to use the course editor. To adapt the system to the needs of lecturers who have been teaching for many years as well as to new lecturers, the guideline “Flexibility and efficiency of use” is included in to the set of heuristics.

Final List of Heuristics

The final list of heuristics contains the following guidelines:

1. Consistency and standards
2. Simplicity
3. Visibility of the system status
4. Obviousness and predictability
5. Ease of navigation
6. Clear task flow
7. Reduce short-term memory load

8. Allow recovery
9. Error handling
10. Flexibility and efficiency of use

The definition of each guideline will be given in the following paragraphs.

#1 Consistency and standards “A system should look, act, and operate the same throughout. Similar components should: have a similar look, similar uses, and operate similarly. The same action should always yield the same result. The function of elements should not change. The position of standard elements should not change.” [Galitz, 2007]

“Similar things should be similar. Different things should be obviously different. Every variation in the design should be deliberate and meaningful. Does the site have internal consistency within the page and between pages? Does it have external consistency with web standards and conventions? Does it have a consistent style and message with the organization’s print materials and actual work practices?” [Brinck et al., 2002]

#2 Simplicity “Dialogs should not contain information that is irrelevant or rarely needed. Every extra unit of information in a dialog competes with the relevant units of information and diminishes their relative visibility.” [[Nielsen, 1995]

“Is everything presented in the simplest, most straightforward way? Is the language simple and direct? Are icons helpful or obscure? Is the site trying to look like more than it is? Follow the principle of minimalism: if anything can be removed, remove it.” [Brinck et al., 2002]

#3 Visibility of the system status “The system should keep users informed about what is going on, through

appropriate feedback within reasonable time.” [[Nielsen, 1995]

“A system’s status and methods of use must be clearly visible. Improve visibility through hierarchical organization and context sensitivity.” [Galitz, 2007]

#4 Obviousness and predictability “A system should be easily learned and understood. A user should know what to look at, what it is, what to do, when to do it, where to do it, why to do it and how to do it. The flow of actions, responses, visual presentations, and information should be in a sensible order that is easy to recollect and place in context.” [Galitz, 2007]

“The user should be able to anticipate the natural progression of each task. Provide distinct and recognizable screen elements. Provide cues to the result of an action to be performed. Do not bundle or combine actions. All expectations should be fulfilled uniformly and completely.” [Galitz, 2007]

#5 Ease of navigation “How clear is the organization of the web site? Can users find their way from place to place? Is the navigation bar well organized? Are there any parts missing? Are the relationships between main sections and subsections clear? Do search engines produce useful results? Does the site map give an accurate understanding of the scope and organization of the site?” [Brinck et al., 2002]

#6 Clear task flow “Sequences of action should be organized into groups with a beginning, middle, and end. Informative feedback at the completion of a group of actions gives operators the satisfaction of accomplishment, a sense of relief, a signal to drop contingency plans from their minds, and an indicator to prepare for the next group of actions. For example, e-commerce web sites move users from selecting products to the checkout, ending with a clear confirmation page that completes the transaction. [Shneiderman and Plaisant, 2010]

“What are the user’s tasks, and does the site reflect the structure of the tasks? A detailed task analysis is also helpful, but you should at least perform a cursory analysis, verify that the obvious task flow well. Make sure users know where they are in a task and that information is automatically carried through from each step to the next.” [Brinck et al., 2002]

#7 Reduce short-term memory load “Humans’ limited capacity for information processing in short-term memory requires that designers avoid interfaces in which users must remember information from one screen and then use that information on another screen. It means that cell phones should not require re-entry of phone numbers, web-site locations should remain visible, multiple-page displays should be consolidated, and sufficient training time should be allotted for complex sequenced of actions.” [Shneiderman and Plaisant, 2010]

#8 Allow recovery “Users often choose system functions by mistake and will need a clearly marked emergency exit to leave the unwanted state without having to go through an extended dialog. Support undo and redo.” [[Nielsen, 1995]

“A system should permit commands or actions to be abolished or reversed and immediate return to a certain point if difficulties arise. Ensure that users never lose their work as a result of an error on their part, hardware, software, or communication problems.” [[Galitz, 2007]

#9 Error handling “Tolerate and forgive common and unavoidable human errors; Prevent errors from occurring whenever possible. Protect against possible catastrophic errors. Provide constructive messages when an error does occur.” [Galitz, 2007]

“In transactional systems especially, does the system prevent the user from entering inappropriate values? Are bad

values detected as early as possible? Is error recovery quick and efficient, guiding the user through problem resolution as easily as possible? When users cannot completely resolve a problem (e.g., they don't have a login account or they don't have their credit card), are they able to participate to the maximum extent possible and complete their activities at a later time when the current problems are no longer a factor?" [Brinck et al., 2002]

#10 Flexibility and efficiency of use "Accelerator – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions." [[Nielsen, 1995]

4.2.2 User Task Definition

The goal of this heuristic evaluation and following prototyping is to improve the usability of the course editor. Since a course can be built out of 31 different course elements and each element has a variety of special configurations, the exploration of all the functionalities would have pushed the boundaries of this bachelor thesis. Therefore, we narrowed down the scope to a smaller subset of course elements. As a starting-point for this analysis, we only wanted to look at course elements that were used most frequently by the lecturers.

Which course elements are used the most? To answer this question OLAT queried their system and provided us a list which contained information about all the existing courses of the University of Zurich. With this data, we determined the total number of elements for each course element type.

On August the 30th 2016, OLAT live was migrated to OLAT 10 and with this migration some new course element types were added to the list. To consider this fact, the data was fil-

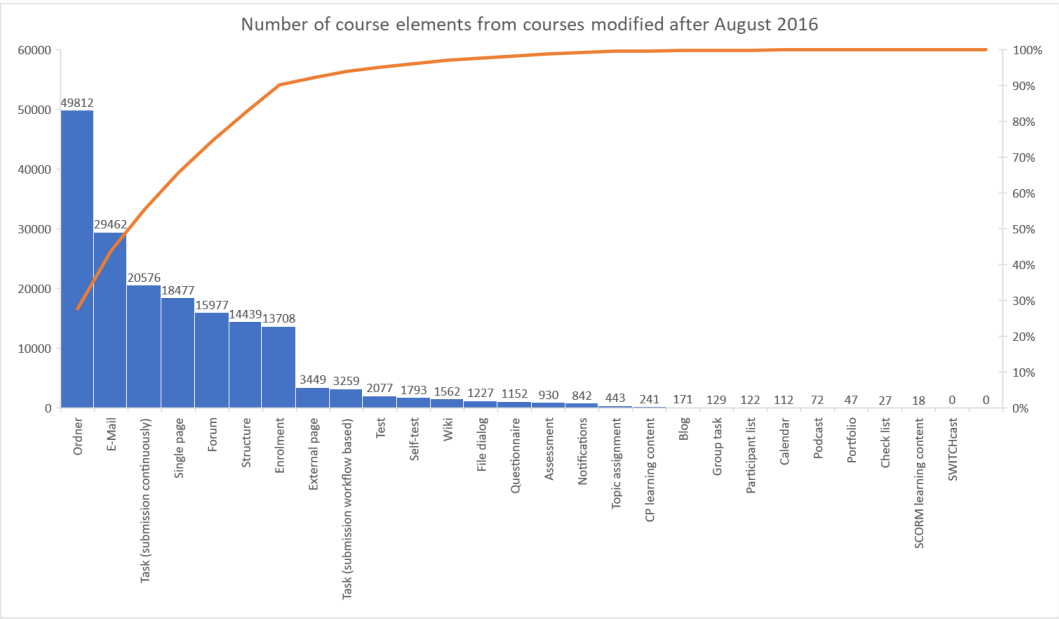


Figure 4.2: Number of course elements per type from courses last modified after August 2016, effective 21.07.17

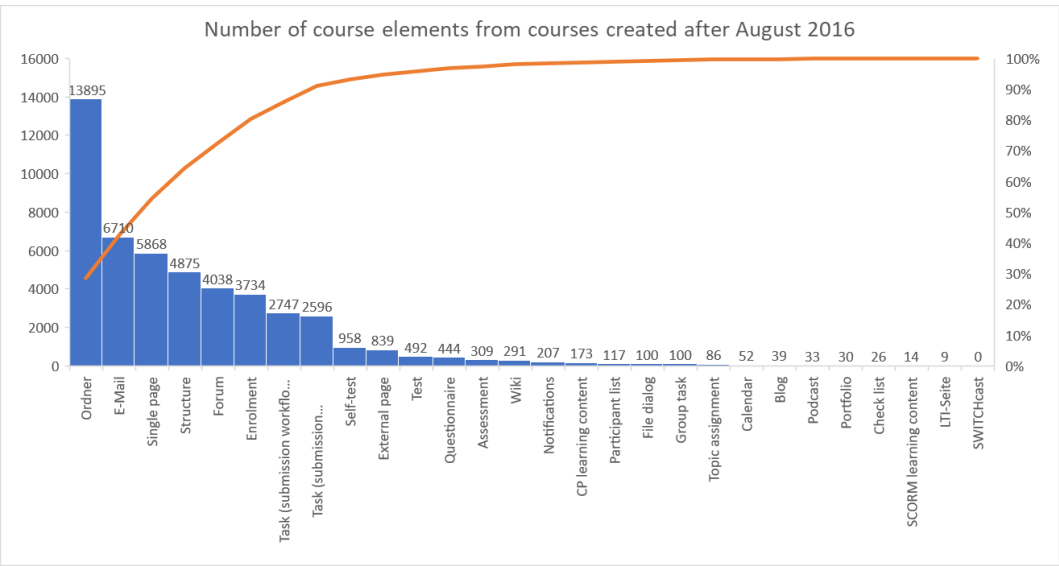


Figure 4.3: Number of course element per type from courses created after August 2016, effective 21.07.17

tered so that only courses that were modified after August 2016 are included.

Figure 4.2 shows the number of elements per course element type. It is obvious that seven course element types represent approximately 90% of all existing elements. And the figure 4.3 shows a subset of the data from figure 4.2. We wanted to dismiss the legacy of old courses, to check if courses created after August 2016 use the same course element types.

The seven most used element types are the same in figure 4.2 and 4.3 ordered in a different way. In figure 4.3 which only includes new courses created after the release of OLAT 10, it is obvious that an eighth element type “Task (submission workflow based)” is included in the group of element types that represents 90% of all elements.

The course element types that were included in the user task are:

- Single page
- Folder
- Enrolment
- Forum
- E-Mail
- Structure
- Task (submission continuously)
- Task (submission workflow based)
- Group task

The first data set we got from the OLAT team (effective 26.06.17), was not correct. The course element type “Task (submission workflow based)” and the “Group task” type were condensed under the type “Group task”. This is why we included the “Group task” element in the user task, only to find out later that the majority of the incorrectly labeled “Group task” elements in fact belonged to the “Task (submission workflow based)” type. We decided to include the

Group task element as well, in hope of finding some answers to the third problem, which is discussed in the section 5 “Finding out the Differences between the Task Elements”.

User task To define a user task that represents the task of creating a course as realistically as possible, the configurations of three existing courses were analyzed.

The defined user task covers the whole process of creating a course, not only the configuration with the course editor. It starts with the creation of the course in the authoring section of OLAT, then the course must be configured as described by adding new course elements and changing their settings. To finish the task, the created course needs to be published.

The description of the user task is purposefully formulated vaguely, so that the evaluator has to reflect and explore the user interface to complete it. The full description of the user task is included in the appendix under the section D “User Task for Heuristic Evaluation”.

4.2.3 Problems Found

During the heuristic evaluation, a total of 65 usability problems were found. For each problem the evaluators defined its severity and the OLAT team rated the ease of fixing, based on two scales (figure 4.4 and 4.5) used in the iTunes Heuristic Evaluation Report [Tennant et al., 2005].

In this section only the main problems will be described and illustrated with concrete examples. Each example refers to a problem found. Each problem has a unique number which is initiated with a P (for problem). For example the first problem in the list would be referred to with the term P1. The full list of problems that were collected and referred to in this chapter is included in the appendix under the section E “Problems found through the Heuristic Evaluation”.

Severity Rankings	
Rating	Definition
0	Violates a heuristic but doesn't seem to be a usability problem.
1	Superficial usability problem: may be easily overcome by user or occurs extremely infrequently. Does not need to be fixed for next release unless extra time is available.
2	Minor usability problem: may occur more frequently or be more difficult to overcome. Fixing this should be given low priority for next release.
3	Major usability problem: occurs frequently and persistently or users may be unable or unaware of how to fix the problem. Important to fix, so should be given high priority.
4	Usability catastrophe: Seriously impairs use of product and cannot be overcome by users. Imperative to fix this before product can be released.

Figure 4.4: Severity Ranking defined by [Tennant et al., 2005] indicates the impact of an unsolved problem on the usability of the system

Ease of Fixing Rankings	
Rating	Definition
0	Problem would be extremely easy to fix. Could be completed by one team member before next release.
1	Problem would be easy to fix. Involves specific interface elements and solution is clear.
2	Problem would require some effort to fix. Involves multiple aspects of the interface or would require team of developers to implement changes before next release or solution is not clear.
3	Usability problem would be difficult to fix. Requires concentrated development effort to finish before next release, involves multiple aspects of interface. Solution may not be immediately obvious or may be disputed.

Figure 4.5: Ease of fixing by [Tennant et al., 2005] indicates how much effort the solving of a problem would use.

Lack of guidance through the process of creating a course

One of the biggest struggles we had while conducting the heuristic evaluation was finding our way through the different steps of the course creating task (P1).

A simplified process of creating a course contains the following steps:

1. Create a course in the authoring course overview

- (a) Go to the course editor
 - (b) Add new course elements
2. Modify the course elements
3. Check if everything is as it should be in the preview mode
4. Publish the course

The biggest problem was, that after creating a course the user ends up on a page (later on referred to as the “Change Infopage”) with no title or description of its role (see figure 4.6) and has difficulties to find out what has to be done next (P15). In addition, the button which leads to the course editor is not visible right away, but hidden in the tools menu (P5). When the course editor is finally found, two new buttons appear in the tool bar at the top, but their appearance is hardly noticeable because of their grey colour (P26). One of them needs to be used to insert new course elements, which can also be a challenge. In OLAT 31 different course element types exist and some are very similar. For example, three different types of task course elements are available and their difference is not obvious (P28).

No useful help provisions When you get stuck as a user, OLAT 10 provides very little assistance to solve the problem. In fact a help button exists on almost every page of the course editor, but by using it you get to a large page of the OpenOLAT Confluence (a kind of wiki). Often the information provided there is too superficial to answer a concrete question and the chapters that the particular help buttons lead to are too big (P7). In general users don’t want to read half a page to find an answer to a simple question (e.g. “What can I do with the folder course element?”).

In a lot of cases the need of a help function could be omitted by providing tooltips (short explanations of the tools), when hovering over a button. This additional information could be displayed right where it is needed. For example, this would simplify the task of adding new course elements (P27, P28), since each course element could show a short message labeling its use without cluttering the whole page.

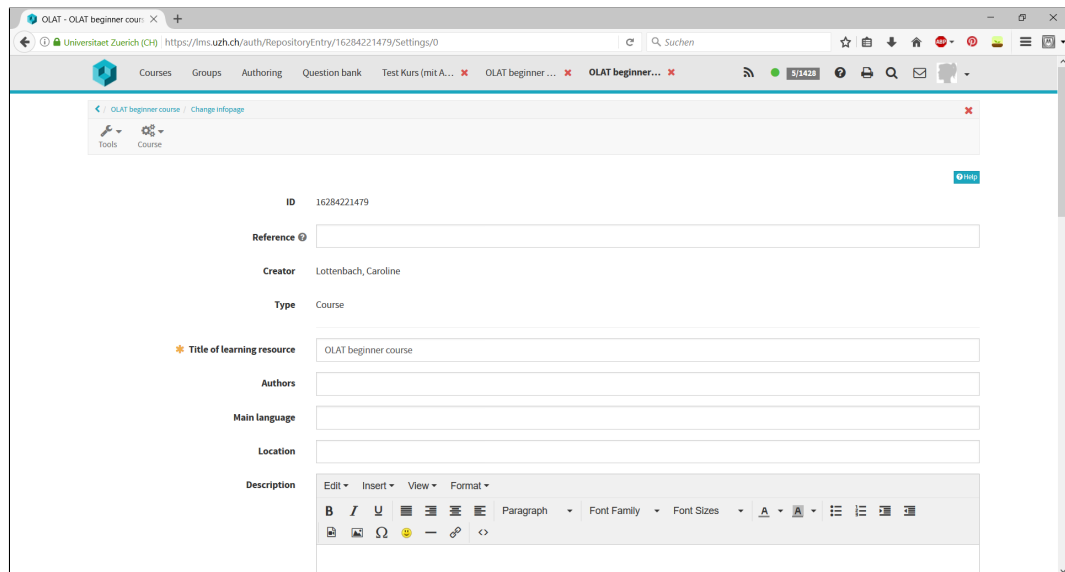


Figure 4.6: Print Screen of the “Change Infopage” where we got stuck during the heuristic evaluation.

Unclear meaning of terms During the evaluation we found that a lot of problems were violating the 4th heuristic “Obviousness and predictability”, meaning that it was not clear what a certain function would do or what a configuration would change. We found several terms with an ambiguous meaning.

For example, when configuring the visibility, the term “All registered OLAT users” is confusing, because it could mean either all the users of OLAT regardless of their status, or only registered OLAT users (P14). The first definition then would correspond to another option “Registered OLAT users and guests” which can be selected as well. Another example for unclear choice options appears when you try to configure the distributor of e-mails to course participants. The difference between the options “All participants” and “Only course participants” is not clear.

Inconsistencies through the layout A consistent layout allows the user to work efficiently with an application. We found that some features were inconsistently implemented. One good respectively bad example is the inconsistent pre-

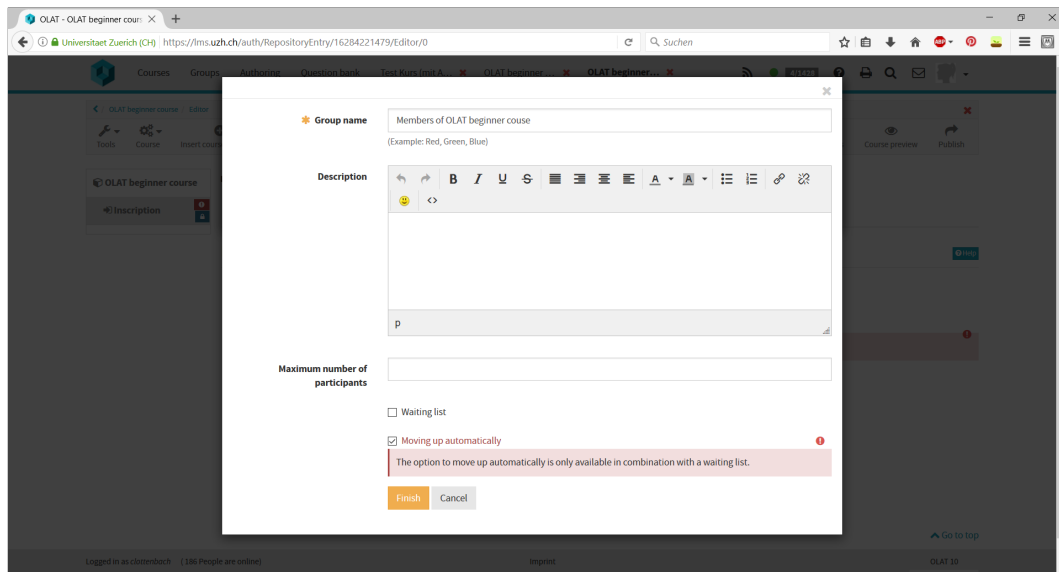


Figure 4.7: An example of an inconsistent part of the layout. Options are displayed which can't be selected

sentation or hiding of unclickable options. Most of them are hidden and only appear when they are used, but in some cases, they are visible and even selectable, but when you try to save the option, an error message will appear (see figure 4.7).

Another example is the use or not use of the saving function (P23, P24). Normally, you have to save the configurations after editing before you can leave the page (a warning message appears when you try to do so without saving). This is however not always the case, for example with checkboxes, the changes will be saved automatically when changing a page and no warning message will appear. This can be problematic if the user did not intend to save the changes and left the page, without realizing that they were automatically saved.

Invisible functionalities OLAT is a powerful tool and has a lot of useful functions, but sometimes the functions are not recognized by the user because they are not visible. One prominent example is the inheritance of visibility and access configurations. Configurations that are made in a

parent course node apply also to all of its sub-elements (P6). This is a very nice function, but we did not know about it until we got the information from the OLAT team themselves, because during the evaluation it did not appear to us.

Another feature that is very useful is the drag and drop function with which the order and hierarchy of course elements can be changed easily. But here again the function was not visible (P54), nor did any of the evaluators know about it.

Preview Mode is tedious to use and does not work “correctly” As the name suggests the Preview Mode is a function within the course editor which allows a preview of the course without publishing it. The course can be seen from different perspectives, for example from the point of view of a student. The lecturer can check if everything was configured in the right way.

During the evaluation, we found that not everything is displayed perfectly. Some links did not work (P59) and the structure course elements are not displayed (P60) in the preview. To see the structure element or use links, the user has to publish the course element.

Another flaw made working with the Preview Mode very inefficient. Each time when we switched from the course editor to the course preview, we had to reconfigure the preview settings. After that we always landed on the same starting page and had to navigate back to the page which of interest. (P61).

Course element type “Task (submission continuously)” is confusing To create a task in a course the user can chose between three different course element types, “Task (submission continuously)”, “Task (submission workflow based)”, and “Grouptask”. From the OLAT team we know that the first one (“Task (submission continuously)”) is the original task type and that the two other task elements were added in the release of OLAT 10.

Since the task with continuous submission existed for a long time, experienced users might not have a lot of problems, but for beginners this course element might be very difficult to understand (P41). Several reasons make the usability tedious. One of them is inconsistent and unclear terminology (P44, P45) and other problems are the selection of sub-elements respectively features (P43) and the access configuration of this task element.

Other smaller problems Apart from these bigger problems a lot of smaller problems were found (the complete list is included in the appendix). Considering each of these problems alone, they might not seem important, but when they are summed up together, the operation of OLAT 10 becomes much more cumbersome.

4.2.4 Proposal for Solution

For all the problems that were found in the evaluation, the severity and the ease of fixing them were defined. To quickly improve the usability of the course editor and other parts of OLAT that are included in the course creation process, we suggest that the problems that can be fixed easily should be addressed as soon as possible; starting with the ones whose severity was ranked high.

The following problem (P4) (figure 4.8) would be a great starting-point for improvements. It is a severe problem, but the solution is clear and easy to implement.

The solution of a lot of problems is straight forward. In this case we have included a concrete proposal for solution in the table directly with the problem found during the heuristic evaluation (see appendix section E “Problems found through the Heuristic Evaluation”).

Problems that have no obvious solution and a high (3) or medium (2) severity ranking were chosen to be further investigated. We found possible solutions for these problems through prototyping and user testing. Which problems

#	Problem	Reason	Proposal for solution	Severity	Ease of fixing
4	It is possible to log out from OLAT without saving the changes that were done in the course editor.	No warning message appears when you Log-out from OLAT without saving. You are logged out immediately and all the unsaved changes are lost.	Display warning message before logging out of OLAT, when changes are not saved.	3	1

Figure 4.8: An example for the description of problem found during the heuristic evaluation.

were chosen to be addressed through a prototype and how the proposals for solution for them looks like is described in the next chapter 4.3 “Prototyping and User Evaluation”.

Because of limited time resources, the problems that have no obvious solution and a low (1) severity ranking were not included in the prototyping phase.

4.3 Prototyping and User Evaluation

In this section the solution to some problems that were found during the heuristic evaluation will be found through prototyping.

4.3.1 Selected Problems for Prototyping

From the list of problems found during the heuristic evaluation, a few problems were selected. Further investigation was conducted and a possible solution in form of a prototype was created. To define which problems were interesting to investigate, we picked three topics that seemed like general and interesting problem areas (see figure 4.9). In a second step, we searched for other problems that were linked to these three problem areas and added them to the mind-map displayed in figure 4.9.

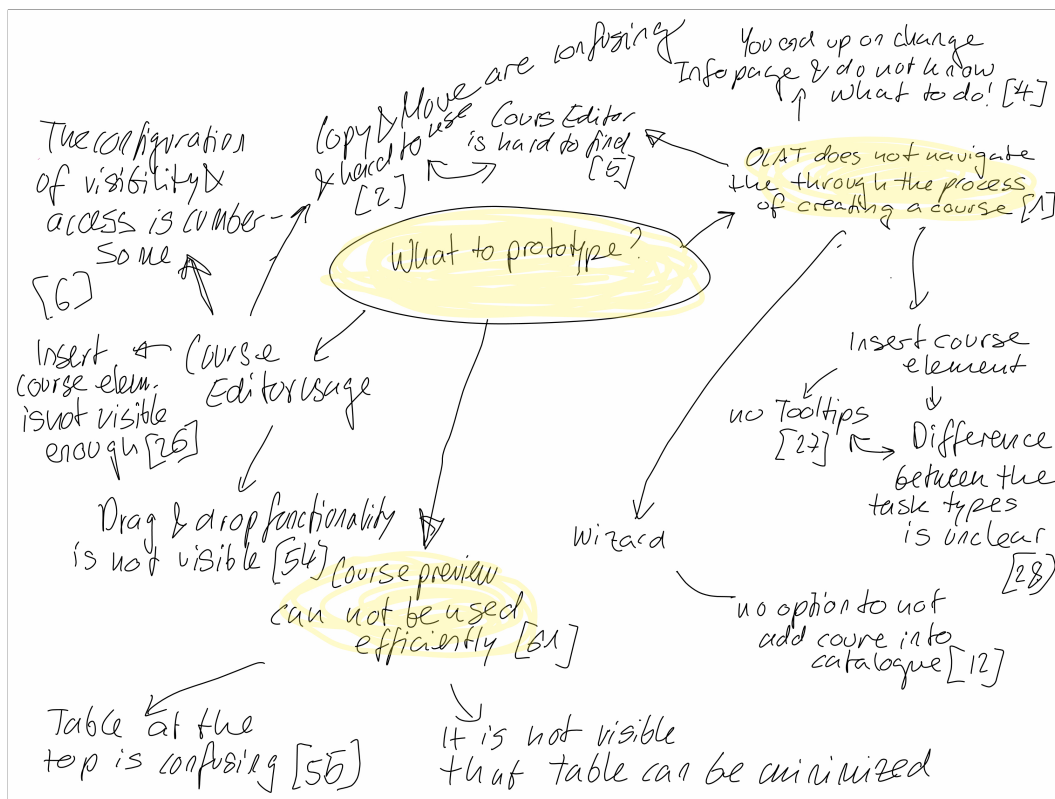


Figure 4.9: This mind-map was used to define the problems that should be analyzed.

We found that the problems could be divided into two not or only slightly connected problem areas:

- Creation and editing of a course
- Course preview

Creation and editing of a course The first and bigger group of problems covers the process of creating a new course and editing it. The following problems (figure 4.10) were included in this section.

Course preview The other problem area contains only problems that are related to the course preview (figure 4.11).

#	Problem	Reason	Severity	Ease of fixing
1	OLAT does not navigate the user through the process of creating and configuring a course.	After creating a course the user gets no help to find the next steps. The "Course Editor" is not visible right away. And when the "Course Editor" is found, no information is given on how to add new course elements. The two new buttons that appear on the "Course Editor" to create new course elements are not noticed at first, because of their grey colour and similar look to the other buttons.	3	2
2	The options "Move" and "Copy" of the "Modify course element" are confusing and hard to use.	It is difficult to understand where a course element will be placed. The place is marked, but it is still difficult to figure out, if it will be displayed at the right place. The user has to imagine how the order will look like after changing it. An other drawback is, that only one element can be copied or moved at a time, which makes the modification of several course elements very time consuming.	2	3
5	The "Course Editor" is hard to find.	There is no direct button to the "Course Editor". The user first needs to click on "Tools" to find the "Course Editor".	2	3
6	The configuration of the visibility and access of a course element is bothersome.	The same steps must be repeated for each course element, which needs a lot of time and clicks. It is not possible to speed up the process by copying or saving often used configurations.	2	2
12	On the second step of the course creating wizard, the user is advised to add the course to the catalogue and no option to not add the course to a catalogue is available.	If a place in the catalogue is clicked, the system does not allow to unselect the option. The only way to recover is to go one step back.	2	1
13	Order of the task sequence to create a course with the wizard, does not correspond to the mental model of the user.	The step "Enter course in catalogue" should come after the step "Publish course", because if you do not want to publish the course, there is no need to enter the course to a catalogue.	2	1
15	After creating the course (with the wizard or without) you end up on the "Change Infopage" and you do not know what to do.	The page has no title and asks the user to enter data about the course, but as a user it is difficult to figure out, where the entered data will be displayed, because no title is displayed and no additional information about the pages purpose are given. An other problem is, that it is not clear what to do next. When the user clicks on save, he stays on the same page and the "Course Editor" option is hidden as a sub element of the "Tools" button, which does not stand out much with his grey colour.	3	2
26	The "Insert course element" button is not visible enough.	After navigating to the Course Editor two new buttons appear on the upper left part of the functionality bar. This is not noticed right away, since the two buttons look the same as the others, they are rather small and in an unremarkable grey colour.	2	2
28	When inserting new course elements to the course, the terms "Task (submission workflow based)" and "Task (submission continuously)" and their differences are not clear for the user.	No additional information about their differences and intended use are given.	2	2
39	As soon as the short title is changed, it is not visible to which type of course element a course element belongs to.	The course element icons are an indicator for the type of course element, but since some types use the same icon, it becomes difficult to find out the exact type of a course element. The three task types for example all use the same icon.	2	3
54	It is not visible how a course element can be moved and added to a structure element.	The user might search an option in the configuration of the structure element, but there is none. One way to move and add course elements is hidden under the button "Modify course element". The easiest way to move a course element is to click on the element on the grey navigation bar at the left side of the screen and drag it to the intended place. But this functionality is not visible.	2	3

Figure 4.10: This table shows the problems that were selected to improve the creation and configuration of a course.

#	Problem	Reason	Severity	Ease of fixing
55	In the Course preview it is not obvious, that the table at the top shows the configuration and the part under the table the page view.	The two sections, table and preview of the course, are not clearly separated from each other. It can be irritating for the user, because he can mistake the configuration table as part of the course.	2	2
57	It is not visible, that the configuration table can be minimized, by clicking on the header.	The header of the table has no visual attribute that would signify to the user, that he can click on it or that the table can be minimized. You have to hover over the header to see, that he is clickable.	2	1
61	The Course preview can not be used efficiently.	Each time before seeing the course in the preview, the preview must be configured. It is not possible to save configurations, they must be entered anew, each time the preview is left. When configuring the course and wanting to see how the course looks like, the user has to switch forth and back from the course editor to the preview and he has to configure the preview anew each time he has used the course editor. On the course preview is no direct link to the course editor and when going back to the course editor, the user always lands on the first element of the course and needs several clicks to get back to the course element he was configuring.	3	3

Figure 4.11: This table shows the problems that were selected to course preview.

The problems which address the incorrect course display in the preview mode were not included in the prototype, because their solution is quite clear. All elements of a course should be visible and utilizable in the preview mode.

4.3.2 Prototyping and User Evaluation

For each of the two problem areas described in the section 4.3.1 “Selected Problems for Prototyping” prototypes were created and evaluated twice by a user. The first set of prototypes was evaluated by Romana Pernishová a Master student in computer science. She had never seen the authoring area of OLAT. The second set of prototypes was evaluated by Professor. Muñoz Hispanic lecturer at the University of Zurich who has been administering her courses for several years with OLAT.

The first set of prototypes were created and evaluated on paper to get some feedback. The second version of the prototypes was created with an interactive power-point presentation, where the evaluator could click himself through the tasks. Based on the feedback from Mrs. Muñoz the power-point presentation was adjusted, which led to the final prototype version that will be described in detail in the sections 4.3.3 “Course Creation and Editing” and 4.3.4

“Course Preview”

4.3.3 Course Creation and Editing

The problems described in section 4.3.1 “Selected Problems for Prototyping” were addressed in a larger prototype that covered the whole sequence of steps from the creation of a course to the addition and configuration of individual course elements. We decided to include all of these steps into one prototype, because our goal was to improve the following core problem:

“OLAT does not navigate the user through the process of creating and configuring a course.” (P1)

The task that the evaluator of the prototype had to perform was described in a way that induced the evaluator to explore each part of the user interface where problems had occurred before. With the evolution of the prototype, the task also changed.

The final prototype included the following steps:

1. Create a new course with the wizard
 - (a) Add all possible course elements to the course
 - (b) The course should not be public and it should not be found in the catalogue
2. Go to the editing tool of the course
3. Add a course element to the course
 - (a) Add a “Task” course element which is responsible for the uploading and correcting of one single
 - (b) assignment that should be solved in individual work
4. Configure the visibility of a course element

- (a) Check the visibility configuration of the newly created “Task” element
- (b) Go to the base course element (the top element of the course element list on the left)
- (c) Change the visibility of the base course element so that it is only visible after the 18.09.17
- (d) Go back to the “Task” element and check that it is also only visible after the 18.09.17

5. Use the Copy, Delete and Move features

- (a) Copy the “Task” element
- (b) Delete the Copy of the “Task” element that you just created

In the section below, each step will be illustrated with some screens and the changes that were made to solve the problems will be explained.

1. Create a new course with the wizard The user starts in the “Authoring” section and creates a new course (figure 4.12), by using the wizard (figure 4.13). Finding out how to create a course does not seem to be a problem and screens from the figure 4.12 and 4.13 were not changed at all.

In the wizard (figure 4.14 – 4.16), some changes were made to address the problem (P13): “Order of the task sequence to create a course with the wizard, does not correspond to the mental model of the user.”

First, the order of the steps was changed by displaying the “Publish course” section before the “Enter course in catalog” section (see figure 4.14), because it only makes sense to add a course to the course catalogue if the course will be published.

Not only was the order of the steps changed but also their appearance on the navigation bar. To highlight the current position in the sequence of steps better, the background and text colors were changed slightly (see figure 4.15).

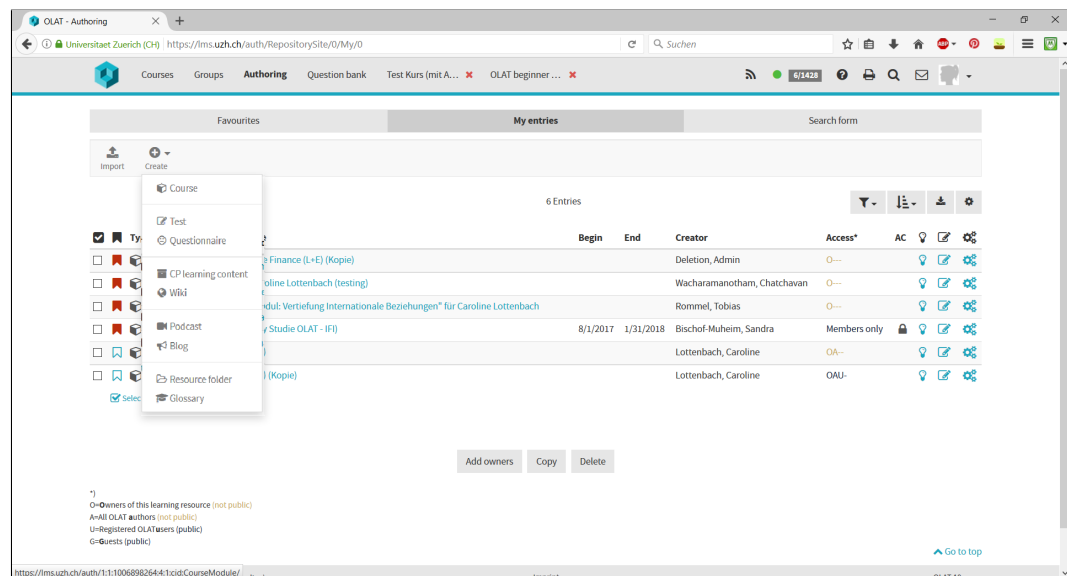


Figure 4.12: On this page the authoring area is displayed. On this page a new course can be created.

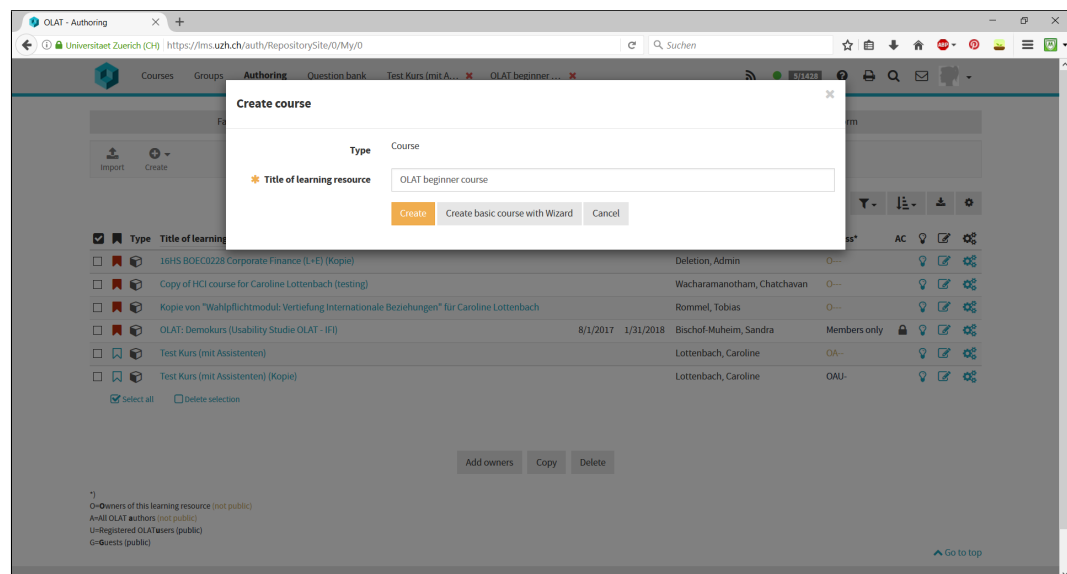


Figure 4.13: The course can either be created with the help of a wizard, or without.

To make the task more comprehensible and provide help for inexperienced users a drop-down box was added (see figure 4.14). The box displays a question which matches the actual step. Per default the box is minimized, but by clicking on it, the box will expand and show the answer to

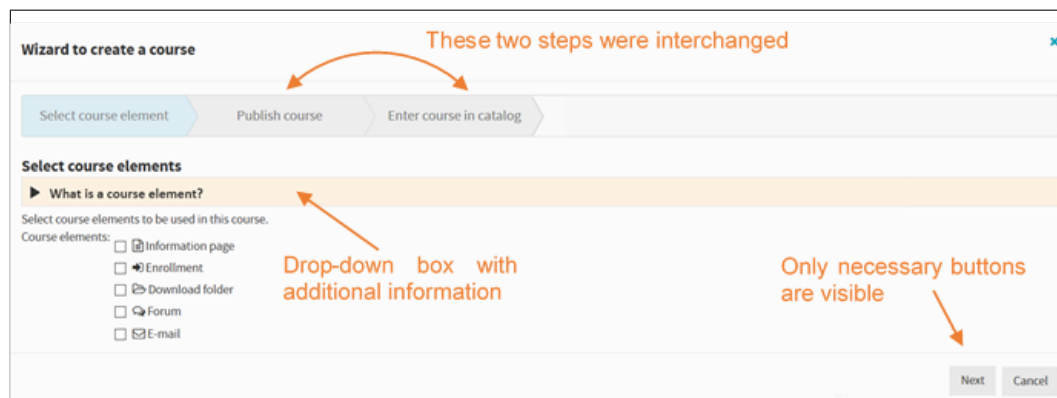


Figure 4.14: Changes that were made on the first page of the course creation wizard are shown.

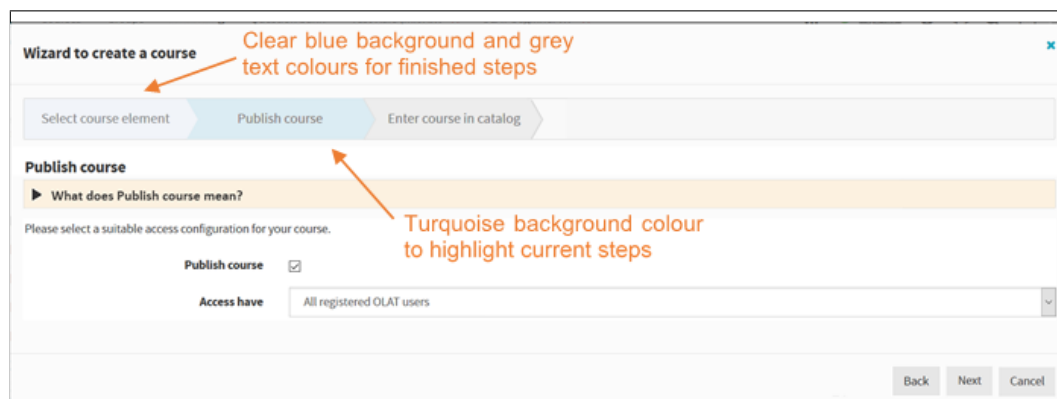


Figure 4.15: Different colors are used to underline the step sequence in the wizard.

the question. With the information provided in this box, the user should know what he/she has to do and which impact the provided options will have on the course. In the beginning, the color of the box was grey, similar to other drop-down boxes in OLAT, but during the evaluation of the second prototypes it was mentioned that the boxes were too inconspicuous. For this reason the color was changed to orange.

To simplify the navigation through the wizard, only the active and clickable buttons were displayed. For example, in the first step where you cannot go back, the "Back" button is no longer visible (figure 4.14) or if the sequence is not finished, the "Finish" button will not appear (figure 4.16).

Wizard to create a course

Select course element Publish course Enter course in catalog

Add entry to category

► Why should I add my course to the catalog?

Do you want to add this course to a catalog?

☐ Yes

☒ No

Option to not add the course to the catalogue

The catalogue is greyed out if the course should not be added

OLAT

► Universität Zürich

► PHSG

► Universität Basel

► Universität Luzern

► ETH Zürich

► Université de Fribourg - Universität Freiburg

"Finish" button only appears when the sequence is finished

Back Finish Cancel

Figure 4.16: The course must no longer be added to the course catalogue.

In the step “Enter course in catalogue” the following problem was found: “On the second (now third) step of the course creating wizard, the user is advised to add the course to the catalogue and no option to not add the course to a catalogue is available.” (P12)

To address this problem an option to not attach the course to the catalogue was added (figure 4.16). This was not possible before because as soon as the user clicked on a place in the catalogue, he could not deselect it. Therefore, to add a course to the catalogue the user would have to go one step back and then forward again to finish the task without adding the course to the catalogue.

2. Go to the editing tool of the course After finishing the creation of the course with the wizard, the user gets to a page that we call the “Change Infopage”. The page itself had no title, but we found this name in the path description.

In this section, we will address two problems that occurred during the heuristic evaluation and which are related to each other.

1. Problem: “After creating the course (with the wizard or without) you end up on the ‘Change Infopage’ and you do not know what to do.” (P15)
2. Problem: “The ‘Course Editor’ is hard to find.” (P5)

During the evaluation we struggled a lot with this page. The first problem as mentioned above was that we did not know what the use of this page was. The user can add a lot of data to the course without knowing where this information will be displayed. The second issue was that we didn’t know what to do next. On the “Change Infopage” no hints regarding the next step are provided (P5).

The first modification that was made was the insertion of a title and a short description of the purpose of this page (figure 4.17). We also added a new button at the end of the page which should lead directly to the course editor (figure 4.18) because during the evaluation with Miss Pernishová we decided that the button at the end of the page might not be enough. The “Change Infopage” is quite long (over 3 screens) and it is likely that not all users will scroll until the very end to find the button that navigates to the course editor.

This is the reason that a second “Course editor” button was added at the right corner of the feature bar (figure 4.17).

3. Add a course element to the course When a course is opened in the course editor and is ready to be configured, the first action a user normally has to perform is to add new course elements. In our example, some course elements were already created through the wizard, but we want to add a new “Task” element to publish assignments.

With this task, we tried to address the following problems:

- “The ‘Insert course element’ button is not visible enough.” (P26)
- “When inserting new course element to the course, the terms ‘Task (submission workflow based)’ and

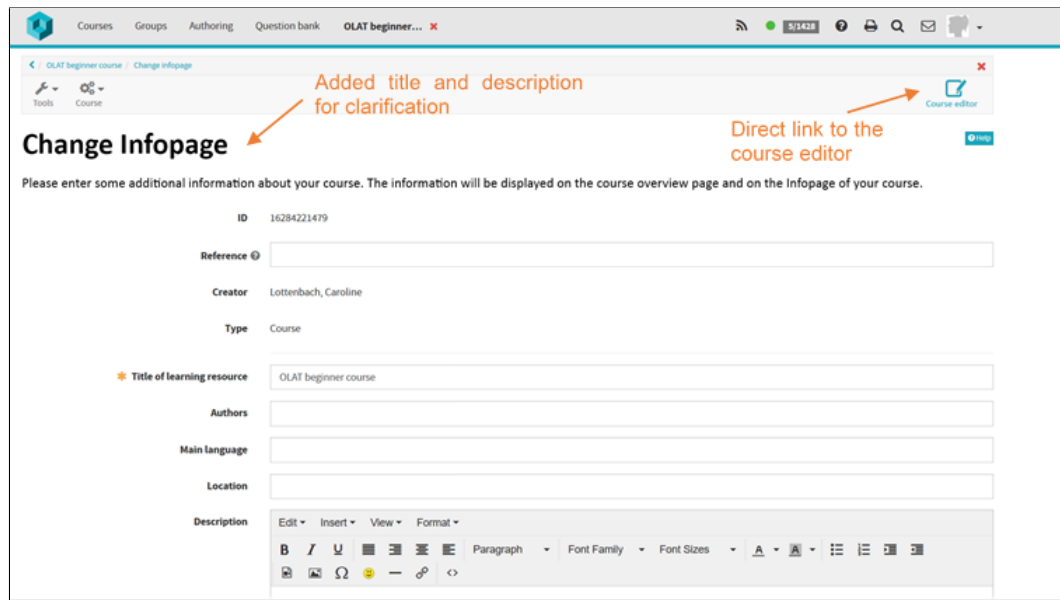


Figure 4.17: A page title and a short description should help the user to understand the purpose of this page.

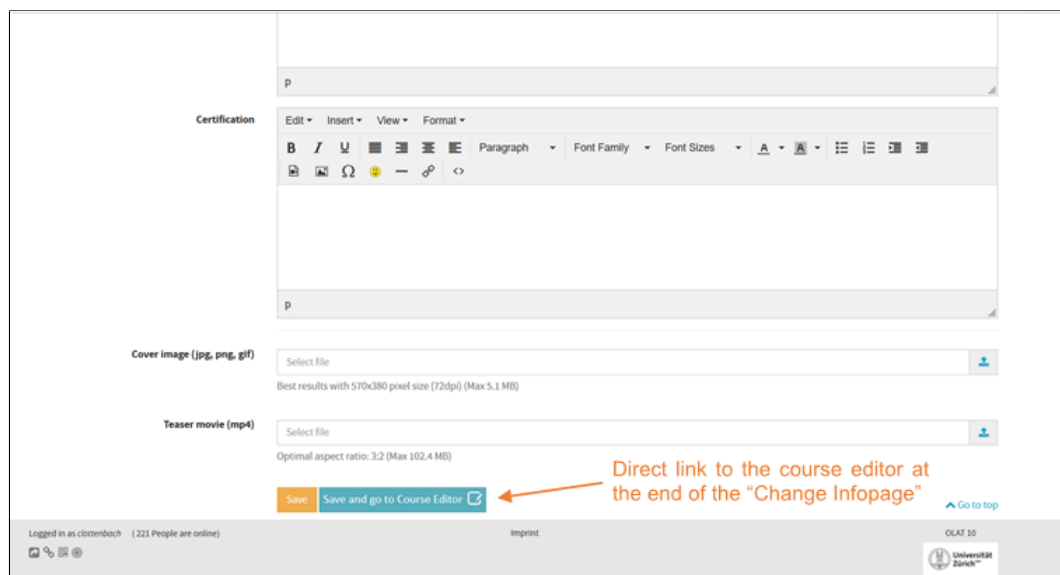


Figure 4.18: At the end of the page a button was included, which leads the user directly to the course editor

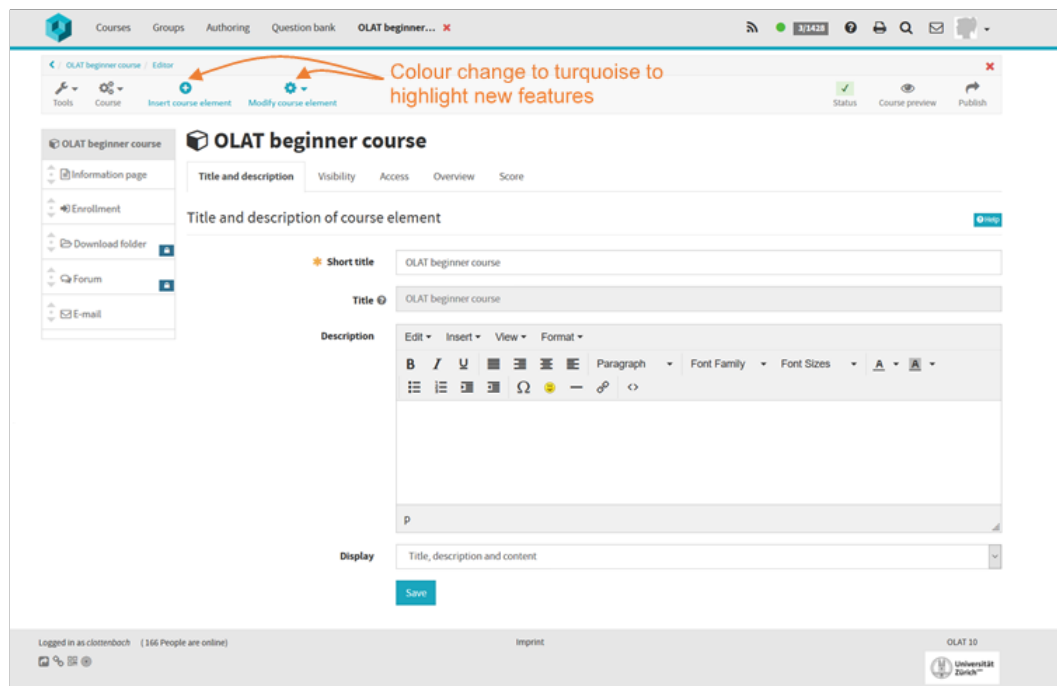


Figure 4.19: To make the appearance of the two button on the top more visible, the color was changed to a more eye-catching blue.

‘Task (submission continuously)’ and their differences are not clear for the user.” (P28)

The first change is that the two new features which appear to the left of the features bar when the course editor is opened are colored in turquoise. This coloring highlights their appearance (figure 4.19) and helps to understand what to do next.

By clicking on the “Insert course element” button a pop-up window opens with a huge choice of course elements that can be added to the course. To improve the step of picking a course element, tooltips were added (figure 4.20). In the prototype (see appendix section G “Content of the CD”), course tips only showed for the two different types of tasks with different kinds of submissions, but when this feature is implemented, every course element should display a tooltip with a short description of its functionalities.

The tooltip description of the two task course elements was

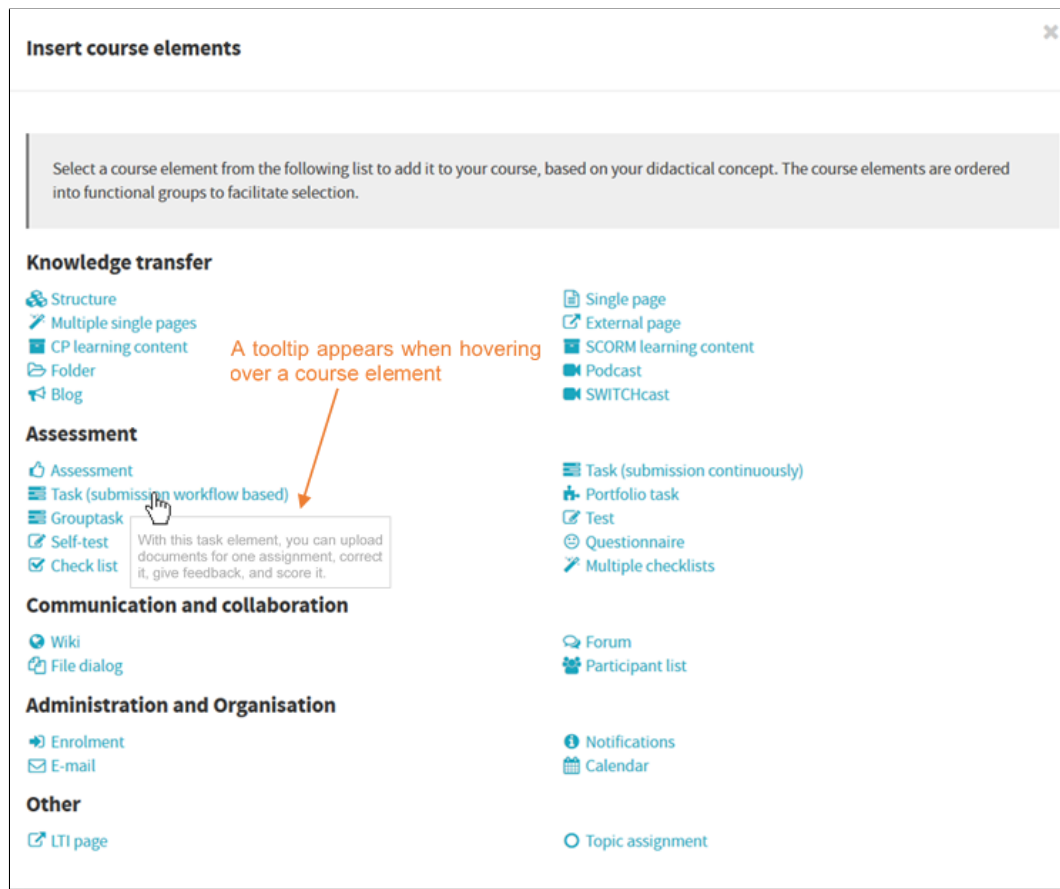


Figure 4.20: To simplify the choice on the "Insert course element" tooltips with a short description are provided.

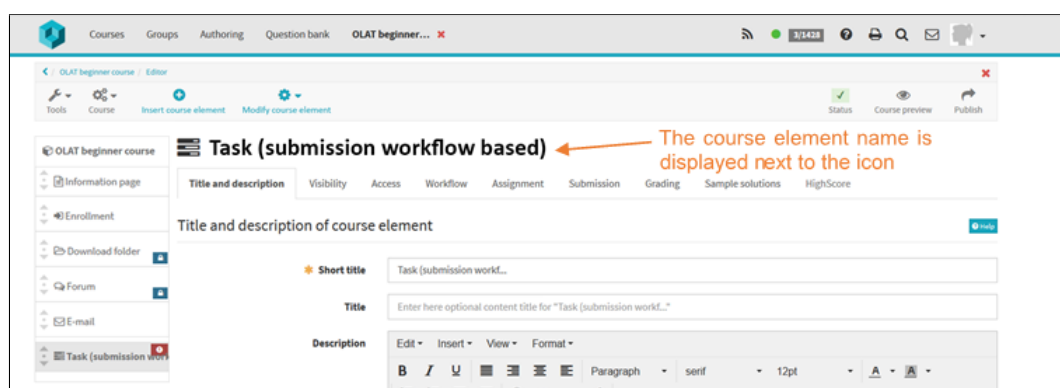


Figure 4.21: The name of the course element is displayed next to the icon and won't change through modifications on the title of the course element.

changed, subsequent to the feedback that their difference was not clear. The new description should be tested again, to see if the meaning is clearer now. Another problem that will be addressed in this section is.

- “As soon as the short title is changed, it is not visible to which type of course element a course element belongs to.” (P39)

This problem is not very severe, but it occurs quite often, and in special cases where the same icon is used for several course element types it can lead to confusion. We solved this problem by simply adding the title of the course element next to the icon (figure 4.21). The heading will not change when the title of the course element is edited.

4. Configure the visibility of a course element In this step, the visibility options of the newly created task course element should be configured. During the evaluation, we found that the configuration of the visibility and access options were very tiring, since we had to configure them for each course element. This is why the following problem was defined:

- “The configuration of the visibility and access of a course element is bothersome.” (P6)

It was only later in a discussion with the OLAT team that the author found out that the visibility and access restrictions of a parent element is inherited by all its sub elements. In the prototype, we tried to show that the configurations made in the root course element will also apply to every element that is added to the course. We did this by displaying the same configurations that were made in the root course element in all the sub elements. In addition, a short description of this behavior was included as well (figure 4.22 and 4.23).

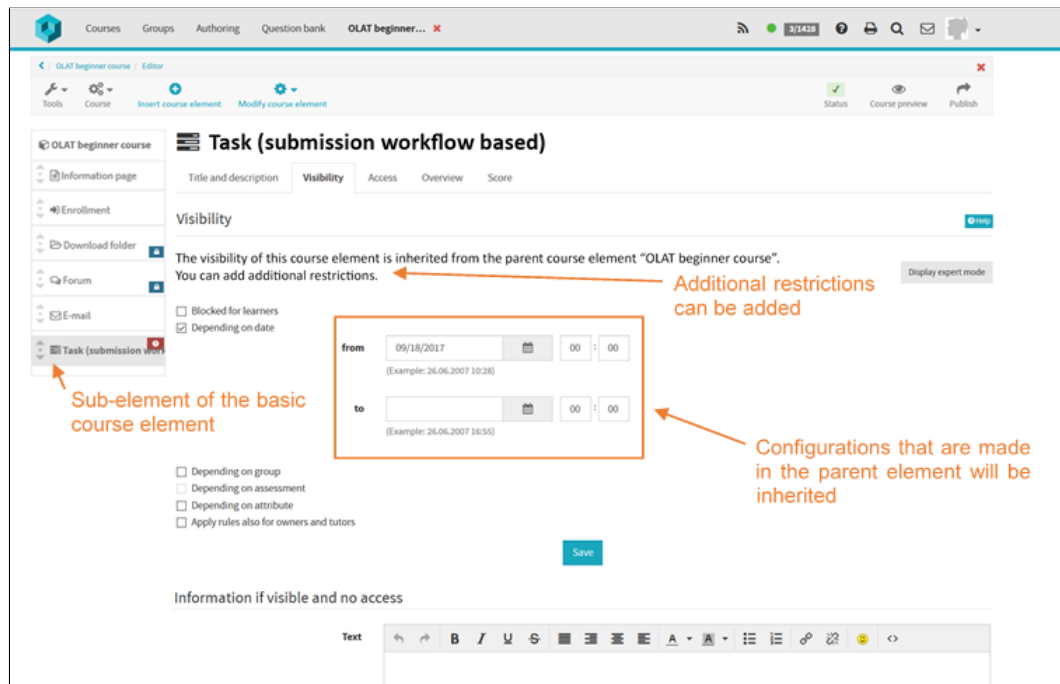


Figure 4.22: In OLAT 10 the inheritance of the visibility and access configuration was not visible. This problem was addressed through different changes in the user interface.

In the prototype, the inheritance was shown in the example of configuring the visibility of the task element. The user had to configure the visibility of the basic course element depending on the date (figure 4.22), which was then inherited in the visibility configuration of the task element (figure 4.23). Further restrictions of the visibility then can be added in the task element. For the access configuration of a course element the same approach should be used to show the inherited configurations.

5. Use the Copy, Delete and Move features The last step of this prototype was the improvement of the usage of the features copy, delete and move a course element. For this task the two following problems were addressed:

- “The options ‘Move’ and ‘Copy’ are confusing and hard to use.” (P2)

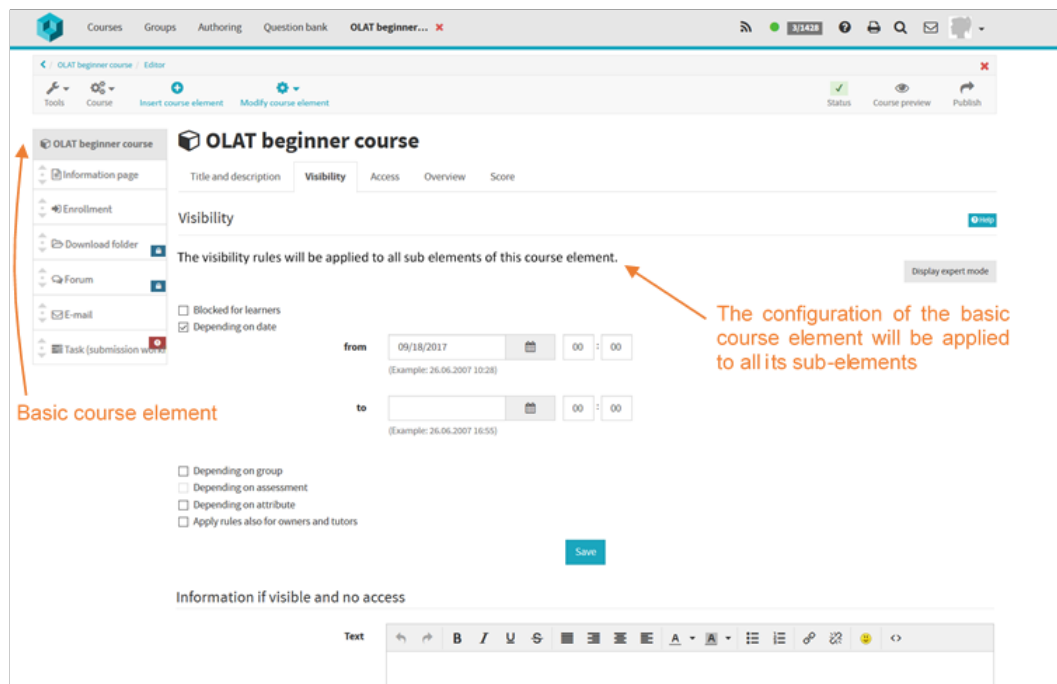


Figure 4.23: The changes visibility and access settings that were made in the parent course node, are also visible in the child course node.

- “It is not visible how a course element can be moved and added to a structure element.” (P54)

The three functions move, copy and delete are located under the “Modify course element” button in the feature bar. During the evaluation, we found that the functions “Move” and “Copy” were hard to use. When you clicked on them a pop-up window opened with which you had to define where the moved or copied elements should be displayed (figure 4.24). The tool is not very intuitive and it is difficult to guess if the course element will be added at the right position.

During the evaluation one evaluator found another way to change the order of the course element menu on the left side of the screen. Course elements can be moved by clicking on one and moving it with drag and drop. Course element positions can be changed through drag and drop and a course element can even be added as a sub-element to another element. This feature is very easy and intuitive to use.

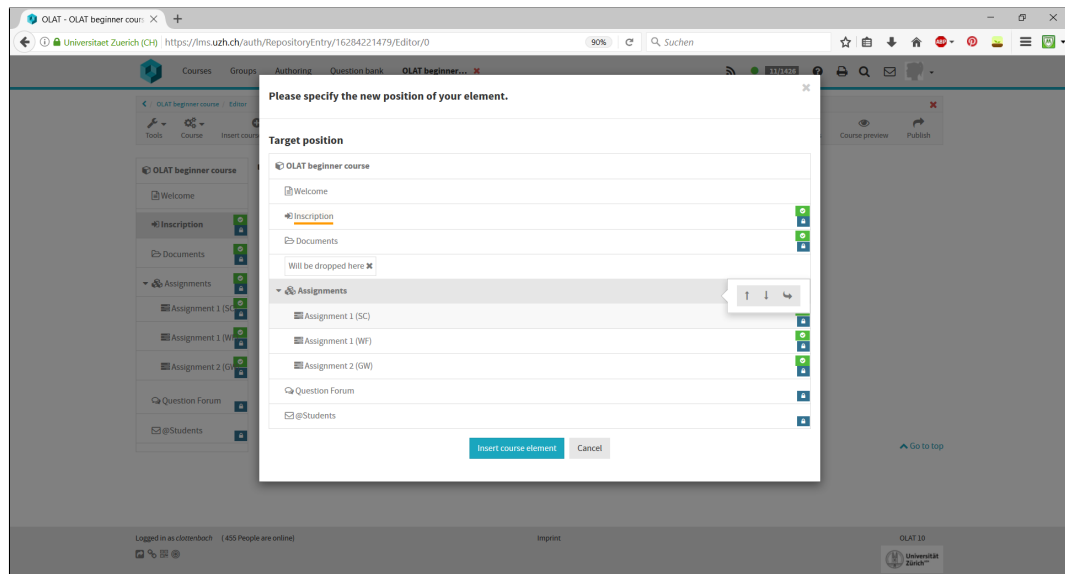


Figure 4.24: Moving and copying of course elements with the course modification tool is very cumbersome.

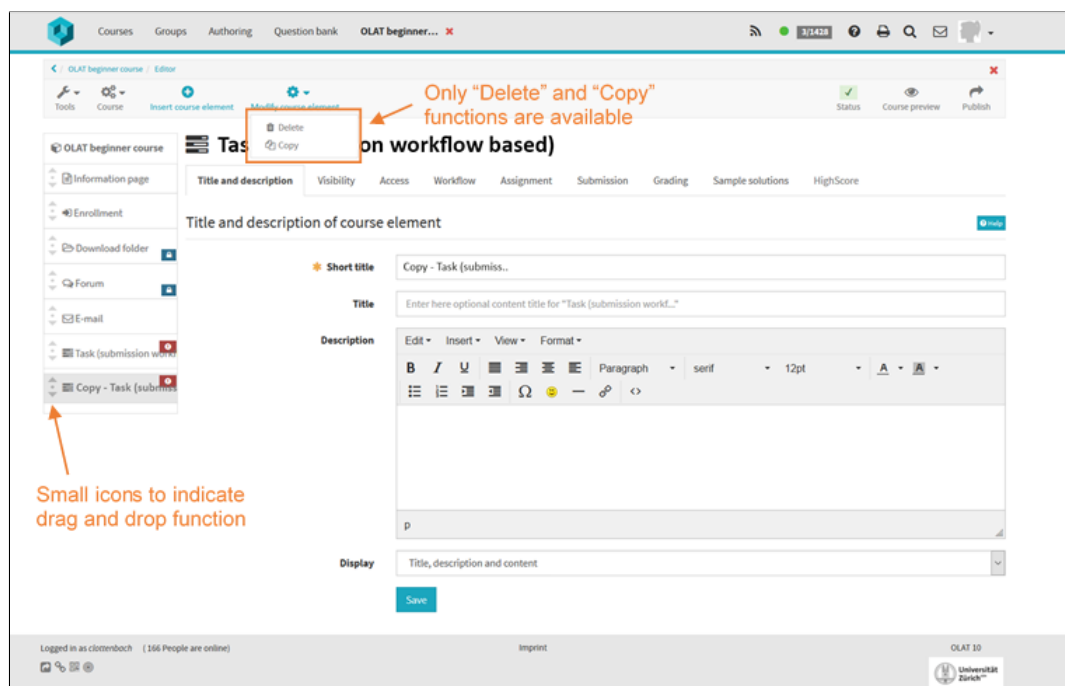


Figure 4.25: The move function of the course modification list was removed from the course overview page.

It works similar to many folder programs (for example the Explorer in Windows). The invisibility of this feature is its only problem.

We tried to visualize this drag and drop functionality by adding a small symbol with two arrows to each course element (figure 4.25). The icon is colored in a light grey so that the users won't perceive it as a regular button.

The symbol first looked like three horizontal bars with an arrow at the top and bottom to symbolize that it can be moved. In iOS systems, the three bars are often used to indicate a drag and drop function. However, during the evaluation of the second version of the prototype the three-bar symbol was mistaken as a menu button, therefore we changed it to a dot with two arrows pointing away from it at the top and the bottom. Because it is not necessary to have two different "Move" functions, the "Move" button from the "Modify course element" menu was removed (figure 4.25).

To make the copy function as simple as possible, the pop-up window (figure 4.25) was not used in the prototype. Instead the selected course element was simply copied and added at the end of the course element menu, if the user clicked on the "Copy" button. It could then be moved by drag and drop to the correct location.



First version of the drag and drop icon.



Improved version of the drag and drop icon.

4.3.4 Course Preview

Since the number of problems for this prototype was relatively small, we decided to prototype two different versions: one which addresses the problems in a way that stays close to the current OLAT version, and one prototype that does not consider any current constraint of OLAT.

The problems that will be addressed through these prototypes are the following:

- "The course preview can't be used efficiently." (P61)

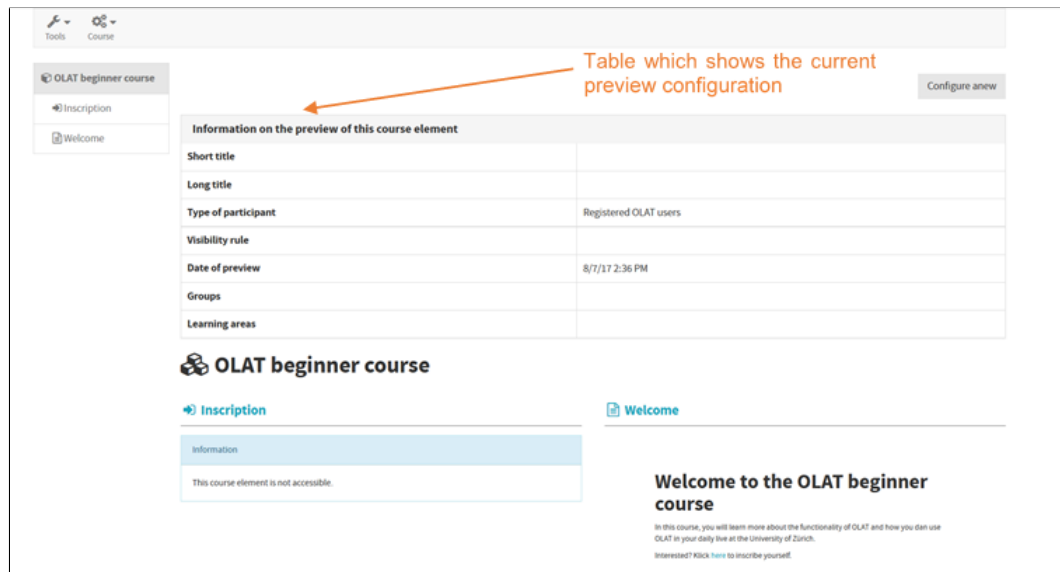


Figure 4.26: The course preview page of OLAT 10 has a large table at the beginning, which is quite irritating.

- “In the course preview it is not visible, that the table at the top shows the configuration and the part under it the page view.” (P55)
- “It is not visible, that the configuration table can be minimized, by clicking on the header.” (P57)

OLAT 10 can only be used in one browser window and it is not possible to have it open in two tabs at the same time. When we configured the course during the heuristic evaluation, we thus had to switch back and forth between the course editor and the preview, to check if the configurations were displayed correctly. Each time we went to the course preview, we had to choose the appropriate preview configurations (P61) to check if for example students could only see what they were allowed to.

Another confusing thing was the display of the course in the course preview. At the beginning of the page, a large table was displayed (figure 4.26. This table was quite irritating because it showed the chosen preview configurations that are not visible in the real course, and these took up way too much space (P55).

By coincidence we found out that the table with the preview configurations could be minimized by clicking on its header, but this was not evident at first (P57).

The main goal of the two prototypes is to provide a better and more efficient way of using the course preview. As mentioned in the previous section, the problem of the incorrectly displayed course elements or not working links will not be part of the prototypes. We will assume that the course is displayed correctly.

Both prototypes were designed so that the user could perform the same tasks:

1. Change from the course editor into the preview mode
2. Change the preview configuration
3. Go back to the course preview
4. Go to the course editor and change something
5. Go back to the course preview and check if the changes have been applied correctly

Both prototypes start in the course editor (figure 4.27), where the user must click on the “Course preview” button on the right side of the feature bar. In this screen, nothing was changed.

Prototype without any restrictions from OLAT The basic idea of this prototype is that by clicking on the “Course preview” button a new internet browser window will open in which the preview of the course will be displayed. This way the user will have two open browser windows. One for the course editor and one for the course preview. This allows the user to easily switch between the two views. If a change is made in the course editor the user simply needs to refresh (figure 4.28) the course preview to see the changes.

Another change in the course preview is that the configuration table per default is displayed in a minimized form with

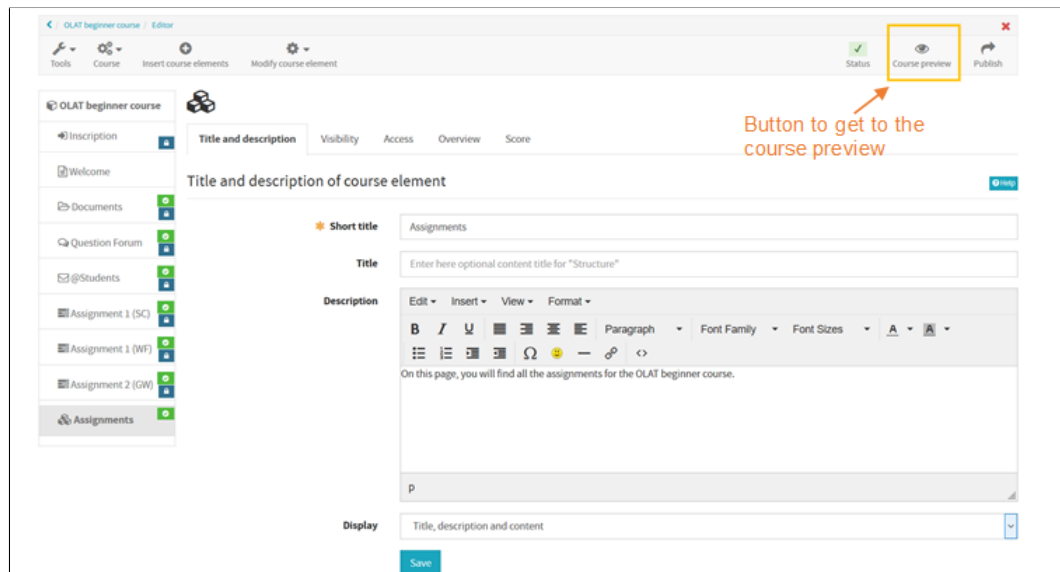


Figure 4.27: The course preview can be opened by clicking on the “Course preview” button.

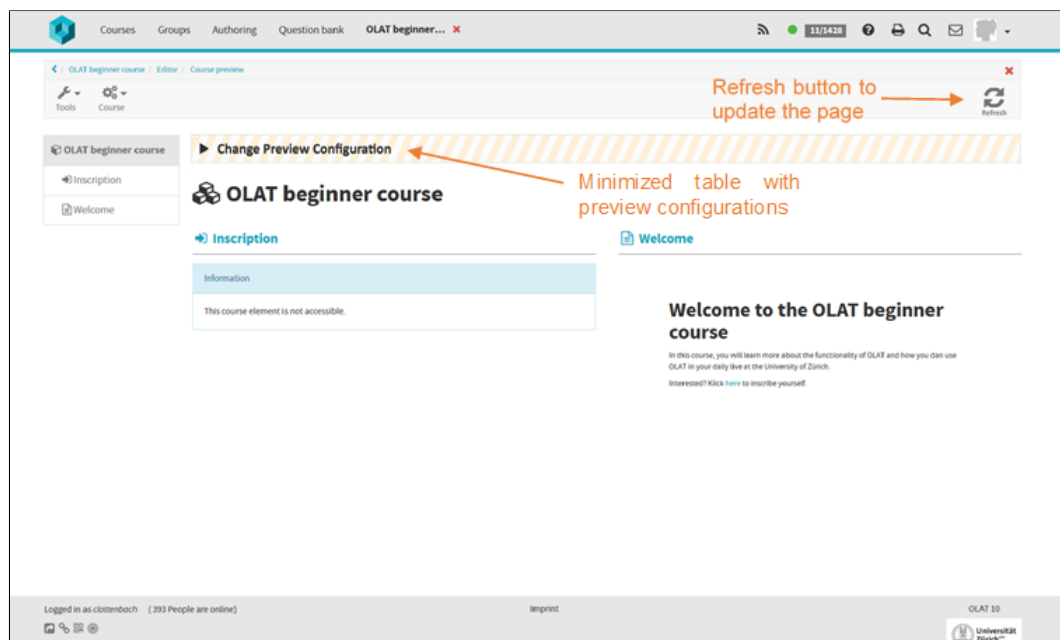


Figure 4.28: In this prototype version a new window will open after clicking on the “Course preview” button. With the refresh button the page can be reloaded.

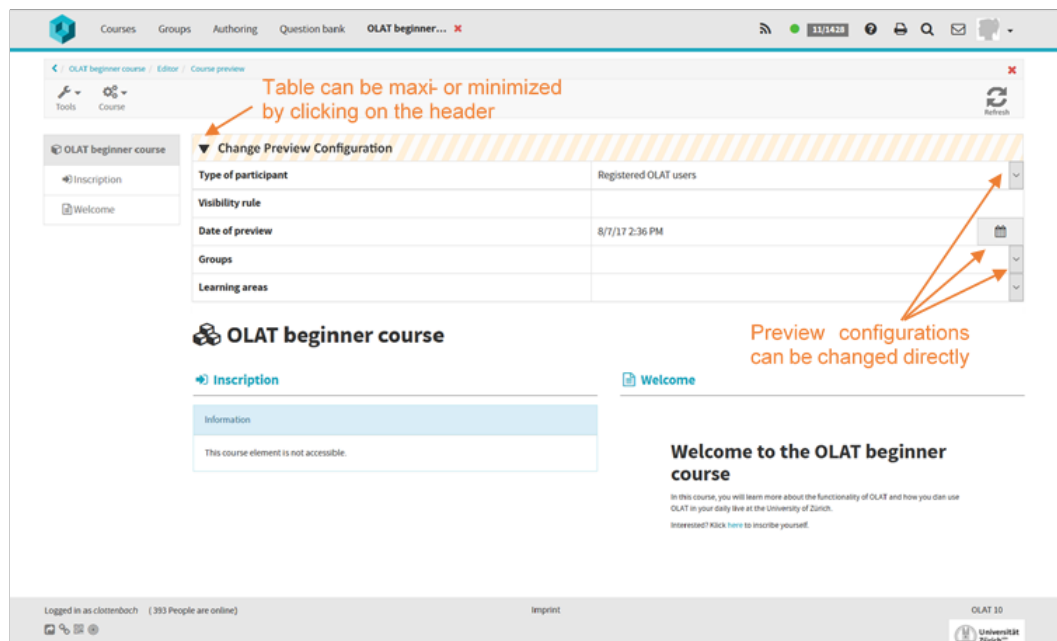


Figure 4.29: The configuration of the course preview can be directly changed in the table.

a newly added little arrow at the left side of the header to indicate that the bar is extensible. During prototype testing it was mentioned that the bar was not visible enough and that the color should be changed to underline that the bar is not part of the real course.

The configuration step of the preview was not included in this prototype, instead the configuration can be changed directly in the table that shows the current configurations (figure 4.29).

To make the bar more visible and indicate that configurations can be changed, the bar now has an orange striped background (figure 4.29) which is an association to the common yellow and black “under construction” band. This design is an adaption to some new design elements of the recently released OLAT 11 version.

Prototype with current restrictions from OLAT The second version of the course preview was designed closer to

Figure 4.30: In this more restricted prototype the user first first needs to configure the page preview, before the page is opened.

the capabilities of OLAT 10, which means that no additional tab or window will be used to improve the usability.

The task sequence also starts in the course editor. By clicking on the “Course preview” button for the first time, the user will be led to the configuration page of the course preview (figure 4.30). The configurations that the user saves on this page will be stored for any further visits of the course preview.

After finishing the configuration, the course preview will be opened. As in the previous prototype the configuration bar is shown in a minimized form. For better recognition the bar has an orange color (figure 26). Because we wanted to keep the design of this prototype as close to the original as possible, the table is only there to show the current preview configurations, but the configurations cannot be

changed within the table. That is why that the header has no stripes, because nothing can be changed within the table. Nevertheless, we kept the orange color to make the table noticeable.

To improve the navigation between the course preview and the editor a button was included that links the user directly to the course editor (4.31). When changing back and forth between the editor and the preview mode, the last state of each of the two views will be saved, so that the user will always get back to the same place from where he left off. For example, if the user was configuring the visibility of a course element in the course editor and goes to the preview to check the configuration, afterwards he will get back to the exact same place in the course editor from where he was before. The same principle applies to the course preview.

The configuration page of the course preview will only show up when the course preview is opened for the first time. Afterwards the configuration is saved and the user doesn't have to re-enter it. In case that the user would like to change the configuration later on, a "Change Configuration" button was added to the features bar (figure 4.31). With this button, the user will get to the same configuration page as when he first opened the course preview.

4.4 Summary

With this part of the thesis, we evaluated the course editor and the process of creating a course based on a defined set of heuristics. This heuristic evaluation was conducted by two evaluators and the result was a list of 65 usability problems.

The lack of guidance through the process of creating a course was one of the main problems. Other problem areas were the help provision which was not very useful, the use of unclear terms, inconsistent layout design throughout the system, and the invisibility of existing functionalities. The preview mode didn't display the courses correctly and couldn't be used efficiently. In addition, the course element

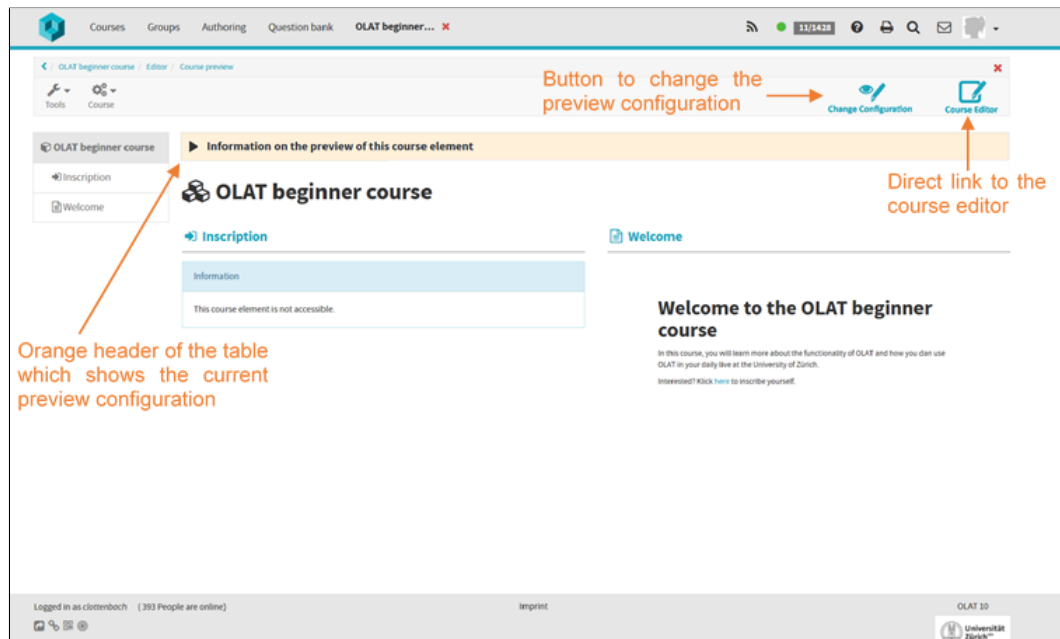


Figure 4.31: The initial configurations then will be saved. To change the configurations the “Change Configuration” button can be used.

type “Task (submission continuously)” seemed very hard to use and confusing.

If a solution for a problem was straight forward, we proposed a concrete solution (see appendix E “Problems found through the Heuristic Evaluation”). Two problem areas were addressed through prototyping. The first problem field contained the process of creating and editing a course and the second area was about the course preview. The Human-Centered Design Process was used to quickly find and evaluate possible solutions. Each prototype was first evaluated by a master student and in a second iteration evaluated by a lecturer. The findings were combined and resulted in the final prototype, three interactive PowerPoint presentations, discussed in the sections 4.3.3 “Course Creation and Editing” and 4.3.4 “Course Preview”.

Chapter 5

Finding out the Differences between the Task Elements

The course editor is the tool that is used to create a course. Each course is built out of different course elements which serve variable purposes. To create an assignment the user can choose from three different course element types. In this thesis we will refer to them as task elements.

From the feedback on the sounding board, we knew that lecturers were troubled when they had to choose one of the three available task elements. In this part of the thesis we try to dissolve the confusion that lecturers had when choosing a task element.

5.1 Methodology

Initially we thought that the problem that the lecturers had with the three different task elements was only to decide which task element they should use for what. To address this issue we wanted to interview lecturers from different faculties to understand the mental model which lecturers use to create their courses and assignments within OLAT.

Based on these findings we then wanted to prototype and test possible solutions.

As a basis for the interviews we first wanted to find out the differences of the three task element types and therefore analyzed their configurations and usage (see section 6.2). Afterwards we tried to arrange meetings with lecturers for an interview, and from there on we run into difficulties, which at the end prevented us from finding a solution for the problem that we initially defined. In the section 6.3 we will explain why it was more complex to find the solution to the problem with the three task element types than expected.

5.2 Analyzation of the three task types

Even though we did not find a solution for the problems that lecturers had, when creating a task element in the course overview, the insights from this work package will be described in this section.

In OLAT 10 the following task element types were available in the course editor:

1. Task (submission continuously)
2. Task (submission workflow based)
3. Group task

To detect the differences of this three task elements, we first scoured the OpenOLAT user manual (the official confluence page, which provides help for OLAT users) for any information concerning the task elements. After searching on different pages we had to learn that the different features and usages of the task elements were not described in the user manual. The only distinction that we found in the documentation of OLAT was the discrimination between a tasks that was intended to be solved individually (e.g. task submission continuously and workflow based) or tasks that were meant to be solved in a group work (e.g. group task).

In a second step the possible course element configurations of each task type were analyzed and compared with each other. The detailed list of similarities and differences is included in the appendix under the section XYZ. In general the Task (submission workflow based) and Grouptask elements were constructed very similarly. The only difference is an additional configuration in the “Workflow” tab of the Grouptask, where the task could be assigned to one or several groups. Furthermore we found that the configuration of the Task (submission continuously) differed a lot from the other two, but the functionalities that could be configured were basically the same.

To investigate the different workflows of the three task element types, we played through the whole process of assigning a task of each type to the students.

For each task type the steps that we played through were the following:

1. Creation and configuration of the task with the course editor (by the lecturer)
2. Selection of the task and download of the exercise (by the student)
3. Upload of the exercise solution (by the student)
4. Examination of the submitted exercise and grading (by the lecturer)
5. View the evaluation and possible feedback (by the student)

Using all three task element types, we did only realize that the user interface of the Task element with continuous submission looked different than the ones of the other two task types. From the set of available functionalities we did not find a big difference.

Based on those findings we initially thought that the tasks with continuous and workflow based submissions only optically differed from each other, but basically had the same

functionalities. Therefore we would have liked to suggest that the Task (submission continuously) element type would be eliminated, because its usability was inferior to the task element with a workflow based submission.

In a conversation with Mrs. Bischof-Muheim and Mr. Vilars we learned that the Task (submission continuously) course element at first wasn't contained in the release of OLAT 10. Apparently this task type was the original task element that existed in the previous OLAT version and that the two other task types (Grouptask and Task with workflow based submission) were intended to replace the old one. After the release of OLAT 10 several lecturers complained about the unavailability of the old task element and insisted on the reintroduction of this element type.

Luckily we were able to arrange an interview with Mrs. Muñoz a Hispanic lecturer which showed us the way that she worked with the old Task (submission continuously) element. Thanks to this interview, we found that per created course element of the Task (submission workflow based) type only one assignment could be uploaded and corrected. To publish several assignments in a course the lecturer would need to individually create and configure a Task (submission workflow based) element for each assignment. Contrary to this task type, one course element of the task type with continuous submission, could be used to upload and correct several exercises. We are not sure if the usage of this course element type was intended that way, but the lecturer is able to upload new assignments and corrections of solutions repeatedly and at any time.. One course element of the task type with continuous submission therefore is able to contain several assignments, while one course element of the task type with workflow based submission can only be used for one assignment. This is the only real difference that we found between this two course element types.

5.3 Reason that inhibited the finding of a solution

Originally we wanted to find out, with which mental models lecturers create a task in OLAT, so that we would be able to propose them the task type that they needed. Finding out the differences between the three task types took much more time than expected and when we finally knew, we didn't have enough time left to further investigate this issue.

It is possible that the three task types also differ in other ways from each other, which we weren't able to see with a single run-through. To really understand how lecturers use these task elements more interviews with lecturers would be needed. We found that it is not enough to simulate the creation of a task, the real properties and limitations of these task elements are only visible when used in real courses. Observing the challenges of managing the assignments of a course with several dozen of students probably leads to a better and more accurate understanding of the struggle that lecturers have.

5.4 Summary

The differences of the three task types were not obvious at the first glance. A lot of time was used to investigate the properties of these course elements, and in the end we weren't able to complete this part of the thesis, because the remaining time was too short.

In order to improve the usage of the task course elements, further investigations would be needed. At first the real problems that the lecturers have while using one or several of the course element types would have to be investigated. Therefrom the mental model of the lecturer could be explored by interviewing lecturers and observing their usage of the task course elements. The findings could then be used to define and evaluate possible solutions.

Chapter 6

Conclusion of the Whole Project

To conclude this documentation of the study about the usability of OLAT, the outcomes of this thesis will be summarized, the limitations of the chosen approaches will be described, and we will give an outlook for further steps that could be done.

6.1 Summary

With this study about the usability of OLAT we wanted to address three different problem areas: the course overview, that students disliked, the course editor that lecturers found difficult to use, and the three available task element types available in the course editor.

For the course overview we used a survey to find out what problems students had with this page. We found several problem areas which are possible causes of the bad rating in the previous OLAT 10 evaluation. The findings of this section should increase the understanding of the needs and struggles of the students so that the OLAT development team is able to address this issues in the next release.

Analyzing the course editor through heuristic evaluation, we found a lot of bigger and smaller usability problems. With the prototypes we propose a concrete solution to a subset of the problems that we found.

Since the conduction of the survey, the heuristic evaluation, and the prototyping were quite time consuming, we couldn't finish the analysis of the third problem. We found out how the three task element types differ from each other, but we couldn't investigate how different lecturers used these course element, and how their usage could be improved.

Nevertheless, we think that our analysis of the survey responses is useful to understand the needs of the students. These insights are a starting position for future improvements of the course overview, and probably improve the general understanding of the students, that developers of OLAT have. The detailed list of usability problems is also a big contribution to future improvement of OLAT. Additionally, the prototypes represent a tested reference point which can be used for the implementation of possible solutions.

6.2 Limitations

A possible factor that could limit the validity of the results from the survey about the usability of the course overview, is the limited number of students that filled out the survey. 79 responses from around 25'000 students [Fuchs et al., 2016] are not a very representative. We also used a non-probabilistic sampling strategy to distribute our survey, which biases the properties of our target population to Facebook users who were part of certain groups in which the survey was published. The interpretation of the responses of the survey aimed to give an overview about the answers of the students rather than to analyze them in a statistically valid manner. The findings should therefore be seen as an indication of possible usability problems and not as engraved in stone.

Nielson suggested that between three to five evaluators

should be involved in a heuristic evaluation. The usability problems that were found in the course editor are based on the findings of only two evaluators. It is therefore possible that some usability problems were missed during the evaluation and the risk of having false problems (problems that aren't real usability problems in the reality) included in our findings is higher.

6.3 Critical Reflection

Looking back at the very beginning of this thesis, we realize how little we knew about the OLAT system. As a student the author used OLAT on a daily basis, but never realized how complex and powerful this system is.

Planning and managing this project was a big challenge for us. We especially underestimated the amount of time that was needed to write all our findings down and arrange them in a logical way. If we could restart this project from the start, we would schedule a fixed amount of time per week to write down the progress and findings of the thesis. This process helps to think things through and possible discrepancies in the reasoning can be discovered earlier. It is possible that we would have done certain things differently if we had started writing earlier.

For the problem with the three task types, we might should have started interviewing lecturers instead of trying to find out the differences of the three task types on our own. We could also have asked the OLAT team for additional information about the course types and as well as about the exact problem that we should investigate.

All in all, we certainly learned a lot and hope that our findings will contribute to the improvements of OLAT.

6.4 Outlook

This thesis includes all our findings and represents a basis for possible improvements of OLAT. The OLAT development team of the University of Zurich supported this thesis in many ways and therefore are very interested in the outcomes. To really have an impact on the usability of OLAT the proposed solutions first need to be implemented.

With the “Course Overview” and the “Course Editor” we have analyzed only a part of the whole OLAT system. One way to pursue the improvement of the course editor would be to analyze the course element types that were not included in this thesis. Mrs. Muñoz for example stated that she had a lot of trouble using the “Wiki”, the “Test”, and “Self-test” course elements. The different course element could also be analyzed from the user point of view. In our thesis we only looked at the configuration of the available course elements but didn’t check if they were intuitive to use as a student.

During the interviews as well as in the responses from the survey it was also mentioned that the searching functionality to find courses doesn’t lead to good results. This could be a more technical subject to investigate. Another issue that was mentioned by the students was that the way that lecturers configured their courses had a big impact on the usability of the course. Finding the features that define a good course and combining this findings into set of guidelines for the lecturers could also be a topic for further research.

The findings that we presented in this thesis are one of many steps that contribute to the continuous improvement of the OLAT system.

Appendix A

Findings from data re-analysis of the OLAT usability survey

The survey was conducted by the OLAT development team between 23rd December 2016 and the 18th of February 2017.

The majority of the users (58% satisfied, 19% very satisfied) are happy with the use of OLAT. And a similar number thinks, that OLAT is useful by the completion of a work task. [1] From the categorized free text comments, it is visible, a little bit more than 30% of the people gave a positive feedback about the clear arrangement of the web site, in contrast 15% gave a negative comment about the clarity of the web page. The category of the usability has almost an equal number of positive (12%) and negative (10%) comments. The fact that the comments for the course overview where majorly negative (10%) and only a few positive (2%) indicates, that there might be some usability problems. Apart from that some participants (3%) mentioned that the dashboard is missing.

To know get deeper insight, I analysed the original answers from the survey. I first noted all the a. The results are listed below. (The number in the brackets at the end of each decla-

ration indicates how often this statement was mentioned.)

Elements displayed on the course overview

- The display of old courses is disturbing/irritating. (20)
- Enrolled courses should be displayed automatically. (13)
- Only the current courses should be displayed. (10)
- Old, out-dated courses should be deleted. (6)
- The access to old courses is good/helpful. (6)
- You should be able to fade out old courses. (3)
- The freshest courses should be displayed at the top. (2)
- Some courses are listed twice. Each course should only appear once. (2)
- Students should be able to define the order of the courses themselves. (2)
- Terminated courses should be displayed at a separate location. (1)
- Only attended courses should be displayed. (1)
- The sorting of the courses in the course overview is not good. (1)

Starting page

- The home page of the old OLAT version is missing. (5)
- The starting page should be the course overview. (4)
- After log-in to OLAT you should always get to the same starting page. (2)

- The starting page should be customizable. (2)
- Students should be able to define if they want to open the starting page or if they want to open the last visited course after logging in to OLAT. (1)

Favourites

- Favourites are helpful. (16)
- Marking courses as favourites is cumbersome/annoying. (2)
- Favourites of courses and groups should be displayed on the same page. (2)
- Students should also be able to mark sub-folders as a favourite. (1)
- Marking favourite courses is too easy. (1)

Other usability issues

- The course overview of OLAT 10 is more confusing than the previous OLAT version (OLAT live). (23)
- Finding lectures/modules is cumbersome. (8)
- The representation of OLAT 10 is clear/clearer. (6)
- The difference between groups and courses is unclear. (4)
- Too many clicks are used to get to a specific page/course. (4)
- Information to the offered lectures are not clear (e.g. course names start with a number). (3)
- The filter options in the course overview are not good/helpful. (2)
- The information to the lectures (e.g. room, course name, ...) are helpful/good. (1)

- The operation of the system is not intuitive. (1)
- The function of the button “Start course” is not clear. (1)
- The button “Start course” is unnecessary. The course should automatically open if he is clicked. (1)
- It is not clear which are the current and the out-dated courses. (1)
- Current modules should always be visible and clickable (without visiting to the course overview). (1)
- When visiting the course overview, the main courses should be displayed first and not the favourites. (1)

Appendix B

Survey about Usability of Course Overview

OLAT usability survey

This survey is for ALL students of the University of Zurich.

My name is Caroline Lottenbachl. am working on my bachelor's thesis to improve the usability of OLAT at the University of Zurich. This survey aims to find problems and possible solutions associated with the course view of OLAT 10.

The survey will take approximately 10 minutes to complete.

As a small thank you, we will raffle off 1x 25.- CHF and 2x 10.- CHF gift cards for Migros or Coop among all the participants who handed in a complete survey.

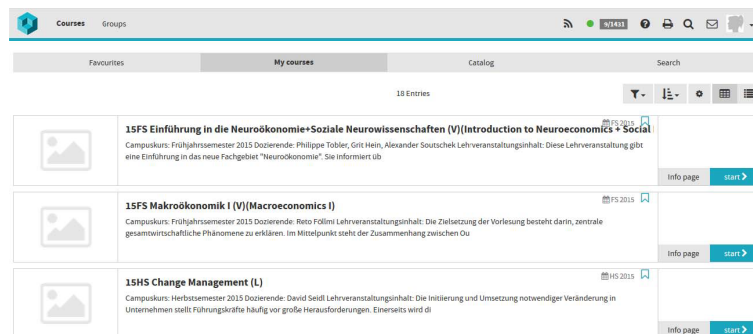
Your answers will be treated confidential. Comments and results will only be published anonymously.

[Die deutsche Version finden Sie unter folgendem Link:
<https://goo.gl/forms/rXzaNaBiyko75pp1>]

* Erforderlich

OLAT 10 Use

In September 2016 the University of Zurich switched to OLAT version 10 as shown in the example in the screenshot below.



1. Have you ever worked with OLAT 10? *

Markieren Sie nur ein Oval.

- ☐ Yes
☐ No *Nach der letzten Frage in diesem Abschnitt weiter mit "Premature end"*
☐ Don't know *Nach der letzten Frage in diesem Abschnitt weiter mit "Premature end"*

Figure B.1: Page 1 of the survey

2. How often did you use OLAT during the lecture period of the last spring semester (2017)? *

Markieren Sie nur ein Oval.

- ☐ Daily
☐ Several times per week
☐ Several times per month
☐ Less frequent
☐ Never
☐ Don't know

3. Last spring semester (2017), how often did you use "courses" from the following semesters? *

Markieren Sie nur ein Oval pro Zeile.

	always	often	sometimes	seldom	never	don't know
Spring semester 2017 (current semester)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Autumn semester 2016 (previous semester)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spring semester 2016 (previous semester)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Autumn semester 2015 (previous semester)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

About the Course View

Below you'll see a picture of the Course View as a reference.

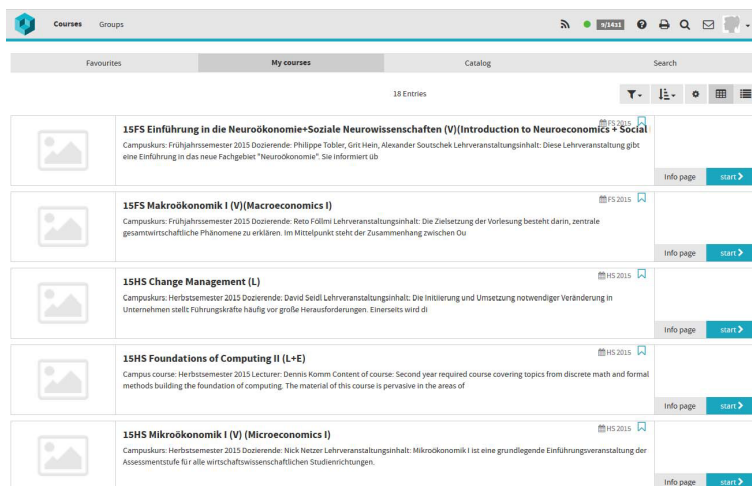


Figure B.2: Page 2 of the survey

4. Please state how strong you agree with the following statements:

Markieren Sie nur ein Oval pro Zeile.

	strongly agree	agree	neutral	disagree	strongly disagree	don't know
After logging in to OLAT, I would always like to get directly to my most recently used course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Under "My courses" I only want to see courses from the current semester.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The colour scheme of OLAT is pleasing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like, that under "My courses" I can access courses from previous semesters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After logging in to OLAT, I would always like to get directly to the Course View.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course view is clear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course view is attractive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Do you have any other comments on the Course View?

Favourites

6. Do you know that it is possible to mark a course as a "Favourite" in the course view of OLAT?

Markieren Sie nur ein Oval.

- ☐ Yes
☐ No

7. Marking courses as a favourites on the course view of OLAT is...

Choose one of the following statements to complete the sentence.

Markieren Sie nur ein Oval.

- ☐ very easy
☐ easy
☐ difficult
☐ very difficult
☐ don't know

Figure B.3: Page 3 of the survey

8. Do you use the "Favourite" function to access your courses?

Markieren Sie nur ein Oval.

- ☐ Yes
☐ No
☐ Don't know

9. If "Yes", which courses do you mark as favourites?

Markieren Sie nur ein Oval.

- ☐ Only courses from the current semester
☐ Courses from various semesters
☐ None
☐ Don't know
☐ Sonstiges: _____

Course Information

10. Which information about the courses would you like to see directly on the course view of OLAT?

Please rate how important the following information about a courses are to you:

Markieren Sie nur ein Oval pro Zeile.

	very important	important	neutral	less important	unimportant	don't know
Image corresponding to the course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Passed / Not passed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Semester	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Day and time of the lecture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Course name	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Favourites (Bookmark) marking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start and end date of the course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Course description	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Current course / Completed course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exam date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lecturer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Are there any other information about the courses which you would like to see directly on the course view?

Figure B.4: Page 4 of the survey

Functions of the Course View

12. Do you know the function of the following button in the Course View?



Markieren Sie nur ein Oval.

- ☐ Yes
☐ No

13. If "Yes", please name or briefly describe the function:

14. Do you know the function of the following button in the Course View?



Markieren Sie nur ein Oval.

- ☐ Yes
☐ No

15. If "Yes", please name or briefly describe the function:

16. Do you know the function of the following button in the Course View?



Markieren Sie nur ein Oval.

- ☐ Yes
☐ No

Figure B.5: Page 5 of the survey

17. If "Yes", please name or briefly describe the function:

18. Do you know the function of the following button in the Course View?



Markieren Sie nur ein Oval.

- ☐ Yes
- ☐ No

19. If "Yes", please name or briefly describe the function:

20. Do you know the function of the following button in the Course View?



Markieren Sie nur ein Oval.

- ☐ Yes
- ☐ No

21. If "Yes", please name or briefly describe the function:

Navigation to individual Courses

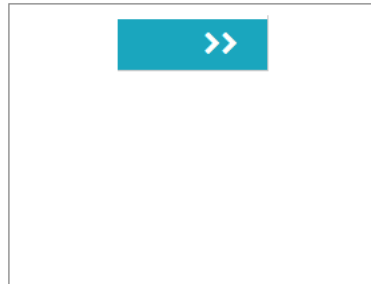
Below you'll see a course how it is displayed in OLAT. In the right bottom corner there is a turquoise button with which you can open the course.



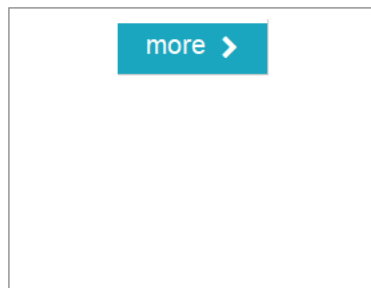
Figure B.6: Page 6 of the survey

22. Which label indicates the best that you will get to the course by clicking on it?

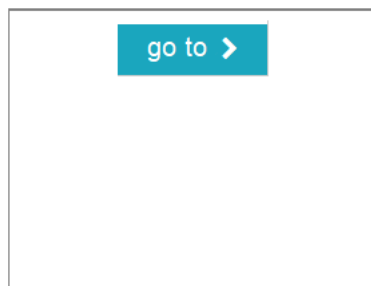
Markieren Sie nur ein Oval.



☐ Option 1



☐ Option 2



☐ Option 3

Figure B.7: Page 7 of the survey

☐ Option 4

☐ Option 5

☐ Don't know

Info page

On the right-hand side of each course is a grey button labelled "Info page" (marked red in the image).

Please answer the questions about the "Info page".

	15FS Makroökonomik I (VI)(Macroeconomics I) <small>Campuskurs: Frühjahrsemester 2015 Dozierende: Reto Föllmi Lehrveranstaltungsinhalt: Die Zielsetzung der Vorlesung besteht darin, zentrale gesamtwirtschaftliche Phänomene zu erklären. Im Mittelpunkt steht der Zusammenhang zwischen Gu</small>	<div> <input type="button" value="Info page"/> <input type="button" value="start >"/> </div>
---	---	---

Figure B.8: Page 8 of the survey

23. **During the lecture period of last spring semester (2017), how often did you use the Info page of a course?**

Markieren Sie nur ein Oval.

- ☐ Daily
☐ Several times per week
☐ Several times per month
☐ Less frequent
☐ Never
☐ Don't know

24. **If you use the the Info page of a course, when and why do you visit this page?**

General

25. **Since when are you matriculated at the University of Zürich? ***

Semester:

Markieren Sie nur ein Oval.

- ☐ Spring semester
☐ Autumn semester

Figure B.9: Page 9 of the survey

26. *

Year:

Markieren Sie nur ein Oval.

- ☐ 2017
☐ 2016
☐ 2015
☐ 2014
☐ 2013
☐ 2012
☐ 2011
☐ 2010
☐ 2009
☐ 2008
☐ 2007
☐ 2006
☐ 2005
☐ 2004
☐ 2003
☐ 2002
☐ 2001
☐ 2000
☐ before 2000

27. In which study degree were you inscribed last spring semester (2017)? *

Markieren Sie nur ein Oval.

- ☐ Bachelor
☐ Master
☐ Doctorate
☐ Sonstiges: _____

28. Which faculty does your major belong to? *

Markieren Sie nur ein Oval.

- ☐ Faculty of Arts and Social Sciences
☐ Faculty of Business, Economics and Informatics
☐ Faculty of Law
☐ Faculty of Medicine
☐ Faculty of Science
☐ Faculty of Theology
☐ Vetsuisse Faculty
☐ Sonstiges: _____

Closing question**Figure B.10:** Page 10 of the survey

29. Do you have any other comments about OLAT 10 or the Course View?

Thank you very much for filling out this survey.



Your contribution is a valuable part of the improvement of OLAT.

30. If you wish to learn more about the results of this study, I'd be happy to keep you posted. Please enter your email address below:

Raffle of the gift cards

You can now participate in the raffle.

The prizes are 1x 25.- CHF or 2x 10.- CHF Migros or Coop gift cards.

The prizes will be raffled at the beginning of September.

Figure B.11: Page 11 of the survey

31. Which gift card do you prefer?

Markieren Sie nur ein Oval.

☐ Migros

☐ Coop

32. Please enter your e-mail address below to participate in the lottery:

Ausfüllen dieses Formulars beenden

Premature end

Unfortunately you are not part of the target audience of this survey. Because you couldn't complete the whole survey, you are not allowed to take part in the raffle.

Nonetheless, thank you for your time and participation in this survey.

Bereitgestellt von
 Google Forms

Figure B.12: Page 12 of the survey

Appendix C

Collection of Heuristics

Conceptual Design Heuristics	10 Heuristics; Nielsen	The eight golden Rules of Interface Design	General Principles	113 Design Guidelines for Homepage Usability	Ten Web Guidelines
Source Interactive System Design; Newmann, Lamming	https://www.nngroup.com/articles/ten-usability-heuristics/	Design the User Interface; Sneiderman, Plasant	The Essential Guide to User Interface Design; Galtz	https://www.nngroup.com/articles/113-design-guidelines-homepage-usability/	Usability for the Web; Brinck, Gergle, Wood
1	Promote the development of both novice and expert mental models	Flexibility and efficiency of use Accelerator – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.	Cater to universal usability Recognize the needs of diverse users and design for plasticity, facilitating transformation of content. Novice to expert differences, age ranges, disabilities, and technological diversity each enrich the spectrum of requirements that guides design. Adding features for novices, such as explanations, and features for experts, such as shortcuts and faster pacing, can enrich the interface design and improve perceived system quality.	Flexibility A system must be sensitive to the differing needs of its users, enabling a level and type of performance based upon users knowledge and skills, users experiences, users personal preferences, users habits, and the conditions at that moment.	Tools and Task Shortcuts 53. Offer users direct access to high-priority tasks on the homepage.
2	User control and freedom Users often choose system functions by mistake and will need a clearly marked emergency exit to leave the unwanted state without having to go through an extended dialog. Support undo and redo.	Permit easy reversal of actions As much as possible, actions should be reversible. This feature relieves anxiety since the user knows that errors can be undone, and encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data-entry task, or a complete group of actions, such as entry of a name-address block.	Recovery A system should permit commands or actions to be abolished or reversed and immediate return to a certain point if difficulties arise. Ensure that users never lose their work as a result of an error on their part, hardware, software, or communication problems		
3	Help users recognize, diagnose, and recover from errors Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.	Prevent errors As much as possible, design the system such that users cannot make serious errors. If a user makes an error, the interface should detect the error and offer simple, constructive, and specific instructions for recovery. Erroneous actions should leave the system state unchanged, or the interface should give instructions about restoring the state.	Forgiveness Tolerate and forgive common and unavoidable human errors; Prevent errors from occurring whenever possible. Protect against possible catastrophic errors. Provide constructive messages when an error does occur.	Error handling In transactional systems especially, does the system prevent the user from entering inappropriate values? Are bad values detected as early as possible? Is error recovery quick and efficient, guiding the user through problem resolution as easily as possible? When users cannot completely resolve a problem (e.g., they don't have a login account or they don't have their credit card), are they able to participate to the maximum extent possible and complete their activities at a later time when the current problems are no longer a factor?	
	Error prevention Even better than good error messages, is a careful design that prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.		Safety Protect the user from making mistakes provide visual cues, reminders, list of choices, and other aids either automatically or upon request.		

Figure C.1: The list of heuristics with their description

4	Consistency and standards Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.	Strive for consistency Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent colour, layout, capitalization, fonts, and so on should be employed throughout. Exceptions, such as required confirmation of the delete command or no echoing of passwords, should be comprehensible and limited in number.	Consistency and standards A system should look, act, and operate the same throughout. Similar components should have a similar look, have similar uses, and operate similarly. The same action should always yield the same result. The function of elements should not change. The position of standard elements should not change.	Content Writing 20. Use consistent capitalization and other style standards.	Consistency and contrast Similar things should be similar. Different things should be obviously different. Every variation in the design should be deliberate and meaningful. Does the site have internal consistency within the page and between pages? Does it have external consistency with web standards and conventions? Does it have a consistent style and message with the organization's print materials and actual work practices?
6	Visibility of the system status The system should keep users informed about what is going on, through appropriate feedback within reasonable time	Offer informative feedback For every user action, there should be system feedback. For frequent and minor actions, the response can be modest, whereas for infrequent and major actions, the response should be more substantial. Visual presentation of the objects of interest provides a convenient environment for showing changes explicitly.	Visibility A system's status and methods of use must be clearly visible. Improve visibility through hierarchical organization and context sensitivity		
7	Aesthetic and minimalist design Dialogs should not contain information that is irrelevant or rarely needed. Every extra unit of information in a dialog competes with the relevant units of information and diminishes their relative visibility.		Responsiveness The system must rapidly respond to the user's requests. Provide immediate acknowledgment for all user actions: visual, textual, and auditory		Simplicity Is everything presented in the simplest, most straightforward way? Is the language simple and direct? Are icons helpful or obscure? Is the site trying to look like more than it is? Follow the principle of minimalism: if anything can be removed, remove it.
				Graphic Design 63. Limit font styles and other text formatting, such as sizes, colours, and so forth on the page because over-designed text can actually detract from the meaning of the words. 64. Use high-contrast text and background colours so that the type is as legible as possible. 65. Avoid horizontal scrolling at 1024x768. 66. The most critical page elements should be visible "above the fold" (in the first screen of content, without scrolling) at the most prevalent window size. 67. Use a liquid layout so the homepage size adjusts to different screen resolutions. 68. Use logos judiciously.	

Figure C.2: The list of heuristics with their description

10	When there is a choice, have the least surprising thing to happen to the user			<p>Obviousness</p> <p>A system should be easily learned and understood. A user should know the following: what to look at, what it is, what to do, when to do it, where to do it, why to do it, and how to do it. The flow of actions, responses, visual presentations, and information should be in a sensible order that is easy to recollect and place in context.</p> <p>Predictability</p> <p>The user should be able to anticipate the natural progression of each task. Provide distinct and recognizable screen elements and provide cues to the result of an action to be performed. Do not bundle or combine actions. All expectations should be fulfilled uniformly and completely.</p>	<p>UI Widgets</p> <p>69. Never use widgets for parts of the screen that you don't want people to click. Make sure widgets are clickable.</p> <p>70. Avoid using multiple text entry boxes on the homepage, especially in the upper part of the page where people tend to look for the search feature.</p> <p>71. Use dropdown menus sparingly, especially if the items in them are not self-explanatory.</p>	
11		<p>Recognition rather than recall</p> <p>Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialog to another. Instructions for use of the system should be visible or easily retrievable wherever appropriate.</p>	<p>Reduce short-term memory load</p> <p>Humans' limited capacity for information processing in short-term memory requires that designers avoid interfaces in which users must remember information from one screen and then use that information on another screen. It means that cell phones should not require reentry of phone numbers, web-site locations should remain visible, multiple-page displays should be consolidated, and sufficient training time should be allotted for complex sequenced of actions.</p>			

Figure C.4: The list of heuristics with their description

Appendix D

User Task for Heuristic Evaluation

User Task for Heuristic Evaluation

As a prospective OLAT expert, I would like to offer an OLAT beginner course in the next fall semester.

1. Create a new course for the next fall semester 2017 with the name *"OLAT beginner course"*.
2. Use the course editor to add new course elements to the course and configure them so that the needs, which are described below, are met.
3. Publish the course, so that he is visible to "Owners and other OLAT authors", but make sure, that the course is not added to a catalogue.

Note: If something is not specified in the description, then this property does not have to be fulfilled.

Requirements for the OLAT beginner course

Inscription to the course

Participants which want to attend the course should be able to inscribe themselves into the course. The enrolment should be open only at the beginning of the semester from the 18th of September until the 10th of October. During this period participants are also allowed to delist themselves from the list, if they changed their mind and do no longer want to attend the *"OLAT beginner course"*.

When people click on the inscription page, they should see the page title *"Inscription"*, a short description of the course and the list, in which they can inscribe themselves. A possible description would be: *"If you want to attend the "OLAT beginner course" and learn more about the usage of OLAT, then inscribe yourself into the course participants list."*

The enrolment should be open to all OLAT members, but each member should be allowed to inscribe himself only once to the course. All the inscribed participants should be part of the *"Members of OLAT beginner course"* group.

Welcome Page

I want to have an entrance page, which is called *"Welcome"* and displays the most important information about the course. The page should be visible and accessible for all OLAT members and should look similar to this:

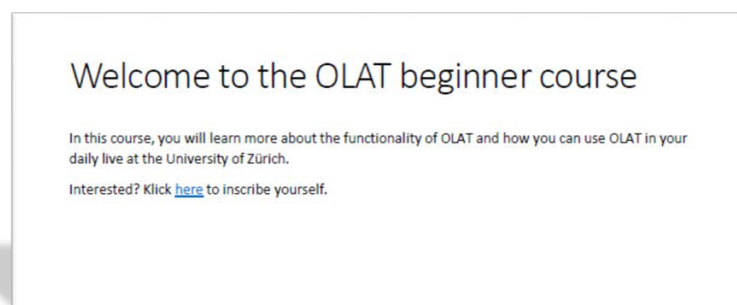


Abbildung 1: See OLATCourse_WelcomePage.pdf

Figure D.1: User Task for Heuristic Evaluation

There should be a title, a short description of the course and a link, to the inscription page. The layout of the page should be optimized for OLAT and use the standard configurations.

Downloadable Course Documents

I want to have a page, where participants can download all the course documents. The documents should be visible only for inscribed participants. The documents should be downloadable, but learners aren't allowed to upload own documents.

The title of the page should be *"Documents of OLAT beginner course"* and when people click on it, they should see a short description of the content in addition to the title and the documents which can be downloaded. A possible description would be: *"On this page you can download all the documents used in the OLAT beginner course."*

You will find the documents, that should be available and downloadable for the participants, in the *"Documents for download"* folder.

Exchange and Question Platform

I would like to have a platform where students can ask questions about the course. The title should be *"Question Forum"* and as a short description the following text should be displayed: *"This is the question forum. If you have any questions regarding the 'OLAT beginner course' pose them here and we will try to answer them."*

The platform should only be visible for inscribed student of the *"OLAT beginner course"*. Participants should be able to read and write comments on to the platform, but the moderation of the discussions should not be permitted. Only lecturers, teaching assistants and tutors should be able to moderate discussions.

Students are only allowed to post under their real name and guests are not permitted to post comments.

Information via E-Mail

I would like to have a function to easily send e-mails to all participants of the course. The title should be *"@Students"* and the displayed description should be *"This function is only for lecturers and tutors. On this page, you can easily send an e-mail to all participants of the 'OLAT beginner course'."*

The e-mail function should not be visible to students. When I or a tutor wants to send an e-mail, the subject should start with *"OLAT beginner course – Subject of the message"* and the recipients should only be inscribed students of the *"Members of OLAT beginner course"* list.

Assignments

For the last part of my OLAT course, I would like to publish two assignments.

Individual Work Assignment

The first assignment will be solved individually. Its title should be *"Assignment 1 – individual work"* and the description is *"This is the first assignment. Each student has to solve it individually. The deadline for the assignment is the 2nd of October 2017 at 23:59."*

The Title and the description should be displayed on the assignment page.

Figure D.2: User Task for Heuristic Evaluation

The first assignment should only be visible and accessible to participants inscribed in the “Members of the OLAT beginner course” group.

The task assignment “*Assignment01_individualWork.pdf*” should be published on the 18th of September 2017 at 10:00 o’clock. The submission of the solutions should be open to the students until the 2nd of October 2017 at 23:59 o’clock.

The task should automatically be assigned to all participants of the course. And if the students submit a solution, they should receive a confirmation per mail.

I want to be able to grade the submissions, but a sample solution will not be available. The grading will be done with passed or failed. The tutors will grade the students and give them a feedback about their submission.

Group Work Assignment

The second assignment needs to be solved as a group. Its title should be “*Assignment 2 – group work*” and the description for it would be “*This is the second assignment. You will need to inscribe yourself in one of the four groups and solve the task together with your group members. The deadline of the assignment is the 16th of October at 23:59 o’clock.*”

The Title and the description should be displayed on the assignment page.

The second assignment should only be visible and accessible to participants inscribed in the “Members of the OLAT beginner course” group.

The task assignment “*Assignment02_groupWork.pdf*” should be published on the 3rd of October 2017 at 10:00 o’clock. The submission of the solutions should be open to the students until the 16th of October 2017 at 23:59 o’clock.

In total, there will be 4 groups, Group 01, Group 02, Group 03, and Group 04, from which participants can choose. All the groups will have the same task “*Assignment02_groupWork.pdf*” assigned, but students can look at the groups and assignments before selecting one.

Only lecturers should be able to upload a task assignment.

Solutions are only accepted as PDF files, the number of submitted documents is not limited.

After receiving the submissions, I want to rate their work with passed or failed and add a comment about their work.

Grouping Assignments together

Since the two assignments belong together, I would like to group them under the name “Assignments” together. Additionally to the title and the two assignments, this description should also appear on the page: “*On this page, you will find all the assignments for the OLAT beginner course.*”

As before the “Assignments” should only be visible to inscribed participants of the course. There is no need for additional access restrictions.

I would like to have an overview with two columns in which the assignments are displayed.

Figure D.3: User Task for Heuristic Evaluation

Final Structure

The finished course should have the following structure:

OLAT beginner course

- ☐ Welcome
- ☐ Inscription
- ☐ Documents
- ☐ Assignments
 - Assignment 1
 - Assignment 2
- ☐ Question Forum
- ☐ @Students

Figure D.4: User Task for Heuristic Evaluation

Appendix E

Problems found through the Heuristic Evaluation

#	Location	Problem	Reason	Proposal for solution	Screen	Severity	Ease of fixing	Heuristic Number	Broad heuristic
1	General	OLAT does not navigate the user through the process of creating and configuring a course.	After creating a course the user gets no help to find the next steps. The "Course Editor" is not visible right away. And when the "Course Editor" is found, no information is given on how to add new course elements. The two new buttons that appear on the "Course Editor" to create new course elements are not noticed at first, because of their grey colour and similar look to the other buttons.	-		3	2	#6	Clear task flow
2	General	The options "Move" and "Copy" of the "Modify course element" are confusing and hard to use.	It is difficult to understand where a course element will be placed. The place is marked, but it is still difficult to figure out, if it will be displayed at the right place. The user has to imagine how the order will look like after changing it. An other drawback is, that only one element can be copied or moved at a time, which makes the modification of several course elements very time consuming.	-	15.00.00_MCE, 15.00.01_MCE, 15.00.02_MCE	2	3	#3, #6, #10	Visibility of the system status, Clear task flow, Flexibility and efficiency of use
3	General	Course elements can be sub-elements of any other course element type.	Since a special structure element is available, this option does not make a lot of sense to me. When course elements can be sub-elements of any other course element the course can get very chaotic and loose its overview.	Don't allow Course elements not be sub-elements except the structure element.	12.06.0_STR	2	2	#4	Obviousness and predictability
4	General	It is possible to log out from OLAT without saving the changes that were done in the course editor.	No warning message appears when you Log-out from OLAT without saving. You are logged out immediately and all the unsaved changes are lost.	Display warning message before logging out of OLAT, when changes are not changed.		3	1	#8, #9	Allow recovery, Error handling
5	General	The "Course Editor" is hard to find.	There is no direct button to the "Course Editor". The user first needs to click on "Tools" to find the "Course Editor".	-	02.00.0_CV	2	3	#5	Ease of navigation
6	General	The configuration of the visibility and access of a course element is bothersome.	The same steps must be repeated for each course element, which needs a lot of time and clicks. It is not possible to speed up the process by copying or saving often used configurations.	-	03.00.1_CE, 03.00.2_CE	2	2	#10	Flexibility and efficiency of use
7	General	Clicking on "help" rarely leads to needed information.	The description on the confluence page that opens when help is clicked is often too superficial too help with a concrete question. Also the chapters that the help function relates to are too rough. A user does not want to read a lot of text to find an answer to a simple question.	-		2	2	#7	Reduce short-term memory load
8	General	OLAT does not behave the same on different browsers.	For example when entering the date it behaves different on Firefox and Chrome.	-		1	0	#1	Consistency and standards
9	Creating a course	When creating a course, the difference of the buttons "Create" and "Create basic course with wizard" is not clear. (Especially in the German version.)	Because the term "basic course" and the difference to a regular course is not known. The term wizard assumes that the user will receive help while configuring the course, but the steps are rather a shortcut for expert users to create the basic structure of a course faster.	Show a tooltip when hovering over the buttons, which describes their functionality.	00.02.0_CC	1	1	#4	Obviousness and predictability
10	Wizard to create a course	On the window that appears when you want to add a course to the catalogue, the triangle that is located left from an expandable catalogue entry, is not	The colour change when hovering over the triangle and the similar look to the windows explorer, where folders can be expanded by clicking on the arrow indicates that the triangle should be part of the button and clickable.	Make the triangle clickable, so that the dialog expands when clicking on it.	00.02.4_CC	1	1	#1, #4	Consistency and standards, Obviousness and predictability
11	Wizard to create a course	When a sequence of steps is displayed, for example when using the wizard to create a course, the current place in the step.	The use of colours is confusing. The turquoise font from finished steps stands out more than the clear blue background which indicated the current step.	-	00.02.4_CC	1	1	#3, #6	Visibility of the system status, Clear task flow
12	Wizard to create a course	On the second step of the course creating wizard, the user is advised to add the course to the catalogue and no	If a place in the catalogue is clicked, the system does not allow to unselect the option. The only way to recover is to go one step back.	-	0.02.4_CC	2	1	#8	Allow recovery
13	Wizard to create a course	Order of the task sequence to create a course with the wizard, does not correspond to the mental model of the	The step "Enter course in catalogue" should come after the step "Publish course", because if you do not want to publish the course, there is no need to enter the course to a catalogue.	-	00.02.7_CC	2	1	#6	Clear task flow

Figure E.1: Problems found through the Heuristic Evaluation

14 General	The term "All registered OLAT users" is ambiguous.	The term "All registered OLAT users" could be interpreted as all user of OLAT regardless of their status, or as only registered OLAT users. The first definition then would correspond to the second access option "Registered OLAT users and guests".	Change the name to "Registered OLAT users".	00.02.8_CC, 14.02.1_PUB	1	1	#4	Obviousness and predictability
15 Change Infopage	After creating the course (with the wizard or without) you end up on the "Change Infopage" and you do not know what to do.	The page has no title and asks the user to enter data about the course, but as a user it is difficult to figure out, where the entered data will be displayed, because no title is displayed and no additional information about the pages purpose are given. An other problem is, that it is not clear what to do next. When the user clicks on save, he stays on the same page and the "Course Editor" option is hidden as a sub element of the "Tools" button, which does not stand out much with his grey colour.	-	01.00.1_IP	3	2	#4, #6	Obviousness and predictability, Clear task flow
16 Change Infopage	The short and long text boxes are not treated the same way.	For example: The short text box gets highlighted with a blue frame when selected, while the long text box does not. And the cursor of the short text box has some space between the frame, while the cursor in the long text box does start at the border of the frame.	-	01.00.2_IP	1	1	#1	Consistency and standards
17 Change Infopage	The "Change Infopage" has no title.	The user does not know where he is and what this page is used for.	Add a title to the "Change Infopage"	01.00.1_IP	2	1	#1	Consistency and standards
18 Change Infopage	The default value for the semester in the change infopage is by default the latest option (in a year). It is not always visible when hidden options appear.	It is easy to make a mistake if you are looking to create a course for the next semester, since the notations is the same (autumn/spring semester) but with an other year.	Set the default value to the current semester.	01.00.2_IP	1	1	#9	Error handling
19 CE: Hidden Options		New options that appear when selecting a special option are not always recognized right away, because they just look like normal options and have no additional visual indicator. For example, on the "Change Infopage" when selecting "Semester" for the "Execution Period" the dropdown menu "Semester" appears and easily can be overlooked.	Highlight the appearance of new options. For example with a blue frame around the option, which pops up with the option and then fades away.	01.00.2_IP	2	1	#3	Visibility of the system status
20 CE: Hidden Options	The visibility of options that are not clickable without selecting a special option first, is not implemented consistent.	In most cases, the additional options are hidden until they are used. Sometimes this is not the case and the options appear with all the others and are even selectable. Only when saving an error message appears, which is cumbersome.	Only display options that are selectable, hide all the other options and let them appear only when they can be selected.	04.04.2_ENR, 04.04._ENR	2	1	#1, #2	Consistency and standards, Simplicity
21 Saving	When changing something and undo the change, the page will still ask you to save the changes, even though the save the changes, even though the	This can be confusing, because it tells the user to save changes, even though he thinks that no changes where made and might think, that he has accidentally changed something.	-	01.00.4_IP	1	1	#2, #3	Simplicity, Visibility of the system status
22 Saving	The default option of the warning message, that appears when the user wants to leave a page with unsaved options, leads to losing work.	The error message should prevent you from losing unsaved changes. But its default value "Ok" leads to leaving the page without saving the changes. It should better have "Cancel" as a default values, so that the changes won't be lost by accident.	Change the default button to "Cancel"/"Abbrechen"	05.01.1_SP	3	1	#9	Error handling
23 Saving	The saving options are not used consistently.	Sometimes there are several "Save" buttons on one page, sometimes non and most of the times only one.	-	07.03.1_FOR, 07.04.0_FOR	2	3	#1	Consistency and standards
24 Saving	The warning message, when leaving a page without saving, is not used consistently.	For example on the "Recipient" register of the E-Mail course element, modifications of the multiple-choice buttons is saved automatically, even though this is not visible. So when you change on an other page, no warning message appears but the changes are not lost. This behaviour appears also at other places, where multiple-choice buttons are used. This can be a problem in the case, that the user does not want to save a change, changes the page and does not realize that his changes where saved.	-	08.04.0_EMA, 08.02.0_EMA	2	2	#1, #9	Consistency and standards, Error handling

Figure E.2: Problems found through the Heuristic Evaluation

25 Saving	Only little feedback is given after saving a page.	If a page has unsaved changes, the save button has an orange colour. After saving the buttons colour changes to turquoise. But this behaviour is not noticed right away, since after saving a page, normally the view jumps up to the beginning of the page and the colour change is not noticed.	03.00.0_CE	1	1	#3	Visibility of the system status
26 CE: Insert course element	The "Insert course element" button is not visible enough.	After navigating to the Course Editor two new buttons appear on the upper left part of the functionality bar. This is not noticed right away, since the two buttons look the same as the others, they are rather small and in an unremarkable grey colour.	02.00.0_CV	2	2	#5	Ease of navigation
27 CE: Insert course element	When creating a new course element, no button has a tooltip.	Since the user might doesn't know the functions of all the course element, it would be helpful to have an indication of its use.	03.00.5_CE	3	3	#4, #7	Obviousness and predictability, Reduce short-term memory load
28 CE: Insert course element	When inserting new course elements to the course, the terms "Task (submission workflow based)" and "Task (submission continuously)" and their appear on the left navigation list, are not clear.	No additional information about their differences and intended use are given.	03.00.5_CE	2	2	#4	Obviousness and predictability
29 CE: Unclear status icons	The meaning of the symbols which appear on the left navigation list, are not clear.	When hovering over them, the tooltip that appears is not helpful for the user (maybe for the developer). And their connection with the "Status" button is not visible.	04.03.0_ENR	1	3	#2, #7	Simplicity, Reduce short-term memory load
30 CE: Deleting groups	Groups can not be deleted directly in the course editor, where the groups are created.	The creation of a group is not reversible in the course editor. If you want to delete a group, you have to go to the "Members management" page, which is cumbersome.	04.04.1_ENR	1	2	#8	Allow recovery
31 CE: Expert Mode	Where do I find information about the expert mode configuration? How is it coded?	When configuring the visibility or access of a course element, the user can switch to the expert mode, which might be useful in special cases. But for the expert mode no information about the coding is given and the confluence page, which opens when clicking on the "Help" icon, does not really help.	04.02.1_ENR	1	2	#7	Reduce short-term memory load
32 CE: Expert Mode	When configuring access and visibility of a course element, place could be saved with displaying the "Display expert mode" button on the same height like the multiple-choice buttons.	Scrolling is bothersome, so if possible it should be omitted and with a compact view the overview also gets improved.	07.03.0_FOR, 09.03.0_EMA	2	1	#2	Simplicity
33 CE: Configuring Dates	When configuring the visibility of access depending on the date, the calendar icon is not clickable.	With its grey background colour and position right to the text field, the calendar icon indicates a button. In other software's (E.g. Ebooker, TripAdvisor, Swiss) the date selecting option looks similar and the calendar is clickable.	04.03.0_ENR	2	1	#1, #4	Consistency and standards, Obviousness and predictability
34 CE: Configuring times	Configuring the time is cumbersome.	The hours and minutes must be entered in two number boxes. To enter a time, hours and minutes logically belong together, if their entry is separated, the cognitive flow will be interrupted.	09.03.1_TSC	2	1	#10	Flexibility and efficiency of use
35 CE: HTML page preview	There is no quick option to check in the preview of the HTML page, if the inserted link does work. In the preview of the HTML page it is not predictable	On the preview that OLAT provides, click on the link will reload the same page, in some configurations an error message appears, and in some you get to an other page with a message from where you can not go back, or after clicking several times you land on the course view.	05.04.5_SP, 05.04.6_SP	2	1	#9	Error handling
36 CE: Uploading files	When configuring a folder course element is not possible to upload whole folders or several files at once (except	It is bothersome to uploading a lot of files.	06.04.3_FOL	2	2	#10	Flexibility and efficiency of use

Figure E.3: Problems found through the Heuristic Evaluation

37 CE: Uploading files	Uploaded files are not always directly visible in the corresponding register.	It needs a additional click to get to the window where need files can be uploaded, to see the files that are already uploaded, which is bothersome.	Make the uploaded files visible in the corresponding register.	06.04.0_FOL, 09.05.6_TSC	2	2	#3, #10	Visibility of the system status, Flexibility and efficiency of use
38 CE: Email configuration	The difference between the terms "All participants" and "Only course participants" is not clear.	As a user, I would assume that participants of a course are course participants, that's why I do not understand the difference between "All participants" and "Only course participants". Is there an other participant category, which I'm not aware of?	-	08.04.0_EWA	1	1	#4	Obviousness and predictability
39 CE: Course Elements	As soon as the short title is changed, it is not visible to which type of course element a course element belongs to.	The course element icons are an indicator for the type of course element, but since some types use the same icon, it becomes difficult to find out the exact type of a course element. The three task types for example all use the same icon.	-	09.01.0_TSC	2	3	#3	Visibility of the system status
40 CE: Course Elements	The header (above the registers) of the course element configuration isn't consistent.	Sometimes only the icon is visible, sometimes the title that was given to this element appears as well.	Always show the header of the selected course element.	10.01.0_TWF, 06.01.0_FOL	1	2	#1	Consistency and standards
41 CE: Task (submission continuously)	The whole Task (continuous submission) course element is unclear and confusing.	Some terms are used inconsistent (Drop box and Handing in) and there meaning is not obvious (Drop box, Return box). It is not intuitive that access options for sub-elements must be configured even though the sub-elements are not selected in the "Sub-element" register.	-		3	3	#4, #6	Obviousness and predictability, Clear task flow
42 CE: Task (submission continuously)	The "Access" page of the task element with continuous submission is unclear.	The naming are not always straight forward. For example, the term "Drop box" is misleading, since it corresponds with the famous file storing and sharing platform. That the "Drop box" is used to submit the solutions is not obvious. And what does assessment mean, will the students be able to rate themselves, if it is not blocked? Or will the score not appear, when it is blocked?	Use the term "Submissions" instead of "Drop box" and the term "Assessment" to "Grading".	09.03.1_TSC	2	3	#4	Obviousness and predictability
43 CE: Task (submission continuously)	The configuration which sub-elements logically comes before the access configuration of the elements.	It does not make sense to define the access for sub-element that are not used in the course.	-	09.04.0_TSC	2	3	#6	Clear task flow
44 CE: Task (submission continuously)	The naming's of the sub-elements "Drop box" and "Return box" are not clear and obvious.	For example, the term "Drop box" is misleading, since it corresponds with the famous file storing and sharing platform. That the "Drop box" is used to submit the solutions is not obvious. And it is not clear what will be returned in the "Return box". It could be interpreted as a place where students can return their solutions or as a place where the lecturers can return the corrected submission of a student, a feedback to the students, or their grades.	Use the term "Submissions" instead of "Drop box" and the term "Feedback" instead of "Return box".	09.03.0_TSC, 09.04.0_TSC	2	1	#4	Obviousness and predictability
45 CE: Task (submission continuously)	The naming of the submission options is not consistent. One time the options are found under "Drop box" the other are found under "Drop box" the other	The term "Drop box" to describe a sub-element corresponds to the register "Handing in". It is confusing to have different names which describe the same thing.	Use the term "Submission" for both of them.	09.04.0_TSC	2	1	#1	Consistency and standards
46 CE: Uploading files	In the left bottom corner of the upload file pop-up screen is a grey bar, which would indicate the progress of the upload (written in white and only visible after clicking on "Insert additional metadata" the view can not be what does "Open task folder" do? It was not clickable.	An progress bar is a nice way to give feedback to the user. But it is useless when it is not visible and does not work correctly. When uploading a bigger file, a round circle will be displayed which indicates that the computer is working, but the progress bar in the back is not visible.	-	06.04.2_FOL, 09.05.2_TSC	1	2	#2	Simplicity
47 CE: Uploading files	After clicking on "Insert additional metadata" the view can not be what does "Open task folder" do? It was not clickable.	There is no button to minimize the view back to the way it was displayed, before clicking on the "Insert additional metadata".	Include a button which minimizes the view again.	09.05.3_TSC, 09.05.4_TSC	1	2	#8	Allow recovery
48 CE: Uploading files	What does "Open task folder" do? It was not clickable.	A button that is not clickable has no use and does confuse the user.	-	09.05.1_TSC, 09.05.5_TSC	2	1	#2, #4	Simplicity, Obviousness and predictability
49 CE: Deactivated registers	The deactivation of a register is not visible.	Deactivated registers look the same like active registers, but they are not clickable. The deactivation is only visible in the tooltip when hovering over the register.	-	09.08.0_TSC, 10.08.0_TWF, 11.08.0_TGR	1	1	#3, #4	Visibility of the system status, Obviousness and predictability

Figure E.4: Problems found through the Heuristic Evaluation

50 CE: Uploading files	The upload file page is not consistent.	One time the title gets automatically defined with the name of the uploaded file, one time the title he must be manually added.	Always use the title from the file as a default and allow the user to edit the name, if wanted.	10.05.2_TWF; 09.05.2_TSC	2	1	#1	Consistency and standards
51 CE: Task (submission workflow based)	The term "Assignment deadline" is not clear.	Deadline normally is used to mark the last possible date to finish a task. In context with the upload of an assignment, its function is confusion. It could be that the assignment is only visible until this date or that the assignment will be uploaded at this date.	Change the name to a more meaningful one.	10.04.2_TWF	2	1	#4	Obviousness and predictability
52 CE: Task (submission workflow based)	The term "Return and feedback" in the "Workflow" register is not clear.	It is not clear who gives and receives the feedback. Can students give feedback about the course or can coaches give students feedback about their work.	Change the name and include some information about the receiver of the feedback, or information about what the feedback is given.	11.04.1_TGR	2	1	#4	Obviousness and predictability
53 CE: Structure	On the overview register of the structure course element the configurations of the presentation are not clear.	It is difficult to imagine how the page and the sub-elements of the structure element would be displayed, since no direct option to preview the page are given. How does a preview of a page look like? What is a child node?	-	12.04.0_STR	1	2	#4	Obviousness and predictability
54 CE: Structure	It is not visible how a course element can be moved and added to a structure element.	The user might search an option in the configuration of the structure element, but there is none. One way to move and add course elements is hidden under the button "Modify course element". The easiest way to move a course element is to click on the element on the grey navigation bar at the left side of the screen and drag it to the intended place. But this functionality is not visible.	-	12.01.0_STR	2	3	#4, #6	Obviousness and predictability, Clear task flow
55 CE: Course Preview	In the Course preview it is not obvious, that the table at the top shows the configuration and the part under the "Configure anew" button is not visible at first.	The two sections, table and preview of the course, are not clearly separated from each other. It can be irritating for the user, because he can mistake the configuration table as part of the course.	-	13.01.0_CPR	2	2	#4	Obviousness and predictability
56 CE: Course Preview	In the course preview, the "Configure anew" button is not visible at first.	Since he is grey and located at the right top of the page, where normally buttons like for the "expert mode" are located.	-	13.01.0_CPR	1	1	#4	Obviousness and predictability
57 CE: Course Preview	It is not visible, that the configuration table can be minimized, by clicking on the header.	The header of the table has no visual attribute that would signify to the user, that he can click on it or that the table can be minimized. You have to hover over the header to see, that he is clickable.	-	13.01.0_CPR	2	1	#4	Obviousness and predictability
58 CE: Course Preview	On the configuration of the course preview page, no information about the use of attributes is available.	The configuration has the option to use special attributes, but information about which attributes are available and can be combined does not exist.	-	13.00.1_CPR	1	2	#7, #10	Reduce short-term memory load, Flexibility and efficiency of use
59 CE: Course Preview	Links do not work in the preview mode.	In the preview mode you can not check if a link works correctly. To do so, you have to publish the course element and check it on the real course. If the course preview does not work correctly, the user has no benefit using it.	-	13.01.2_CPR	3	1	#4, #5, #10	Obviousness and predictability, Ease of navigation, Flexibility and efficiency of use
60 CE: Course Preview	The structure element is not visible in the preview mode.	A structure course element does not appear in the preview mode, as long as it is not published. A course preview, that does not work correctly does not provide any benefit to the user.	-	13.01.3_CPR	3	1	#3, #10	Visibility of the system status, Flexibility and efficiency of use

Figure E.5: Problems found through the Heuristic Evaluation

61 CE: Course Preview	The Course preview can not be used efficiently.	Each time before seeing the course in the preview, the preview must be configured. It is not possible to save configurations, they must be entered anew, each time the preview is left. When configuring the course and wanting to see how the course looks like, the user has to switch forth and back from the course editor to the preview and he has to configure the preview anew each time he has used the course editor. On the course preview is no direct link to the course editor and when going back to the course editor, the user always lands on the first element of the course and needs several clicks to get back to the course element he was configuring.	13.01.0_CPR	3	3	#5, #7, #10	Ease of navigation, Reduce short-term memory load, Flexibility and efficiency of use
62 CE: Course Preview	When opening the preview of an HTML page, two buttons appear on top of the "Configure anew" button.	The appearance of the two buttons is hardly noticeable and they overlay the original button.		1	2	#1, #5	Consistency and standards, Ease of navigation
63 CE: Publish	What will happen when you click on the "Publish" button is not clear.	No additional information about what happens when you click the "Publish" button, is available. The user might be scared to make an error and publish something that he did not want to (for example solutions to an exercise). Before clicking on the "Publish" button the user does not know, that there will be some steps to configure the publication of the course. It is inefficient and confusing to see steps where nothing needs to be done.	03.00.0_CE	1	2	#4	Obviousness and predictability
64 CE: Publish	When publishing the course the steps "Information" and "Background update" are shown, even when nothing	-	14.04.0_PUB, 14.05.0_PUB	1	2	#2, #10	Simplicity, Flexibility and efficiency of use
65 CE: Publish	The step "Summary" is not displayed as a whole.	As a user, you are not sure if there are any other steps after "Summary". The word is not readable, only "Summ" is displayed. It does not look good.	14.06.0_PUB	1	1	#2, #4	Simplicity, Obviousness and predictability

Figure E.6: Problems found through the Heuristic Evaluation

Appendix F

Task Type configuration Characteristics

	Task (submission continuously)	Task (submission workflow based)	Group task
	To solve by oneself	To solve by oneself	To solve as a group
Registers available	<ul style="list-style-type: none"> Title and description Visibility Access Sub-elements Assignment Handing in Assessment Sample solution 	<ul style="list-style-type: none"> Title and description Visibility Access Workflow Assignment Submission Grading Sample solution 	
Register "Title and description"	The same screen for all task types		
Register "Visibility"	The same screen for all task types		
Register "Access"	<p>Own access configuration for each task element. You can configure the access to the following task elements:</p> <ul style="list-style-type: none"> Assignment Drop box Return box Assessment Sample solution 	One access configuration for all task elements	
Register "Sub-elements"/ "Workflow"	<p>Configure, which sub-elements will be used for the assignment. You can choose from the following:</p> <ul style="list-style-type: none"> Assignment Drop box Return box Assessment Sample solution <p>When you deactivate one of the elements, the corresponding register will no longer be clickable. Funny: The deactivation of the "Return box" has no influence on the registers, in return the deactivation of the "Drop box" leads to a deactivated "Handing in" register. It's not allowed to deactivate all elements.</p>	<p>Configure which elements should be included in the workflow. You can choose from the following:</p> <ul style="list-style-type: none"> Task assignment* Submission* Return and feedback (return box activated) Revision phase (drop box activated) Sample solution* Grading <p>For all elements marked with a *, a date for the deadline or visibility (for the solutions) can be defined. All dates can be either specified with an explicit date or with relative dates. Relative dates are defined relative the "Course first launch", "Enrolment" or "Task Assignment". When you deactivate one of the elements and save the changes, the corresponding register will no longer be clickable. The deactivation of the "Return and feedback" checkbox has no influence on the register, but the "Revision phase" is no longer enabled. It's not allowed to deactivate all elements.</p>	
			<p>Settings for the "Task type"</p> <ul style="list-style-type: none"> Create and select groups Create and select Learning Areas

Figure F.1: Characteristics of the different task types

Register "Assignment"	<ul style="list-style-type: none"> Task can be uploaded or created Type of assignment, Preview, Type of sampling and Message for users can be configured 	
	<ul style="list-style-type: none"> Tree clicks to upload tasks Uploaded assignments are not visible Preview: when Preview ("Yes, ...") is activated a additional Single-choice option "Deselect" appears The text field "Message to the user" is displayed after the upload button and before the checkboxes. 	<ul style="list-style-type: none"> Upload multiple tasks at once (.zip file which will be unzipped automatically) Direct upload or creation (two clicks only) Uploaded files are visible on the page Additional checkbox: "Coaches can upload tasks" The option "Deselect" does not appear, when the "Preview" is activated. The text field "Message to the user" is displayed below the checkboxes.
Register "Handing in" / "Submission"	<ul style="list-style-type: none"> Definition of the Confirmation text, that appears after a successful handed in of an assignment. Checkbox "Send text additionally as e-mail" 	
	No additional configurations	<ul style="list-style-type: none"> Define if files can be uploaded or not Define if the OLAT test editor can be user to submit the solutions or not <p>Define the max. number of documents that can be handed in as solutions</p>
Register "Assessment"/ "Grading"	<ul style="list-style-type: none"> The same functions and look for all the assignment types But why are the register names different? Configuration of the grading options 	
Register "Sample solution" / "Sample solutions"	<ul style="list-style-type: none"> Upload the solutions for the Assignment 3 steps to upload the files Folders can be created Uploaded Solutions are not directly visible File name is directly defined by the uploaded file. The name can be changed. 	<ul style="list-style-type: none"> Direct upload or creation (two clicks only) Uploaded files are visible on the page Only one file can be uploaded at once File name must be defined

Figure F.2: Characteristics of the different task types

Appendix G

Content of the CD

1. English Abstract (Abstract.txt)
2. German Abstract (Zusfsg.txt)
3. English Survey Structure
(OLAT_usability_survey.pdf)
4. German Survey Structure(OLAT Benutzerumfrage.pdf)
5. Responses and Evaluation of the Survey (Responses_OLAT_usability_survey.xlsx)
6. Full Collection of Heuristics (CollectionOfHeuristics.xlsx)
7. Folder which contains the List of Problems found through the Heuristic Evaluation and the corresponding Screen shots (ProblemsFound)
8. Folder which contains all interactive PowerPoint Prototypes (CourseEditor_Prototypes)

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