

USABILITY EVALUATION OF VUOLEARNING MATERIAL EDITOR

Final Report

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1. Document overview

This report describes the results of usability evaluation conducted on e-learning platform VuoLearning. The goal of the usability tests were to establish a baseline of user performance: identify potential design problems in order to improve the efficiency, efficacy and user satisfaction.

We conducted both expert evaluations and user tests. The user groups consist of teachers from different fields and their students. The more specific focus of this evaluation was to evaluate the material editor that the teachers use to import and edit their material. Furthermore, we evaluated the entire workflow related in creating a new course in the system from the point of view of a teacher. The user tests were conducted at an office rooms in Aalto University and Beijing Language and Culture University between April 26th and May 12th.

2. Expert evaluations

Expert evaluations were conducted between April 3rd and 4th. Expert evaluations do not involve users but were rather conducted by our team. These inspections enabled us to look for problems in the software based on our understanding of usability. This enabled us to look for problems that might not have been caught by the inevitably limited set of test users but that might be encountered later when thousands of people would be using the system.¹ Furthermore, these inspections helped us devise the test scenarios for the user tests. Expert evaluations helped us devise test scenarios for user tests and augment the data gathered from user tests.

2.1 Action analysis

We conducted a so called back-of-the-envelope action analysis for the product. This means that first we decided on a test scenario that we would evaluate. We then estimated all the physical and mental steps that a user will perform to complete the selected scenario and made a list out of them. Finally, we made crude estimates on the time required to finish each subtask.

We sought to determine whether the list of actions and the time required to complete them would reveal usability problems by reflecting them to the following questions:

1. Can a simple task be done with a simple action sequence?
2. Can frequent tasks be done quickly?
3. How many facts and steps does the user have to learn?
4. Is everything in the documentation?

With the exception of question 4, which we did not evaluate since the documentation was in Finnish, we concluded that there were no significant problems in the system.

The use scenario, list of tasks and time to perform tasks are described in Appendix 1.

2.2 Cognitive walkthrough

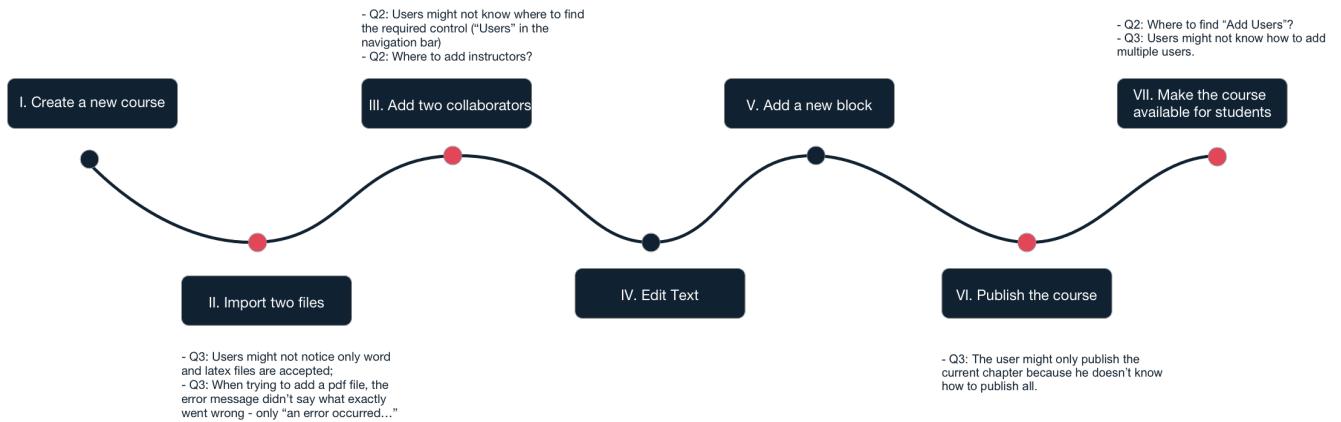
The cognitive walkthrough is a usability evaluation method in which one or more evaluators work through a series of tasks and ask a set of questions from the perspective of the user. The focus of the cognitive walkthrough is on understanding the system's learnability for new or infrequent users. At

¹ Lewis, C., & Rieman, J. (1993). Task-centered user interface design. A Practical Introduction. Available at: http://dcti.iscte.pt/cgm/web/TCUID_PI.pdf. [Retrieved April 1st, 2016]

each step in a task procedure, the evaluator(s) asks herself the following four questions² about her expectations of users' behaviors:

1. Will the user know what to do next?
2. Will the user notice that the required control?
3. Will the user how to user the control?
4. Will the user see that the task progresses?

The problems were found in importing material from a file, adding collaborators and publishing the course to students as illustrated in Figure X.



2.3 Heuristic evaluation

A heuristic evaluation is a usability inspection method for computer software that helps to identify usability problems in the user interface (UI) design. It specifically involves evaluators examining the interface and judging its compliance with recognized usability principles (the "heuristics"). We used the evaluators described by Jakob Nielsen in 1994: Simple and natural dialogue, Consistency, Shortcuts, Use the users' language, Prevent errors, Minimize the user memory load, Clearly marked exits, Help and documentation.³ The evaluators are described in more detail in Appendix 2.

Results of heuristic evaluation based on aforementioned evaluators is illustrated in the Figure 1.

² Wharton, C., Rieman, J., Lewis, C., and Polson, P. (1994). The cognitive walkthrough method: A practitioner's guide. In Nielsen, J., and Mack, R. (Eds.), Usability inspection methods. New York, NY: John Wiley & Sons, Inc.

³ Nielsen, J. (1993). Usability Engineering. London: Academic Press Limited.

Figure 1: Results of heuristic evaluation

	Simple and natural dialogue	Consistency	Shortcuts	Use the user's language	Prevent errors	Minimize user memory load	Clearly marked exits	Help and documentation
Login	✓	✓	✓	?	✓	✓	✓	✗
Create new course	?	✓	✓	✓	✓	✓	✓	✗
Import two files	✓	✓	✓	?	?	?	✓	✗
Add two collaborators	✓	?	✗	?	?	?	✓	✗
Edit text	?	?	✗	✓	?	✓	✓	✗
Add new blocks	✓	?	✗	✓	?	✓	✓	✗
Publish the course	✓	✓	?	✓	?	?	✓	✗
Make course available for students	?	✓	?	?	?	?	?	?

1. Login	2. Create new course	3. Import two files	4. Add two collaborators	5. Edit text
	Problems: Language options are too extensive by default Solutions: ➤ Set most common languages first.	Problems: Error message for importing "wrong" file type is not helpful. Solutions: ➤ Specify the reason for the error. ➤ Live validation while user is typing avoids having same title error.	Problems: Word "user" is used to refer different types of users and is confusing. Adding non-user as editor raises a 404 error. Adding non-admin user as editor does not prompt an error but the person is unable to access the admin interface. If transfer of ownership to invalid user/email you lose the ability to control of the course. Remembering the email address strains memory. Solutions: ➤ Replace word "user" by something more specific. ➤ There should be a list of users.	Problems: Functionality of the small icons on the bottom-right corner is unclear. Adding line breaks to text is inconsistent. Leaving a block empty gives error. Solutions: ➤ Remove empty blocks. ➤ Consistent line break functionality

2.4 Results

The problems found are depicted in Table 1. The problems that were discovered in both heuristic evaluation and cognitive walkthrough are highlighted. As mentioned before, action analysis did not reveal problems in the scope that action analysis would reveal.

The frequency, impact and persistence of the problems are also estimated on the scale from 0 to 2. This gives indication of how severe the problem is. These results were considered together with the user test results to compile the final list of recommendations for improving the software.

Table 1: Problems found in expert evaluations

Section	Problem	Frequency (0–2)	Impact (0–2)	Persistence (0–2)	Inspection Method
Create new course	Language options are too extensive by default	1	1	1	Heuristic
Import two files	Error message for importing "wrong" file type is not helpful.	1	1	1	Both
Import two files	Users might not notice only doc and latex are accepted	0	0	0	Cognitive
Add two collaborators	Word "user" is used to refer different types of users and is confusing	0	0	0	Both
Add two collaborators	Adding non-user as editor raises a 404 error.	0	2	2	Heuristic
Add two collaborators	Adding non-admin user as editor does not prompt an error but the person is unable to access the admin interface.	1	2	1	Heuristic
Add two collaborators	If transfer of ownership to invalid user/email you lose the ability to control of the course. Remembering the email address strains memory.	2	2	0	Heuristic
Edit Text	Icon functionality unclear	0	0	0	Heuristic
Edit Text	Error in line breaks in text editor	1	1	2	Heuristic
Edit Text	Empty edit blocks raise errors	2	1	1	Heuristic
Add new block	Inconsistent error for empty blocks	0	1	2	Heuristic
Add new block	No response for incorrect file format	2	1	1	Heuristic
Publish the course	User needs to remember to publish individual parts	2	1	2	Both
Make course available for students	Usage of word "users" is contextually confusing	1	1	0	Both
Make course available for students	No option to add/delete multiple users	2	2	2	Both
Make course available for students	Retrieving email addresses to share	2	1	2	Heuristic

3. User tests

3.1 Methodology

3.1.1 Test sessions

The tests were conducted in a quiet room at the Computer Science building of Aalto University between April 26th and May 12th. Each user test session took approximately one hour. The test sessions consisted of three parts: pre-test interview, user test and post-test interview with a System Usability Scale (SUS) questionnaire.

The purpose of the pre-test interview was to deepen understanding of teachers' current situation: how do they currently deliver material to their students, what kind of problems do they encounter and what are their needs and wishes relating material sharing and an e-learning platform. Questions of the pre-test interview can be found in Appendix 3.

The second phase was the user test. The test participants were presented with the following tasks that they were asked to undertake. The tasks were divided into four scenarios each concerning different parts of the application. This difference, however, was not significant for the users' perspective as tasks were given to them on pieces of paper one by one - each after the previous one had been completed.

Imagine now you are the professor/ teaching assistant of the course Scientific writing and presentation, you are going to create the course on Vuolearning, which is a online collaborative e-learning platform for users to upload course materials, edit with collaborators and share with the students.

Task 1-1 Create a new course called "Scientific writing and presentation".

Task 1-2 Create a new chapter named "Introduction" by adding content from a doc file ("Introduction.docx").

Task 1-3 Create a new empty chapter called "Elevator Pitch", but you don't have any material ready yet.

Task 1-4 Add a video to the chapter "Elevator Pitch". (Find from file "video link and email list.doc" on desktop).

Task 2-1 Edit chapter "Elevator Pitch", Add a new paragraph (text).

Task 2-3 Create a 3rd chapter called "Pitch Skills" by adding content from a doc file ("Pitchskills.docx").

Task 2-4 Add other users who can edit the document with you. (Find from "video link and email list.doc" on desktop)

Task 3-1 Preview the course "Scientific writing and presentation".

Task 3-2 Add two students to the course. (Find from file "video link and email list.doc" on desktop)

Task 3-3 Share the course with the students.

Task 4-1 Rename the course.

Task 4-2 Delete the course.

The participants were asked to talk aloud whatever came to their mind while completing the set of tasks. This method gave information of the user's thoughts and feelings.

Finally, after the user test, the participants were asked to fill the SUS questionnaire. The SUS questionnaire will ask the test participants to rate 10 claims on the scale from 1 (strongly disagree) to 5 (strongly agree). The claims covered topics such as how satisfied the user was using Vuolearning

platform, how confident they felt while using it and would they learn to use it by themselves. After users had filled the SUS questionnaire, the facilitator asked open questions relating the VuoLearning system and how did they feel using it. Thus, qualitative data was gathered as well. The SUS questionnaire and interview questions can be found in Appendix 4.

3.1.2 Participants

The sample consisted of four University or Polytechnic level teachers and one teaching assistant. Their work included material sharing to the students. Two of the participants had non-technical background as they were language teachers in Aalto University. Of the five participants, two were female and three were male. One participant was living and working in China.

Basic information of the participants:

- 41 years old English teacher in Aalto University
- 30 years old Swedish teacher in Aalto University
- 33 years old Computer Science teacher in Haaga Helia University of Applied Sciences
- 33 years old Computer Science teacher in China
- 26 years old teaching assistant in Aalto University, majoring Informatics

3.4 Results

We tested primarily whether the system was so easy to use that a new user would be able to use the system with few errors and without consulting a manual. In this chapter, we describe the metrics used and the results from user tests.

3.4.1 Success, scenario completion and error rates

Success rate was evaluated to assess how intuitive the system is and how quickly it can be learned. We followed Nielsen's definition of success rate that defines it as the percentage of tasks that users complete correctly. For the purposes of success rate calculation, we defined success on a task as the user being able to finish the task without any help from the instructor.

Furthermore, we also calculated the **scenario completion rate**. For the purposes of scenario completion rate calculations, we calculated as success those scenarios where the user was able to finish all the tasks with or without instructor help. Partial successes were scenarios where there was one failure to complete a task. No user had more than one failure in a scenario.

In our test plan we also planned to measure **error rate**. However, as all scenarios were completed at least partially by all of the users without instructors' help, the error rate for all scenarios is 0.

Results for success rate and scenario completion rate are described in the table below.

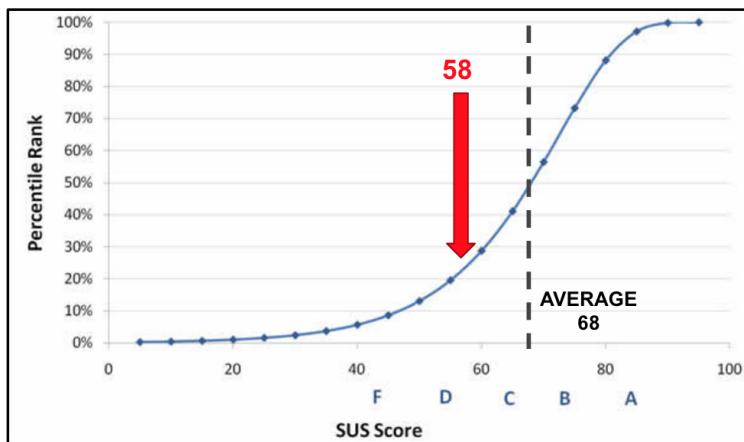
Table 2: Success rates and scenario completion rates

	Success rate	Scenario completion rate
Scenario 1		90%
Task 1-1 Create a new course called "Scientific writing and presentation".	100%	
Task 1-2 Create a new chapter named "Introduction" by adding content from a doc file ("Introduction.docx").	80%	
Task 1-3 Create a new empty chapter called "Elevator Pitch", but you don't have any material ready yet.	100%	
Task 1-4 Add a video to the chapter "Elevator Pitch". (Find from file "video link and email list.doc" on desktop).	80%	
Scenario 2		90%
Task 2-1 Edit chapter "Elevator Pitch",	100%	
Task 2-2 Add a new paragraph (text).	100%	
Task 2-3 Create a 3rd chapter called "Pitch Skills" by adding content from a doc file ("Pitchskills.docx").	90%	
Task 2-4 Add other users who can edit the document with you. (Find from "video link and email list.doc" on desktop)	80%	
Scenario 3		60%
Task 3-1 Preview the course "Scientific writing and presentation".	70%	
Task 3-2 Add two students to the course. (Find from file "video link and email list.doc" on desktop)	70%	
Task 3-3 Share the course with the students.	50%	
Scenario 4		90%
Task 4-1 Rename the course.	100%	
Task 4-2 Delete the course.	80%	

3.4.2 Users' subjective satisfaction

Users' subjective satisfaction to the system was measured by administering a positive System Usability Scale (SUS) questionnaire after the testing session

Figure 2: Raw SUS scores as percentiles and grades



The users' responses resulted in SUS scores in the range of 50–70. The average SUS score was 58 with standard deviation (stdev) of 8.37. This places the results in the bottom quartile based on the results from 500 studies across various types of applications⁴.

⁴ Sauro, J. (2011). SUStisfied? Little-Known System Usability Scale Facts. User Experience Magazine, 10(3).

The **learnability**⁵ and **usability**⁶ subscales gave average results of 70 (stdev 16.77) and 55 (stdev 7.53), respectively, indicating that the learnability of VuoLearning is high while there remains several usability problems.

5. Conclusions

In general, the learnability of VuoLearning is good and users appreciate the features a lot after they found it and learned how to use it. However, there exists several critical usability problems. According to the results of SUS questionnaire, the learnability scale of VuoLearning is 70, while the usability scale is 55. In total, the SUS score of VuoLearning is 58 which is comparatively low, placing the application to the bottom quartile in terms of usability.

There were a few features that were highly appreciated by the users:

- Importing from a document files was considered as a very nice feature.
- The user interface is very nice and intuitive.
- The system responds quickly to user's actions.
- Editing blocks are very easy and have a nice feel to it.
- Adding editors to collaborate the system is very easy.

In general, the most critical issues that the users faced can be grouped into following categories.

- System status with chapters is not clear to a user
- User management is error-prone and gives non-informative error messages and requires lots of manual work.
- Course management functions are spread across the application
- Giving more informative feedbacks to user upon failure will be very helpful.

Based on these findings, we propose several changes to the system. Our change proposals are listed and illustrated in Appendix 6. There we have also graded the severity of the problems on the scale from 0 to 4:

- [4] catastrophic problem, prevents users from finishing the task
- [3] major problem, reoccurs and significantly slows down the performance
- [2] minor problem, slows down the performance slightly, but the users are able to overcome the problem
- [1] cosmetic problem having little effect to the performance, such as colours, fonts and images
- [0] not a usability problem, after all

Furthermore, in our user tests we have found that there are several features that many teachers would need in their work that are not currently covered by the functionalities of VuoLearning. Implementing such functionalities could be considered in future development. The functionalities are listed below:

- Adding version control.
- Allow chapterwise collaboration in a course.
- Providing different levels of rights to users (e.g. view only, view & edit) so that students could possibly also collaborate with creating material.
- Create a students group and manage groups.
- Adding the functionalities to handle assignment submissions from students.

⁵ Learnability subscale is calculated from the questions 4 and 10 of SUS.

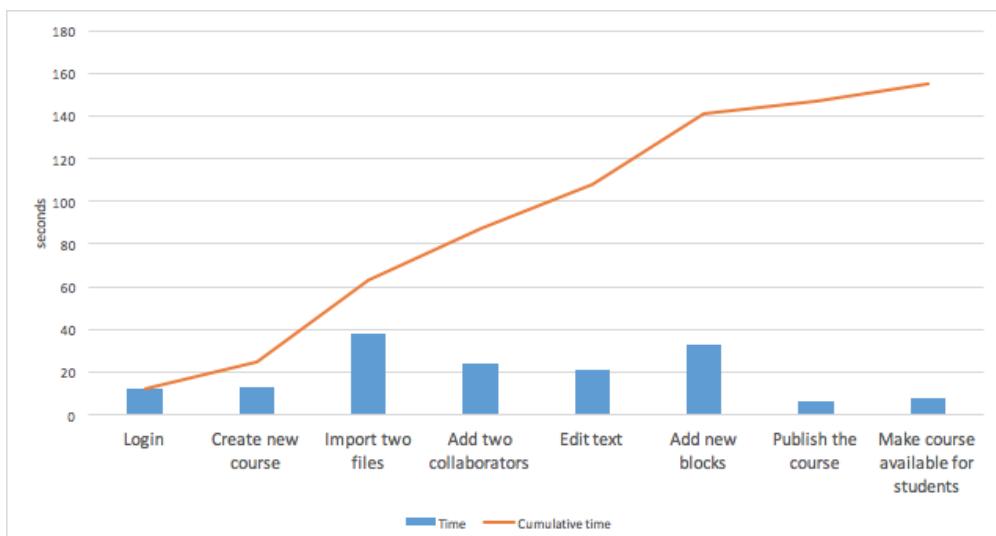
⁶ Usability subscale is calculated from questions 1–3 and 5–9 of SUS.

Appendix 1: Action Analysis

The test scenario and estimated times to finish each task and action are described in the table below. Task completion time estimates take into account potential requirement to exert mental effort (e.g. remembering an email address) and system delays (e.g. waiting for system to save changes).

TASK	ACTION	TIME
Login (12 seconds)	Enter email address	5
	Enter password --- Remember: password	7
Create new course (13 seconds)	Select 'create new course'	2
	Enter course name.	5
	Select material language --- Tedious to find.	4
	Click create	2
Import two files (38 seconds)	Click 'Import'	2
	Enter 'Chapter name'.	5
	Select file	4
	Click import (in dialog)	8
	Click Import	2
	Enter 'Chapter name'.	5
	Select file	4
	Click import (in dialog)	8
Add two collaborators (24 seconds)	Click 'Users'	2
	Click 'Add editor'	2
	Enter 'collaborators email address' --- Remember: e	7
	Click 'Add'	2
	Click 'Add editor'	2
	Enter 'collaborator's email address' --- Remember:	7
	Click 'Add'	2
Edit text (19 seconds)	Click 'Edit'	2
	Find the correct location.	2
	Edit text.	10
	Click save changes.	5
Add new blocks (33 seconds)	Click 'Chapter 2'	2
	Click 'Plus sign'.	2
	Click 'Image icon'.	2
	Upload image file.	10
	Click 'Plus sign'.	2
	Click 'Video icon'.	2
Publish the course (6 seconds)	Enter the video url. --- Retrieve url for a video.	10
	Click 'Save changes'.	5
	Click 'Publish'.	2
Make course available for students	Click 'Chapter 1'	2
	Click 'Publish'	2
Total seconds		155

The figure below illustrates the time taken by each task and the cumulative time taken by finishing the entire scenario.



Appendix 2: Evaluators used in heuristic evaluation

We used the following evaluators, that were described by Jakob Nielsen⁷, in our heuristic evaluation described in chapter 2.3:

- *Simple and natural dialogue.* Dialogues should not contain information that is irrelevant or rarely needed. Every extra unit of Information in a dialogue competes with the relevant units of information and diminishes their relative visibility. All information should appear in a natural and logical order.
- *Consistency.* Users should not have to wonder whether different words, situations, or actions mean the same thing.
- *Shortcuts.* Accelerators – 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.
- *Use the users' language.* The dialogue should be expressed clearly in words, phrases and, concepts familiar to the user, rather than in system-oriented terms.
- *Prevent errors.* Even better than good error messages is a careful design that prevents a problem from occurring in the first place.
- *Minimize the user memory load.* The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
- *Clearly marked exits.* 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 dialogue.
- *Help and documentation.* Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, be focused on the user's task, list concrete steps to be carried out, and not be too large.

⁷ Nielsen, J. (1993). Usability Engineering. London: Academic Press Limited.

Appendix 3: Pre-test interview

We will conduct a short semi-structured interview with the participants to engage, gather background information and insight into the context where they might use the system.

Provide background of the setting:

1. Introduce ourselves, the course and our work.
2. Introduce Vulearning: an e-learning platform.

The interview would be structured as following:

1. Name
2. Age or Age group
3. *Note the gender*
4. Occupation
5. Describe the the content of their work generally or specifically related to delivering content to students.
6. What kind of systems related to content delivery have you used in the past?
7. Can you list out some features that you like/dislike about using such a system?
8. What were the positives and negatives you had while using such systems?
9. Are there any specific problems that you encounter when you want to deliver content to students? Why?
10. General evaluation of tech savviness/interest, e.g. "How enthusiastic are you to start using new technology or websites?"
11. What would you expect from a system that you would use to deliver content?

Mention the following:

1. We are not the developers or a part of the company, so feel free to give your comments and feedback on the system without any reservation.
2. You can stop doing the tasks anytime you like and take breaks as and when needed.
3. Your behaviors won't be evaluated but recorded.

Appendix 4: Post-test questionnaire & interview

After the user test we administered a positive System Usability Scale test to the participants. The questionnaire is illustrated below.⁸

Vuolearning Feedback Form

Please indicate how you felt using Vuolearning platform and mark your feelings to the corresponding statements.

	Strongly disagree					Strongly agree				
1. I think that I would like to use the Vuolearning platform frequently	<input type="checkbox"/>									
2. I found the Vuolearning to be simple.	<input type="checkbox"/>									
3. I thought the Vuolearning was easy to use.	<input type="checkbox"/>									
4. I think that I could use Vuolearning without the support of a technical person.	<input type="checkbox"/>									
5. I found the various functions in Vuolearning were well integrated.	<input type="checkbox"/>									
6. I thought there was a lot of consistency in Vuolearning.	<input type="checkbox"/>									
7. I would imagine that most people would learn to use Vuolearning very quickly.	<input type="checkbox"/>									
8. I found the Vuolearning very intuitive.	<input type="checkbox"/>									
9. I felt very confident using Vuolearning.	<input type="checkbox"/>									
10. I could use Vuolearning without having to learn anything new.	<input type="checkbox"/>									

⁸ Jeff Sauro (2016). MeasuringU. Measuring Usability With The System Usability Scale (SUS). Available at: <http://www.measuringu.com/sus.php>. [Retrieved April 15th, 2016]

Furthermore, we also conducted a semi-structured interview after the user test. The questions were as following:

1. How is your general attitude towards using Vuolearning?
2. Can you compare your experience with other material-sharing system?
3. What is the feature you like/dislike the most about Vuolearning? Mention top three features you liked and didn't like.
4. Is there any function you would like to change or add?
5. Is there any question or comment you have for the whole testing session?

Appendix 5: Problems & Improvement suggestions

Problem severity rating

[4] catastrophic problem, prevents users from finishing the task

[3] major problem, reoccurs and significantly slows down the performance

[2] minor problem, slows down the performance slightly, but the users are able to overcome the problem

[1] cosmetic problem having little effect to the performance, such as colours, fonts and images

[0] not a usability problem, after all

Home page (before)

Hard to manage the course from an upper level (e.g. delete, publish the whole course) [2]

The screenshot shows the VuoLearning BETA home page. At the top, there is a navigation bar with the VuoLearning logo, Home, About, Help, a user profile icon labeled 'qiao', a language dropdown set to English, and a Sign out button. Below the navigation bar is a dark blue header bar with the word 'Home' in white. The main content area has a light gray background and features a section titled 'My courses' in bold black text. Below this, there is a list of five courses, each in its own row:

Course Name	Action
Design Project	Edit
Machine Learning	Edit
Research Project	Edit
Scientific Writing	Edit
Usability Evaluation	Edit

Each course row also contains a 'Open in reader' button with a small icon. A red oval is drawn around the first three course entries: 'Design Project', 'Machine Learning', and 'Research Project'. Below this section, there is another heading 'Other courses' followed by the text 'No courses found'.

Home page (after)

IMPROVEMENT SUGGESTIONS

Add the frequent and important functionalities related to courses on the home screen

Align them to maintain an order and consistency in the system.

The screenshot shows the VuoLearning BETA platform's 'My courses' section. At the top, there is a navigation bar with the VuoLearning logo, 'BETA', 'Home', 'About', and 'Help' links, a user profile icon for 'qiao', language selection ('English'), and a 'Sign out' link. Below the navigation bar is a dark blue header bar with the word 'Home'. The main content area is titled 'My courses' and lists five courses: 'Design Project', 'Machine Learning', 'Research Project', 'Scientific Writing', and 'Usability Evaluation'. Each course entry includes four action buttons: 'Edit', 'Preview', 'Publish', and 'Delete', followed by a 'Open in reader' button with a document icon. A large green circle highlights the first four buttons ('Edit', 'Preview', 'Publish', 'Delete') for the first course, 'Design Project'. At the bottom of the list, it says 'Other courses' and 'No courses found'.

Course	Edit	Preview	Publish	Delete	Open in reader
Design Project	Link	Link	Link	Link	Link
Machine Learning	Link	Link	Link	Link	Link
Research Project	Link	Link	Link	Link	Link
Scientific Writing	Link	Link	Link	Link	Link
Usability Evaluation	Link	Link	Link	Link	Link
Other courses	No courses found				

Site structure (before)

Too many tabs,
functionalities are
too spread out and
often placed
illogically. [3]

*“Logic of the system is
annoying, the system
doesn’t feel so intuitive”*

The screenshot shows the VuoLearning BETA website interface. At the top, there is a navigation bar with links for Home, About, and Help. On the right side of the top bar, there is a user profile icon labeled "qiao", a language dropdown set to "English", and a "Sign out" button. Below the top bar, a secondary navigation bar is visible, featuring a "Machine Learning" tab, a "Course" tab (which is currently active), and other tabs for Edit, Feedback, Analytics, Users, and Settings. A red horizontal line highlights the "Course" tab. The main content area displays the title "Machine Learning" with an "Edit" button. Below the title is a table with two rows. The first row contains the chapter "1. Introduction" and the status "Published", followed by a "Publish" button and a three-dot menu icon. The second row contains the chapter "2. Basic Statistics" and the status "Published", followed by a "Publish" button and a three-dot menu icon.

Chapter	Published	
1. Introduction	Published	<button>Publish</button> ≡
2. Basic Statistics	Published	<button>Publish</button> ≡

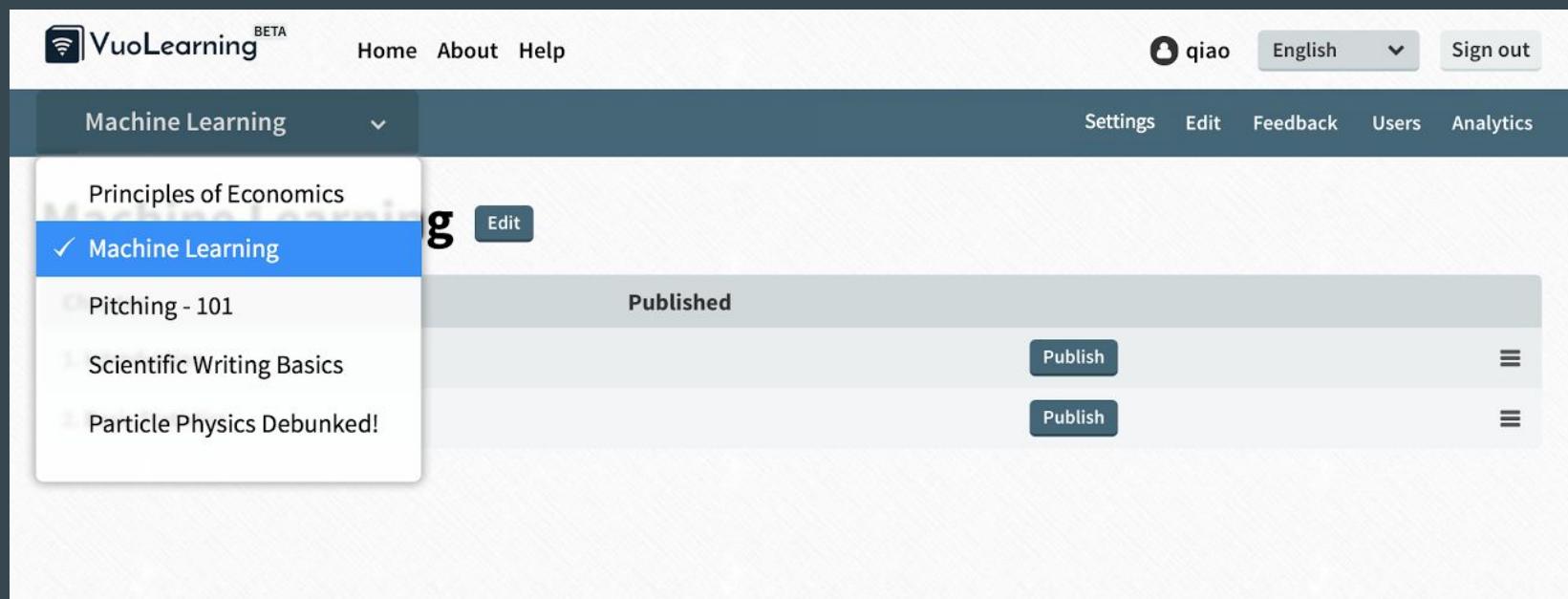
Site structure (after)

IMPROVEMENT SUGGESTIONS

Removed the course link and merge them with settings tab.

It is cumbersome to switch between courses and difficult to understand hierarchy levels in menu and hence added a chevron menu to edit.

“Logic of the system is annoying, the system doesn’t feel so intuitive”



Course (before)

Publishing chapters one by one is too much work if course is large. [2]

Users try to find preview button from this page.
[1]

Users would expect this page to have more global functionalities. [1]

Renaming the course from “edit” button might not be clear to all users. [0]

The screenshot shows the VuLearning BETA interface. At the top, there is a navigation bar with links for Home, About, Help, and a user profile for 'qiao'. Below the navigation bar, the title 'Machine Learning' is displayed, followed by an 'Edit' button which is circled in red. A table below lists two chapters: '1. Introduction' and '2. Basic Statistics', both marked as 'Published'. To the right of each chapter is a 'Publish' button, also circled in red. The entire interface is set against a light gray background.

Chapter	Published
1. Introduction	Published Publish
2. Basic Statistics	Published Publish

Course Settings (after)

IMPROVEMENT SUGGESTIONS

Add 'rename' option and preview button with the course main page.

Provide option to 'Publish' all the chapters together.

Delete option is made more easy to access.

All the 'Settings' are added to course main page.

The screenshot shows the VuoLearning BETA interface. At the top, there is a navigation bar with links for Home, About, Help, and a user profile for 'jarno'. Below the navigation bar, there is a secondary header with 'Machine Learning' and dropdown menus for Settings, Edit, Feedback, Users, and Analytics.

The main content area displays a course titled 'Machine Learning'. A green oval highlights the course title 'Machine Learning' and the 'Rename' and 'Preview' buttons. Another green oval highlights a 'Publish all' button and three individual 'Publish' and 'Delete' buttons for each of the three chapters listed below.

Below the course title, there is a table showing three chapters:

Chapter	Published
1. Chapter 1	[Publish] [Delete]
2. Chapter 2	[Publish] [Delete]
3. Chapter 3	[Publish] [Delete]

At the bottom of the screen, there is a 'Course Settings' panel with the following fields:

- Link:** usability.vuolearning.fi/courses/principles-of-economics
principles-of-economics
- Description:** (Empty text area)
- Material language:** English
- Visible to admins:** On
- User access:** Registered
- Require passcode:** Off
- Passcode:** (Empty text area)
- Save:** (Green button)

Edit (before)

Confusion about the logic of creating a new chapter [2]

4/5 didn't intuitively get the difference between "Add chapter" and "Import"

Save changes is not clear [3]

"Save changes button is confusing after saved as draft message"

Icons are not informative [1]

→ Add tooltips

Preview button opens a new tab and the users didn't notice it. [1]

- + All users liked import functionality
- + Editing blocks was easy

The screenshot shows the VuLearning BETA interface. At the top, there's a navigation bar with 'Home', 'About', 'Help', a user profile 'qiao', language 'English', and 'Sign out'. Below that is a secondary navigation bar with 'Course', 'Edit', 'Feedback', 'Analytics', 'Users', and 'Settings'. The main content area is titled 'Machine Learning'. On the left, a sidebar titled 'Chapters' lists '1. Introduction' and '2. Basic Statistics', with 'Add chapter' and 'Import' buttons highlighted by a red oval. The main area shows the '1. Introduction' block with a preview of its content: 'Machine learning is a subfield of computer science that evolved from the study of pattern recognition and computational learning theory in artificial intelligence. Machine learning explores the study and construction of algorithms that can learn from and make predictions on data. Such algorithms operate by building a model from example inputs in order to make data-driven predictions or decisions expressed as outputs.' Below this is another block with similar content. A red arrow points from the 'Import' button in the sidebar to the second block's title. A red circle highlights the 'Discard changes' and 'Save changes' buttons at the top right of the main area.

Edit (after)

IMPROVEMENT SUGGESTIONS

Make the two level 'Save state' evident by telling users clearly. Also have an option to undo block level changes, than discard all the changes in the system.

Rename the buttons to 'Save Chapter' and 'Delete Chapter' to make their meaning clear.

Publish is renamed to a easy to understand name that also conveys what the system does.

Preview button re-color to make it more prominent on the UI

Add informative error message when invalid video links fail are added to the system.

The screenshot shows the VuoLearning platform's chapter editor for 'Machine Learning'. The top navigation bar includes 'Home', 'About', 'Help', 'qiao', 'English', and 'Sign out'. The left sidebar lists chapters: '1. Introduction', '2. Basic Statistics', and '3. Machine Learning 101'. A green circle highlights the 'Preview' button above the first chapter's content. Another green circle highlights the 'visible to : Editors' dropdown and the 'Delete chapter' button. A third green circle highlights the 'Discard changes' and 'Save chapter' buttons at the bottom right of the chapter content. A note at the bottom says 'Saved as a draft 2 minutes ago. Save chapter to view changes in Preview mode.' The main content area displays the first chapter's title '1. Introduction' and its description: 'Machine learning is a subfield of computer science that evolved from the study of pattern recognition and computational learning theory in artificial intelligence. Machine learning explores the study and construction of algorithms that can learn from and make predictions on data. Such algorithms operate by building a model from example inputs in order to make data-driven predictions or decisions expressed as outputs.' Below this is another section with a plus sign and a description: 'Machine learning is closely related to and often overlaps with computational statistics; a discipline which also focuses in prediction-making through the use of computers. It has strong ties to mathematical optimization, which delivers methods, theory and application domains to the field. Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms is infeasible.' At the bottom, there is a summary section with a plus sign and a description: 'Within the field of data analytics, machine learning is a method used to devise complex models and algorithms that lend themselves to prediction. These analytical models allow researchers, data scientists, engineers, and analysts to "produce reliable, repeatable decisions and results" and uncover "hidden insights" through learning from historical relationships and trends in the data.' A vertical bar on the right indicates 'UNSAVED CHANGES' with a circular arrow icon.

Edit (after)

IMPROVEMENT SUGGESTIONS

Drop import button and merge functionality with 'Add chapter'

The screenshot shows the VuoLearning platform interface. At the top, there's a navigation bar with the logo 'VuoLearning BETA', 'Home', 'About', 'Help', and user account information ('qiao', 'English', 'Sign out'). Below the navigation is a secondary header with 'Machine Learning' and dropdown menus for 'Settings', 'Edit', 'Feedback', 'Users', and 'Analytics'. The main content area is titled 'Chapters' and lists three chapters: '1. Introduction', '2. Basic Statistics', and '3. Machine Learning 101'. A green button '+ Add chapter' is visible. On the right, a modal window titled 'Add Chapter' is open, prompting the user to 'Enter chapter name' and providing a note that only Microsoft Word files (doc, docx) and LaTeX files (tex) are supported. It also includes a 'Select file (optional)' input field with a 'Select file...' button, a 'Cancel' button, and a green 'Add' button. The background of the main content area shows the content of the '1. Introduction' chapter, which discusses machine learning as a subfield of computer science and its relationship with computational learning theory. A vertical bar on the right indicates 'UNSAVED CHANGES'.

VuoLearning BETA

Home About Help

qiao English Sign out

Machine Learning

Settings Edit Feedback Users Analytics

Chapters

1. Introduction

2. Basic Statistics

3. Machine Learning 101

+ Add chapter

Visible to : Editors Delete chapter

Saved as a draft 2 minutes ago. [Save chapter](#) to view changes in Preview mode.

Discard changes Save chapter

1. Introduction

Machine learning is a subfield of computer science that evolved from the traditional learning theory in artificial intelligence. It is concerned with the study and construction of programs that can learn from data. Such programs build models from example inputs in order to make predictions as outputs.

Add Chapter

Enter chapter name

For now, only importing Microsoft Word files (doc, docx) and LaTeX files (tex) is supported.

Select file (optional)

Select file...

Cancel Add

Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms is infeasible. often overlaps with computational learning theory in prediction-making through the use of mathematical optimization, which provides a framework for domains to the field. Machine learning is a method used to devise complex models and algorithms that lend themselves to prediction. These analytical models allow researchers, data scientists, engineers, and analysts to "produce reliable, repeatable decisions and results" and uncover "hidden insights" through learning from historical relationships and trends in the data.

UNSAVED CHANGES

Preview (after)

IMPROVEMENT SUGGESTIONS

Added a informative text telling users' that the preview has been opened in a new tab.

This screenshot shows a presentation slide with a blue header bar. The header bar contains the text "This preview has been opened in a new tab." on the left and a "Do not show again" button with a close icon on the right. Below the header is a white content area. In the top right corner of this area is a "Next >" button. The main title of the slide is "1. Introduction". The text below the title defines machine learning as a subfield of computer science that evolved from pattern recognition and computational learning theory in artificial intelligence. It quotes Arthur Samuel's definition from 1959 and describes machine learning as a field that gives computers the ability to learn without explicit programming. The text also mentions that machine learning explores the study and construction of algorithms that can learn from and make predictions on data, operating by building a model from example inputs to make data-driven predictions or decisions expressed.

This preview has been opened in a new tab.

Do not show again x

Next >

1. Introduction

Machine learning is a subfield of computer science that evolved from the study of pattern recognition and computational learning theory in artificial intelligence. In 1959, Arthur Samuel defined machine learning as a "Field of study that gives computers the ability to learn without being explicitly programmed". Machine learning explores the study and construction of algorithms that can learn from and make predictions on data. Such algorithms operate by building a model from example inputs in order to make data-driven predictions or decisions expressed.

Users (before)

Users tend to think that the course is available to students when they have been added to the course. [4]

Entered text is removed when error [3]

Extra separators (e.g. semicolon) at the end of the email list causes error [3]

Error messages are uninformative. [2]

Not enough error feedback [2]

Daunting to add users [2]

Unclear terminology [1]

The screenshot shows the 'User management' section of the Vuolearning platform. At the top, there are tabs for 'Home', 'About', 'Help', 'jarno', 'English', and 'Sign out'. Below that, it says 'Principles of Economics' and has links for 'Course', 'Edit', 'Feedback', 'Analytics', 'Users', and 'Settings'. The main area is titled 'User management' and has a sub-section titled 'Admins'. It shows the 'Owner' as 'jarno.lappalainen@aalto.fi' with a 'Move ownership' button. The 'Editors' section shows 'No editors' with a green 'Add editor' button. A red circle highlights this 'Add editor' button. Below that is a 'Users' section with a 'Users' button and 'No users' message, also highlighted by a red circle. At the bottom, there's a 'Delete all' button. The final section is 'Add users', which includes fields for 'Email addresses' (with a note about sending notifications) and 'Message (optional)', both of which are also highlighted by red circles.

Users (after)

IMPROVEMENT SUGGESTIONS

Rename the terminologies ‘User’ to ‘Student’.

More clear email address box marking out the email ids and grouping them as and when entered.

Notifying the users that adding students does not mean that the chapters are published.

The screenshot shows the 'User management' section of the VuoLearning platform. At the top, there are sections for 'Admins' (Owner: jarno.lappalainen@aalto.fi) and 'Editors' (No editors). Below these are sections for 'Users' (Students: No users) and 'Add students'. The 'Add students' section includes fields for 'Email addresses' (matti.meikalainen@maili.fi, minna.opiskelija@em...) and a 'Message (optional)' field. A note at the bottom right states: 'Note that there are 5 unpublished chapters not available to students!'. Two green circles highlight specific areas: one around the 'Students' label in the user list, and another around the note about unpublished chapters in the add student form.

Users (after)

IMPROVEMENT SUGGESTIONS

Pre-populating the list of users than having to type all the users individually.

Add informative error messages when the an email address is invalid or a user does not exist.

The screenshot shows the VuoLearning platform's User management section. At the top, there is a navigation bar with the VuoLearning logo, Home, About, Help, a user profile (qiao), language selection (English), and sign-out options. Below the navigation is a secondary header with Machine Learning and dropdown menus for Settings, Edit, Feedback, Users, and Analytics.

The main content area is titled "User management" and contains a section for "Admins". It shows the current "Owner" as jarno.lappalainen@aalto.fi and indicates there are "No editors". Buttons for "Move ownership" and "Add editor" are present.

Below the Admins section is a "Users" section. It shows a "Students" category with "No users" and a "Delete all" button. Below this is a "Add students" section with a note about email notifications and a field for "Email addresses". A modal window titled "Add editor" is open over the "Add students" section. This modal has fields for "Email" and "...or name", with "Alber" typed in. A dropdown list shows suggestions: Albert Cruz (highlighted in blue), Angela Leon, Chris Baker, Colleen Garton, and Gregory Baxter. There is also a link to "Create a new user". At the bottom of the modal are "Cancel" and "Add" buttons.