

# DigiCulture

## O2.5 - Usability Evaluation and continuous update FINAL

<b>Outcome 2 Activity 5 Usability Evaluation and continuous update</b>	
<b>Document submission and review information</b>	
Date of deliverable	August 2021
Organisation name of lead author	Politehnica University of Timisoara
Revision date	August .2021
<b>Author and reviewer information</b>	
Name of the author	Silviu Vert, Diana Andone, Vlad Mihaescu, Andrei Ternauciuc
Organisation / affiliation of the author	Politehnica University of Timisoara
Name of the reviewer	Bastian Ilsø Hougaard
Organisation / affiliation of the reviewer	Aalborg Universitet

**Copyright licence:** This work is licensed under a Free Culture Licence [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

*The creation of these resources has been (partially) funded by the ERASMUS+ grant program of the European Union under grant no. 2018-1-RO01-KA204-049368. Neither the European Commission nor the project's national funding agency ANPCDEFP are responsible for the content or liable for any losses or damage resulting of the use of these resources.*

## Imprint

This publication is O2.5 - Usability Evaluation and continuous update of the DigiCulture Erasmus+ strategic partnership founded by the European Commission 2018 - 2020 under 2018-1-RO01-KA204-049368 | [www.digiculture.eu](http://www.digiculture.eu)

## PDF download

A full-text PDF of this report is available as a free download from:

<https://digiculture.eu/en/category/outputs/output-2-integrated-virtual-learning-hub-online-and-mobile-moc-platform/>

## Social media

Find us on Twitter: @digiculture

Find us on Facebook: DigiCulture Erasmus+ Project

Find us on Instagram: digiculture\_erasmus

Give us your feedback on any social media platform using the hashtag: #digiculture

## Suggested citation

Vert, S., Andone, D., Mihaescu, V., Ternauciu, A. (2021). *Usability Evaluation and continuous update.*

Retrieved from

<https://digiculture.eu/en/category/outputs/output-2-integrated-virtual-learning-hub-online-and-mobile-mooc-platform/>

## Corresponding author

Silviu Vert

Politehnica University of Timisoara

Piata Victoriei no. 2, Timisoara 300006, Romania

silviu.vert [at] upt [dot] ro

## Contributors

Politehnica University of Timisoara

Università degli Studi di Roma Tre

Aalborg Universitet

Universität Graz

Dublin City University

JME Associates Ltd

National Association of Distance Education

Fundația Interart TRIADE

## Table of Contents

Outcome 2 Activity 5 Usability Evaluation and continuous update	1
<b>Contributors</b>	<b>2</b>
Table of Contents	<b>3</b>
Executive Summary	<b>5</b>
Objectives of this document	<b>5</b>
Who is this document for?	<b>5</b>
What topics are addressed in this document	<b>5</b>
<b>Contributors</b>	<b>5</b>
Acknowledgements	<b>5</b>
1 Aims and Scope	<b>6</b>
2 Background and rationale	<b>6</b>
<b>3 Methodology, tools and research</b>	<b>7</b>
4 Results	<b>8</b>
4.1 Evaluation of the DigiCulture Courses on the Web Platform	<b>8</b>
User Observation Session	<b>8</b>
Questionnaire Method	<b>9</b>
Error Testing Method	<b>10</b>
4.2 Evaluation of the DigiCulture Courses on the Mobile Application	<b>10</b>
User Observation Session	<b>10</b>
Error testing method	<b>11</b>
Focus group	<b>11</b>
4.3 Continuous Update of the DigiCulture Platform and Courses	<b>11</b>
<b>5 Discussion</b>	<b>14</b>
6 Conclusions	<b>17</b>
7 References	<b>18</b>

## Executive Summary

This document presents the initial usability evaluation of the DigiCulture MOOC platform, which was performed using a mix of user observation sessions, focus groups, questionnaires and error testing, with 26 participants, students undertaking a usability and interactivity graduate class, over a period of several months. It reports on the main findings of the evaluation, which found a score of 73 on the standard System Usability Scale, corresponding to a Good user experience on the adjective rating scale. Consequently, the document formulates some recommendations for improving the user experience of the DigiCulture MOOC platform, which can be generalized to similar platforms. Additionally, it reports on the actions taken for the continuous update of the platform, such as the 9 video and text based user guides, in multiple languages. The final usability evaluation concluded that the user experience was enhanced to Excellent on the adjective rating scale of the System Usability Scale.

## Objectives of this document

The document has the following objectives:

- describe the methodology and tools used in the usability evaluation of DigiCulture MOOCs,
- formulate recommendations for the improvement of the user experience, and
- present the actions taken for the continuous update of the platform.

## Who is this document for?

The document is focused on two main target groups: (1) DigiCulture partners involved in the design and creation of the DigiCulture MOOCs, and (2) teachers and elearning platform managers interested in creating an appropriate user experience for the learners.

## What topics are addressed in this document

The document addresses the following topics:

- User experience in MOOCs
- Usability evaluation methodology and tools for MOOCs
- Usability issues and their severity ratings in MOOCs
- Recommendations for improving the user experience of MOOC learners

## Contributors

Politehnica University of Timisoara and all partners of the DigiCulture project.

## Acknowledgements

The Politehnica University of Timisoara is the author of this document. The DigiCulture project partners provided valuable feedback in the process of evaluation and improvement of the user experience of the platform and courses.

Parts of this report were included in the following publication: Vert S., Rotaru O., Stoica D., Andone D. (2021) Initial Usability Evaluation of the DigiCulture Courses on UniCampus. In: Lopata A., Gudonienė D., Butkienė R. (eds) Information and Software Technologies. ICIST 2021. Communications in Computer and Information Science, vol 1486. Springer, Cham. [https://doi.org/10.1007/978-3-030-88304-1\\_24](https://doi.org/10.1007/978-3-030-88304-1_24)

## 1 Aims and Scope

The purpose of this document is to describe the usability evaluation of the platform implemented in *O2 Integrated Virtual Learning Hub - online and mobile MOOC platform*, the outcomes and the action taken for the continuous update of the platform and courses.

## 2 Background and rationale

We live in a fast-changing world in which we need to keep ourselves updated in many knowledge domains. One of the advantageous ways of expanding our knowledge is through Massive Open Online Courses (MOOCs). A MOOC is defined as being an online course, addressed to an unlimited number of participants, sustaining an open education.

The extended definition of a MOOC includes the following aspects: an online course that doesn't need physical presence; an available and accessible course for everyone, from anywhere; the course is self-directed, self-paced or time limited, having a start and an end date; it consists of video lectures and/or readings, examinations in the form of assignments, exams, experiments; it supports interactivity between the participants and the tutors through online forums or other social media platforms; its content meets high academic standards; and it supports the creation of educational communities.

An important requirement when it comes to MOOCs is the level of usability offered to the people attending the courses. A high level of usability can be accomplished after several usability evaluations on the product, in this case, on the MOOC. The usability evaluation methods are procedures composed of well-defined series of activities, meant to collect the information regarding the interaction between the final user and the digital product, in order to identify if the final aim of the product is reached by the end users.

The term usability is defined in the context of Human Computer Interaction as a "quality attribute that assesses how easy user interfaces are to use". In the context of MOOCs and LMSs (Learning Management Systems), usability defines the measure in which students can do the proposed tasks with efficiency, effectiveness, and satisfaction.

When it comes to usability evaluation methods, an important aspect is also the classification of them. One of the most accepted classification represents the classification of Nielsen and Holzinger. This classification splits the evaluation methods in two categories: usability inspection methods and usability testing methods. The main difference between these two consists of the fact that the usability inspection methods involve expert's opinion in the evaluation and the usability testing methods involve possible users of the evaluated product.

The most famous usability inspection methods are the heuristic evaluation and the cognitive evaluation. On the other hand, usability testing methods are the ones that involve future users and some of the most used methods are the focus group and the survey.



In this report, we will present the usability evaluation of the DigiCulture online courses and describe the main findings of the research.

Due to COVID-19 restrictions, the usability evaluation of the DigiCulture courses was organized entirely remotely. Research shows no differences between (a)synchronous remote testing and lab-based usability testing under favorable operational conditions, which was the case for the UniCampus platform.

The usability evaluation methods, performed both on the website and the mobile application of the UniCampus platform, consist of: the observation session method, the expert review method, the focus group, the error testing, and the survey method.

### 3 Methodology, tools and research

For this report, we identified 2 main research questions:

**Q1.** How is the integration of the DigiCulture courses on the UniCampus platform?

**Q2.** What is the students' experience of the first implementation of the DigiCulture MOOCs?

To be able to answer these questions, we performed a usability evaluation of the DigiCulture MOOCs as part of the Interactivity and Usability class of the Multimedia Technologies master's degree program at the Politehnica University of Timisoara (Romania). 26 students of this class were involved in the evaluation, some as facilitators and observers, others as participants, all under the supervision of their tutors (the authors of this paper). The students, 23-25 years old, have good IT skills and use the Internet and mobile applications in extensive ways.

The DigiCulture project aims to create MOOCs on 13 domains relevant for IT skills in creative industries, namely 1. The Internet, World Wide Web, and introduction to the digital world, 2. Digital Content & Publishing, 3. Data Protection and Open Licenses, 4. Digital Curation - Digital Libraries and Museums 5. Digital Safety, Security and Ethics, 6. Digital Storytelling, 7. Digital Audiences, Digital Analytics, 8. Social Media for Culture, 9. Augmented and Virtual Reality, 10. Mobile Apps and Mobile User Experience, 11. Digital Management in Culture, 12. Digital Communication & Presentations and 13. Online and Mobile Digital Media Tools.

Only 8 MOOCs out of these 13 have been evaluated, since the other 5 had insufficient content at the time the research was conducted, to be a valid target for usability testing.

During a class at the end of May 2020, the students were divided in 3 groups in Zoom Breakout Rooms: the first group evaluated MOOC no 5 on the web platform using the user observation method, the second group evaluated MOOC no 9 in the mobile app also using the user observation method, while the third group evaluated MOOCs no 4, 6, 8, 10, 11 and 13 using the error testing method on both platforms (web and mobile). After all the groups were finished, the whole class participated in a focus group session. Some smaller usability tests were performed also after his day.

In the following sections, we describe each of the usability testing methods, separately for web and mobile, for the reader to understand the usability issues more easily.

## 4 Results

### 4.1 Evaluation of the DigiCulture Courses on the Web Platform

The evaluation of the DigiCulture web courses was done on the UniCampus platform (Fig. 1).

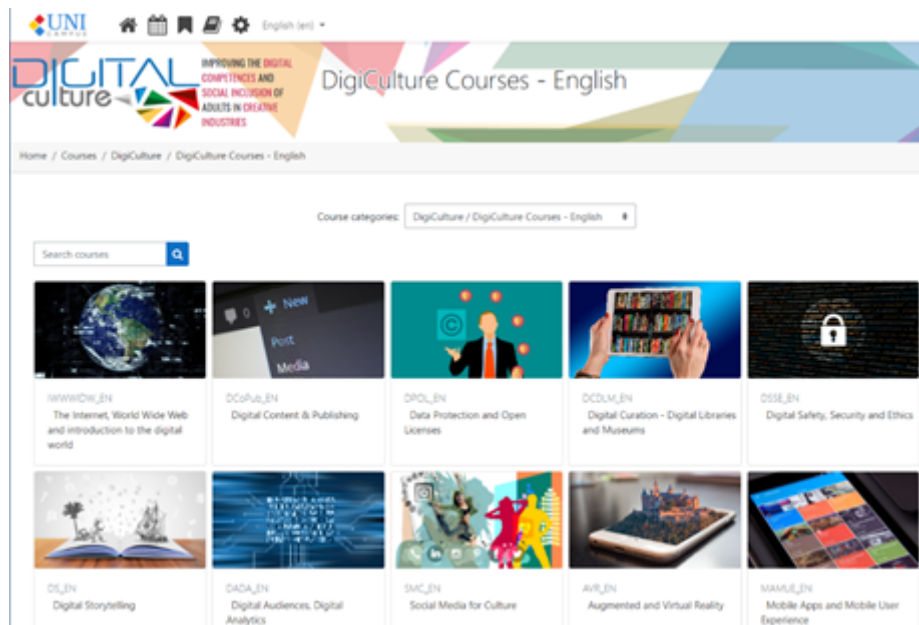


Fig. 1. Homepage of the DigiCulture platform on UniCampus

#### User Observation Session

For this evaluation method, a group of 7 students were organized in different roles, 1 student being the moderator, 2 the observers and 4 the actual participants in the study.

The user testing began with the briefing of the participants and with a pre-questionnaire, which included some context related questions about the users.

The tested MOOC was no 5, titled “Digital Safety, Security and Ethics”, and the participants had to carry out 9 tasks. The participants were required to perform tasks such as: creating a user account on the platform; finding some specific topic in the course; identifying the learner’s progress; sending a question to the tutor of the course; or answering a questionnaire in the course.

Only 3 out of 9 tasks were not 100% accomplished: the 4th task with a completion rate of 50%, and the 8th and 9th tasks both with a completion rate of 25%. The 4th task was not completely understood by the participants – they mentioned that the description of the courses should have been displayed on the first page of each course. Also, the 8th task was only accomplished by the fourth participant, the only one who noticed the progress bar in the dashboard page of its account. The 9th task was accomplished only by one of the users, the rest of them expecting to see the name of the tutor either on the course page, on the



general info section, or on a forum of discussions. On average, the tasks were completed by 77.7% of the participants.

## Questionnaire Method

For this usability evaluation method, the students used a standardized questionnaire, SUS (System Usability Scale), a well-known questionnaire for its replicability and ease of use. It's a short questionnaire and it's easier to be filled by the participants, rather than a longer questionnaire which can be overwhelming for them. Also, they chose SUS for its balance between the positive and negative questions, which brings more objectiveness to the results.

The survey was filled online, by 15 participants, after navigating on the DigiCulture courses on the UniCampus website.

In the following list, we present the customized statements of the SUS survey.

1. I think that I would like to use this platform frequently.
2. I found the platform unnecessarily complex.
3. I thought the platform was easy to use.
4. I think that I would need the support of a technical person to be able to use this platform.
5. I found the various functions in this platform were well integrated.
6. I thought there was too much inconsistency in this platform.
7. I would imagine that most people would learn to use this platform very quickly.
8. I found the platform very cumbersome to use.
9. I felt very confident using the platform.
10. I needed to learn a lot of things before I could get going with this platform.

Most of the participants to this survey agreed that there is no need to have a technical background in order to use the UniCampus website, so we can conclude that the evaluated product is appropriate to be used by a beginner, which is an objective of this Erasmus+ project. Most of the respondents to the survey agreed that the website's functionalities are well integrated.

Using the SUS methodology, we derived the total score of the platform, which is 73. In adjective rating scale (Worst Imaginable – Awful – Poor – OK – Good – Excellent – Best Imaginable), a SUS score of 73 equals to Good.

After the completion of the questionnaire, most of the participants mentioned several important aspects and suggestions regarding the product, such as the following ones: the change of the website design (following a color code for the courses), modifications of the main menu which is considered ambiguous, modifications of the sidebar menu, different actions regarding the courses such as the message sending, enrollment, the existence of a language filter for the courses and also, improvements in the way users are accessing the information in the context of intuitiveness and facility.



## Error Testing Method

For this usability evaluation method, several students had the task to complete a course in order to observe if there are any problems or errors by the time of their progress.

The first of the courses to be completed was entitled “Digital Curation – Digital Library and Museums”. Some of the problems mentioned by the students are aspects like: login display problem inside the form, spelling mistakes, tables of content are inconsistent, the term “click” is misspelled in most of the scenarios, the text from the sidebar is not visible enough.

Another error tested course is entitled “Digital Storytelling in Creative Industries” and some of the encountered problems during the completion of it are: hard to read content on the sidebar menu, the language translation doesn’t work every time, several links don’t work, the progress of the user cannot be seen very well.

## 4.2 Evaluation of the DigiCulture Courses on the Mobile Application

For the mobile application testing, the authors used the following testing methods: User Observation Session, Error testing method and Focus group. All the sessions were organized remotely using Zoom, on the Unicampus mobile platform (Fig. 2) which is available both on Android and iOS.

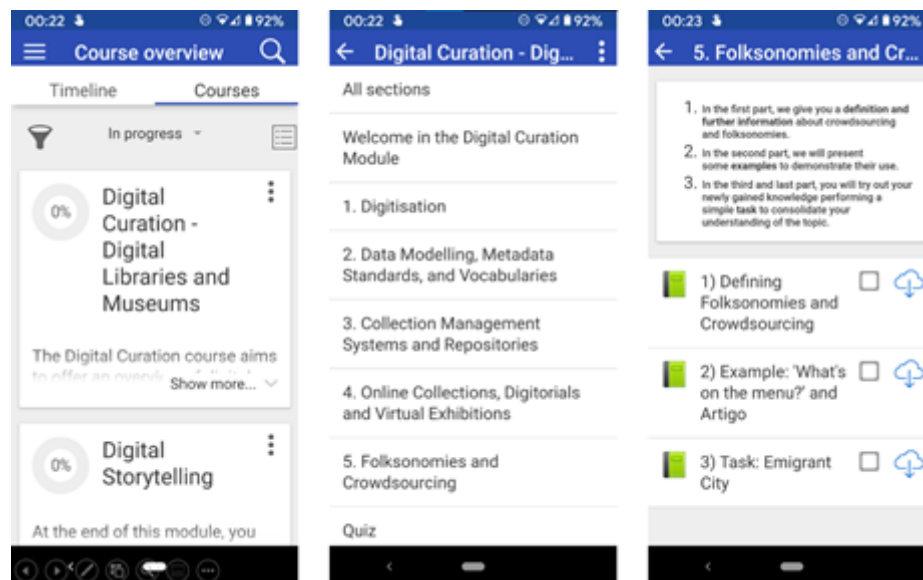


Fig. 2. Homepage of the DigiCulture platform on the UniCampus Android app

## User Observation Session

The user observation method was organized with 3 student-participants. They had to complete tasks such as creating an account within the mobile application, logging in, accessing the files and the DigiCulture courses in Romanian language, opening the inbox and sending a message to a contact in the friends list. Also, they had to change the language from the settings menu.

The first and major issue was that they could not create a new account, so they used one that was already created to complete all the other tasks.

All the other tasks were completed successfully and without errors.

After the session ended, the students completed a post questionnaire evaluating the whole experience they had while using the DigiCulture mobile application.

At the end, the students had to answer some general questions, to evaluate the intuitiveness, the design and the navigation in the mobile application.

### Error testing method

For the error testing method, the students had to find, access, and walk through the “Digital Management in Culture” course in the mobile app. They encountered issues related to the quizzes and video integration. The navigation between the chapters was also problematic because some chapters did not have any content displayed and, on those sections, the “go to next chapter” button was not displayed so they had to go back and choose the next chapter from the main page.

### Focus group

For the focus group, 20 students were asked to walk through some of the DigiCulture courses using both the website and the mobile application.

They discovered that some of the courses were not accessible, especially using the application on the iOS devices. Most of the problems were related to navigation buttons that were not intuitive or were not displayed on every page. They also got confused at the beginning when they used the courses’ menu.

Another issue they found was that in some of the courses, as part of the learner’s activity, they were asked to create accounts on various websites, and they did not appreciate that as a pleasant experience.

Some of the quizzes did not work and they had issues with the functionality of the checkboxes, because some of them could not be checked once they finished an activity.

The students appreciated that at the end of the courses they could find a section named “Conclusions”. Also, they appreciated that the courses contained interesting information and they would gladly choose to learn through them.

Overall, they appreciated the platform and they said that they would use the website and application again to enroll and learn.

## 4.3 Continuous Update of the DigiCulture Platform and Courses

As part of the continuous update of the platform and courses, 9 video and text guides have been created and inserted on the DigiCulture website <https://digiCulture.eu/en/courses/> and on the Unicampus platform (in the ‘Welcome to DigiCulture’ course, after login).

These guides are described below.

### How to access the DigiCulture courses

This tutorial, which is available in English at <https://www.youtube.com/watch?v=i7bTLh2qZWo>, presents a step-by-step guide into how to register on the DigiCulture platform and how to enroll in courses (Figure 3):

‘First you navigate on <https://digidculture.eu/en/courses>. Then you choose the course you want to enroll into and click on it. After reading the information about the course, you can choose Join the course for free, which sends you to the UniCampus platform. Here you login or create a new account, reading and accepting the Data privacy policy. Before joining the course you have to complete the Previous background quiz located in the ‘Welcome to DigiCulture Course’. If you don’t complete the Previous background quiz, you won’t be able to receive the badge after completing the course. Simply click on ‘Enrol me’ and you are enrolled in the course of your choosing.’

The tutorial was also adapted for:

- Romanian <https://www.youtube.com/watch?v=DTVipeBc6Lg>
- Lithuanian <https://www.youtube.com/watch?v=znI5mRACB4U>



Fig. 3. Screenshot from “How to access the DigiCulture courses” video on Youtube

### How to complete a DigiCulture course

This tutorial, which is available in English at <https://www.youtube.com/watch?v=KYrFOHbO9oo>, presents how one can complete a course on the DigiCulture platform and how to navigate through the modules of the courses (Figure 4):

“Before starting the course you have to complete a pre-course knowledge quiz. After you complete an activity, a green check mark will be displayed and your progress will be registered. You can navigate through the module using the arrows present under the lesson content. Your overall progress will be displayed in the upper right corner. After you complete all the course modules you will earn the course badge.”

The tutorial was also adapted for:

- Romanian <https://www.youtube.com/watch?v=rhysmFRoAjM>
- Lithuanian <https://www.youtube.com/watch?v=9AyFrqPK88A>



Fig. 4. Screenshot from “How to complete a DigiCulture course” video on Youtube

### How to claim and use your online badge

This tutorial, which is available in English at <https://www.youtube.com/watch?v=toFPJIHZmGk>, shows where to find the earned badges and where to upload them in order to share the achievements on social media (Figure 5):

“After completing a course, you should receive a notification about your badge, which you can see in the upper right corner of the page (the bell icon). Choosing to view this notification, you will get more information about it. You can click on ‘Manage badges’ to view all the badges you received. Once you have found the badge, there are a few steps you need to take in order to share it. First, you need to download it. It may look like an ordinary image file, but the file also contains the metadata which verifies your accomplishment. Before you can share your badge on social media, you need to upload it on Badgr. Badgr is an online service which allows you to collect all of the badges you earn in a digital backpack. If it is your first time using Badgr, start by creating an account. Once you have an account, you can add your badge(s). This is very simple, go to your “Backpack”, then click “Add badge” and upload the special image file you

downloaded from the DigiCulture platform, UniCampus. To let others know about your new competencies, you can share your badge on social media (eg. Facebook, LinkedIn, Twitter, Pinterest).”

The tutorial was also adapted for:

- Romanian [https://www.youtube.com/watch?v=mSuKCDy8a\\_8](https://www.youtube.com/watch?v=mSuKCDy8a_8)
- Lithuanian <https://www.youtube.com/watch?v=rbWcBVozAFE>



Fig. 5. Screenshot from “How to claim and use your online badge” video on Youtube

## 5 Discussion

After applying the usability evaluation methods on the DigiCulture courses on the UniCampus website and mobile app, some of the most important aspects to be improved turned out to be the following: inefficient navigation caused by an unfriendly sidebar menu, insufficient visibility on the sidebar menu, the hierarchy of the courses (too much time spent to find a course), the enrollment button being almost invisible, the non-intuitive interface of the website, the inconsistency regarding the courses presentation, the method of sending messages to the tutor which is very hidden, the list of the tutors being shown only in the main list of the courses, not in each course separately.

Severity ratings were used to prioritize the issues that affect most the user experience.

There are three factors that should be taken into consideration when analyzing an usability problem: frequency (“is it common or rare?”), impact (“will it be easy or difficult for the users to overcome?”) and

persistence (“is it a one-time problem that users can overcome once they know about it or will users repeatedly be bothered by the problem?”).

Jakob Nielsen also proposed a four-step scale to rate the severity of usability problems, as it follows:

0 = The problem is not a usability issue.

1 = “Cosmetic problem only”: it does not have to be fixed unless extra time is available on the project.

2 = “Minor usability problem”: as the issue is not severe it should be solved only after major problems are solved.

3 = “Major usability problem”: fixing this kind of issue should be a high priority because it affects the user experience.

4 = “Usability catastrophe”: the platform should not be released until this kind of issue is resolved.

In Table 1, we present the severity rating and some recommendations for every major usability problem that was encountered.

Table 1. Usability problems, severity ratings and recommendations

Usability Problem	Severity Rating	Recommendation
The “enroll in this course” button is hard to find. Test participants reported that it is way too small and looks more like ordinary text.	4	Enrolling in a course is a crucial action for the success of the learning experience. The button needs to stand out immediately, through color and size.
Some of the quizzes and videos are not displayed properly. Test participants had issues viewing or acting on them.	4	The learning platform needs to be thoroughly checked for this type of issues, on all major web and mobile platforms, and these issues need to be corrected immediately.
Marking an activity as checked is confusing. Test participants reported that this functionality sometimes worked and sometimes not, so they were unable to progress to 100% and complete the course.	3	Along with checking for possible bugs, visible instructions on how this feature works needs to be displayed on the platform.
Some course modules lack navigation buttons. Test participants wondered why they needed to go back to the homepage of the course just to find the next module.	3	All the modules in the courses need to be checked for missing navigation items. Proper navigation is very important for the user to make sense of where he/she is at the moment and where he/she could go next.
The sidebar menu is too cluttered. Test	3	The sidebar menu, which contains actions that can

participants complained that there are too many links and options in the sidebar menu, that it is too narrow, and that text is hard to read.		be done inside a course, needs to be decluttered by keeping only what is essential for the students. This can be determined by further usability studies and usage analytics.
The table of contents of some courses is inconsistent with the actual content. Test participants were surprised that the contents did not match with what was advertised.	2	For a proper user and learning experience, all the table of contents need to be checked and, if necessary, recreated, to eliminate confusion.
The design of the platform is inconsistent. Test participants reported feeling confused because identical functionalities have slightly different designs throughout the platform.	2	The platform needs to implement a design system in order to keep designs consistent across devices, screens, and functionalities.
Course content is too segmented. Test participants remarked that some courses have too many mini pages of information, which leads to way too many navigation actions that are needed from their part.	2	Courses need to be checked to keep a balance between information overload and number of screens.
The tutors are hard to identify. Test participants reported that it is unclear who is tutoring the course and how to contact them.	2	Although contacting the tutor is less common in a MOOC, the details of who created the MOOC and his/her contact information, or a general contact information for the platform, need to be visible on the course page.
Some external links do not open in a new browser tab. Test participants expected that links to external platforms, of which there are a lot in these courses, will open in a new tab.	2	All the external links need to be checked to open in a new browser tab, so that students can easily return to the actual course content when finished.
The progress bar is hard to notice. Test participants reported that they had issues in spotting the progress bar and that, sometimes, it does not seem to reflect the actual progress of the student inside a course.	2	Along with checking for possible bugs in the functionality of the progress bar, this module needs to be made more visible, through location and design, in order to give the students a proper sense of how much work they still have to put in to finish the course.
Spelling mistakes within the courses. Test participants were bothered that the course content has not been thoroughly checked for typos.	1	All the course content needs to be proofread again for spelling mistakes.

Also, the students participating in the usability evaluation mentioned that they think that the whole learning experience would be improved if the courses would have a more dynamic structure, with less text and more multimedia elements integrated into the lessons, especially for the mobile version of the application.

Given the feedback that we gathered during the evaluation, we improved the platform in order to enhance the user experience, especially for learners with low IT skills. Some examples are: the “Enroll” button was changed to stand out and be easier to discover, navigation was simplified, both content navigation and platform navigation, external links were set to open in new tab in order to help them easily return to the actual courses, quizzes and videos were checked in order to solve display problems on both web and mobile, the design of the platform was improved in order to eliminate confusion (similar sections have similar format and colors, etc.).

The final usability evaluation concluded that the user experience was enhanced to Excellent on the adjective rating scale of SUS.

## 6 Conclusions

As mentioned in the beginning of the document, all the usability evaluation methods for the DigiCulture courses were accomplished entirely remotely, due to COVID-19 restrictions.

The initial usability evaluation was performed both for the website version of the DigiCulture courses and for the mobile application. The methods used for the testing of the website were the user observation session, the expert review, the focus group, the questionnaire, and the error testing method. For the mobile application, the methods used were the focus group, the error testing, and the user observation session.

This was the first usability evaluation for the DigiCulture courses, after the development process. Some of the most important problems encountered during the evaluation involve aspects such as: too much text content on one page of the course, too many pages and required clicks, the enroll button is hard to find, some sections of the website such as the side menu appear confusing, and inconsistency on the courses. Also, some of the recommendations from the participants would be a more dynamic structure of the DigiCulture courses, filled with more boxes, videos and images instead of lots of text. Also, on the mobile application, the students mentioned that the video material for the courses would be more useful than the text.

Turning back to the research questions in the methodology, we found out that:

- A1.** The integration of the DigiCulture courses on the UniCampus platform is not finalized. Some modules, content, links, and navigation items are not properly working, and this can lead to unsatisfied users which will leave the platform.
- A2.** The initial experience of the students regarding the DigiCulture MOOCs is a positive one. They suggested several improvements, both in the interface of the platform and in the content of the courses, but they graded the web and mobile platforms fairly high and see themselves using the platform again in the future.





The final evaluation of the Digiculture platform and courses concluded that the major usability issues were removed and the overall user experience improved, complemented by several video-based user guides.

## 7 References

- Andone, D., VasIU, R., & Ternauciuc, A. (2017). UniCampus: The first courses in a Romanian MOOC. 2017 IEEE Global Engineering Education Conference (EDUCON), 1210–1215.  
<https://doi.org/10.1109/EDUCON.2017.7943002>
- Fernandez, A., Insfran, E., & Abrahão, S. (2011). Usability evaluation methods for the web: A systematic mapping study. *Information and Software Technology*, 53(8), 789–817.  
<https://doi.org/10.1016/j.infsof.2011.02.007>
- Holzinger, A. (2005). Usability engineering methods for software developers. *Communications of the ACM*, 48(1), 71–74. <https://doi.org/10.1145/1039539.1039541>
- Jakob Nielsen. (n.d.). Usability 101: Introduction to Usability. Nielsen Norman Group. Retrieved July 20, 2020, from <https://www.nngroup.com/articles/usability-101-introduction-to-usability/>
- Jakob Nielsen. (1994). *Usability Engineering* (1st ed.). Morgan Kaufmann.  
<https://www.elsevier.com/books/usability-engineering/nielsen/978-0-08-052029-2>
- Johansson, S., & Frolov, I. (2014). An Adaptable Usability Checklist for MOOCs: A usability evaluation instrument for Massive Open Online Courses. Umeå University, Department of Informatics.
- Measuring and Interpreting System Usability Scale (SUS). (2017, May 31). UIUX Trend.  
<https://uiuxtrend.com/measuring-system-usability-scale-sus/>
- Nielsen, J. (1994, November 1). Severity Ratings for Usability Problems. Nielsen Norman Group.  
<https://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/>
- Otaiza, R., Rusu, C., & Roncagliolo, S. (2010). Evaluating the Usability of Transactional Web Sites. 2010 Third International Conference on Advances in Computer-Human Interactions, 32–37.  
<https://doi.org/10.1109/ACHI.2010.27>
- Ramakrisnan, P., Jaafar, A., Razak, F. H. A., & Ramba, D. A. (2012). Evaluation of user Interface Design for Learning Management System (LMS): Investigating Student’s Eye Tracking Pattern and Experiences. *Procedia - Social and Behavioral Sciences*, 67, 527–537. <https://doi.org/10.1016/j.sbspro.2012.11.357>
- Rotaru, O., Vert, S., VasIU, R., & Andone, D. (2020). Standardised Questionnaires in Usability Evaluation. *Applying Standardised Usability Questionnaires in Digital Products Evaluation* (pp. 39–48).  
[https://doi.org/10.1007/978-3-030-59506-7\\_4](https://doi.org/10.1007/978-3-030-59506-7_4)
- Sauer, J., Sonderegger, A., Heyden, K., Biller, J., Klotz, J., & Uebelbacher, A. (2019). Extra-laboratorial usability tests: An empirical comparison of remote and classical field testing with lab testing. *Applied Ergonomics*, 74, 85–96. <https://doi.org/10.1016/j.apergo.2018.08.011>