



DigiEduHack Solution

Berlin - #SemesterHack 2.0 (in German & English)

Challenge: Berlin - #SemesterHack 2.0 (in German & English) Challenge 2020

Learnflix- Stop, I have a question! Netflix Party for educational videos

Learnflix: Stop, I have a question! Netflix for education

Alleine und gleichzeitig gemeinsam asynchrone Lerninhalte anschauen, wie kann das funktionieren? Netflix Party macht es vor! Learnflix ist eine Moodle Integration, die genau das ermöglicht. Es verfügt über zahlreiche Funktionen, die das gemeinsame Anschauen der Vorlesungsvideos enorm erleichtern.

Team: Learnflix and Chill

Team members

Carolin Straßmann, Andreas Lingnau, André Helgert, Sebastian Brüne, Adriano Nicolosi, Malin Benjes, Alicia Neumann, Anna Westenfelder Gil

Members roles and background

Members of this project are: Dr. Carolin Straßmann, Dr. Andreas Lingnau (Both are university teachers at the Institute of Computer Science), André Helgert (Research assistant at the Institute of computer science) from the University of Applied Sciences Ruhr-West, Sebastian Brüne and Adriano Nicolosi from University for Media in Stuttgart (Both are students of public relations) as well as Malin Benjes from University Leipzig, Anna Westenfelder Gil from Philipps-University Marburg and Alicia Neumann from University Duisburg-Essen (all three are students of psychology).

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Solution Details

Solution description

Learnflix offers students the opportunity to watch learning videos or lectures together. Whether in a large room of 80 people or in a private room with a small learning group. To be able to learn unhurriedly, there is the possibility of creating hidden rooms that are not displayed in the menu. In the dashboard, they can also see how many people are already participating in an active room and how long the corresponding video has already been running. Students can join a video room and watch a lesson together with their fellow students. One can express their mood via a button or mark important segments for later with the flag. In addition, there is the option to exchange information about the content of the video with everyone else in the chat. We have also kept in mind the full screen viewers. With a picture-in-picture view the chat can be incorporated in the video in order to enable the viewer following the chat conversation without losing focus of the video. E.g., if a student has a question, by clicking on a post a fellow student can open a thread and answer it. Thereby the chat overview stays clear and all answers to a question are bundled together. Once a learning unit ends the video will automatically be stored together with the corresponding chat and will be either visible to the public or only to the participants of the session, depending on the configuration of the video room. When revisiting the room flags will be shown on a timeline and each chat message will be marked with a timestamp which allows users to directly jump to the corresponding position in the video. Thereby no information and question is lost. As students we know that particularly during the digital semester it's hard for many of our fellow students to motivate oneself. It often helps to work together collaboratively in groups, but unfortunately this is hardly possible due to the current situation. At least not in a face-to-face meeting. With Learnflix, this is now supposed to change and in addition, it should feel like studying on campus!

Therefore, we have developed a concept for Learnflix that incorporates various functionalities. In the attached video you can see a mock-up of the tool to help you understand the whole idea. Altogether, our design includes the following functionalities:

- Live Function:
 - Full control of the video. Learners can stop the video at any time, restart or rewind in order to discuss questions. All participants in a virtual room can:
 - Start and stop playing the video
 - Move forward or backward on the timeline.
 - Start watching again
 - Chat
 - Picture-in-picture (Translucent → e.g. as offered by Youtube) → During the full-screen livestream one can see the chat within the video on the left side. Thereby learners can see who is commenting or asking questions without leaving the full-screen viewer.
 - Traditional chat (chat and content of the video or the lecture are separated) → Apart from picture-in-picture chats a conventional version is available where the chat is displayed on the right side of the video.
 - Different colours are used to distinguish users in the chat.

- Comments
 - Private messaging → Clicking on a person's name opens a direct chat in a window in order to exchange private messages
 - Threads → When clicking on a comment the chat stops and a separate window opens with a thread for the particular comment.. To read a thread you must first click on the comment in the chat window. This will keep the chat clean and tidy for everyone.
 - Mute → if participants are misbehaving, fellow students can mark their name and the. If the troublemaker is marked by a majority, they are automatically muted and/or banned from the room.
- Shortcuts → During a live stream students can give quick feedback by selecting shortcut buttons which will be displayed in the video as pop-up messages, presenting emojis to the lecturer and/or fellow students.
- Splitting up of groups
 - Groups of more than 30-50 persons can be automatically split into smaller groups of 5-10 people.
- Recording:
 - Timestamp function → When a question is asked at a certain point in the video one can see the exact timestamp related to the question. By clicking on the timestamp, the player jumps to that point in the video.
 - Flags → Questions of important parts in the video can be marked using flags. Thereby they can be seen and selected more easily.
 - After the synchronized tracking of the video, no information is lost → The video is automatically saved with the associated chat and can be either viewed by everyone or only by yourself, depending on the configuration of the room. When you view it again, the set flags are displayed in the timeline and each chat message is provided with a time stamp, which enables you to jump to the appropriate point in the video
 - The aggregated view can (depending on the default settings) also be used by the teachers to improve and deepen the materials (see image file)
- Notifications:
 - When a public Learnflix party is started, students can also receive notifications on request so that nobody misses the party!

Next Steps and planned future work:

After the hackathon Learnflix is on a conceptual level. The tool's concept and the planned functions have been developed based on scientific findings. First mockups and approaches how a technical implementation of the tool could look like exist. The functions were thoroughly planned and can be easily adopted in an implementation phase. However, a concrete technical implementation is currently missing. This requires more and more time. A funding of the project idea would allow us to finance the corresponding personnel costs and any material costs that may arise. In order to make the tool as stable and user-friendly as possible, competences from different areas are required, just like in the Hackathon team. An interdisciplinary team consisting of computer scientists (expertise in Moodle programming and data protection), UX designers (user friendly design in order to create a high acceptance of the application) and psychologists (evaluation and research of the tool's effectiveness and its psychological effects) is necessary. For this implementation, we are looking for scientific employees or student research assistants who already have previous experience in the implementation of such a learning tool. At the same time student assistants can simplify and accelerate the process. They could especially support the networking work in order to transfer the tool as quickly as possible to other universities and also to design evaluations of the tool there. In

addition to personnel and material costs (for servers, licenses, etc.), there are also costs for transfer and public relations (e.g. publication costs, possibly funds for long-term evaluations, advertising material).

Solution context

Why do we need a tool for collective learning?

Social isolation is a factor, which leads to decreased learning efficiency in online- and on-campus-situations as well as extenuated satisfaction with study-experiences of (international) students (Erichsen & Bollinger, 2011). With its interactivity Learnflix counteracts this social isolation. The social climate respectively the social contacts to fellow students (or the sense of belonging) emerged as a particularly relevant factor for study-satisfaction. The better the communication between students and the better the sense of belonging, the greater the increase of satisfaction in students (Bernholt et al., 2018).

There is a strong positive correlation between the amount of communication about content of lectures and seminars and the attachment of students to one another. Collective discussions as well as the reciprocal explaining of learning contents, increase attachment (Hurtado & Carter, 1997). As humans tend to be "ultrasocial beings" (Tomasello, 2014), it is greatly important for them to feel such attachment (Ryan und Deci, 2000). Enabling communication among students is therefore indispensable. There was another study which showed just that: Hoffmann et al. (2000) found that interaction with the peer-group is the most important factor to enhance a sense of belonging. Learnflix joins exactly at that point and connects students with each other. One is able to interact within a small group of fellow students and is therefore well-connected with others, even though learning is solely online. But that is not all Learnflix has to offer. Learning is also arranged in a way that makes it perfectly easy for students. With the facility of seeing the chat within the frame of the learning content, the spatial separation of those two parts is reduced by a large amount. If learning material is greatly separated by space, the working memory gets strained because it gets "cognitively overloaded". This high cognitive load reduces learning efficiency. To prevent just that from happening Learnflix has a function that makes the chat appear transparently within the picture of the viewed learning content. This reduces cognitive load and gives students the best opportunity to have an interactive and easy learning experience (Sweller & Chandler, 1994).

Solution target group

As mentioned before, students from all subjects and from all semesters profit from the increased interaction. At the same time, teachers receive feedback regarding the comprehensibility of their learning material through the export-function. They are able to recognize which parts had a greater need for discussion and which video sequences -as a follow-up- were particularly often marked. Teachers can use this data as a good starting point to adapt their learning materials and students profit even more through the increased comprehensibility. It is a win-win situation for everyone!

Solution impact

A Learnflix Party never killed anybody! Learnflix increases the sense of belonging of students and fights against social isolation. Joint discussions allow a deeper understanding of the learning content, a shared appointment increases motivation and teachers are able to identify problems

within their learning videos more quickly. These are the assumptions that we have derived from scientific findings. Naturally, we would like to examine the effectiveness of Learnflix in more detail in the near future. Alongside a technical implementation, usability tests as well as evaluations of the effects on the users shall take place. With the help of qualitative and quantitative methods the most needed improvements can be identified. At the same time we are able to check the impact of psychological effects on factors like sense of belonging, motivation and learning success through questionnaires and objective measures (e.g. performance in the course).

Solution tweet text

U don` t wanna desperately try to make sense of your lecturing video all alone?? Then come on, make a Learnflix-Party over on Moodle! With the right people watching a lecture can be just as enthralling as your favourite thriller.

Solution innovativeness

Learnflix merges a lot of different functions from individual platforms into just one. The central concept of Netflix-Party, a much used and well-established tool, is mapped onto the learning-context. With the integration of our tool in Moodle, a lot of important features for a joint watching and discussing of videos will be transferred to the learning-context. Of course there are individual solutions for each of our features. But they just cannot meet the requirements of students and teachers. Integrating all of it into a learning-platform like Moodle facilitates in question aspects like privacy protection, personalisation and grouping.

We also inserted an innovative export-function, which is tremendously adjuvant for both teaching staff and students. Current solutions do not have such a function. In conclusion we created a new tool for education, which is a synthesis of varying well-known features from different platforms, supplemented with specific features to alleviate the learning context. The handling of Learnflix is rather intuitive, as its target-population was most likely already in contact with its features on other platforms. Simultaneously we created an innovative amalgamation of functions that cannot be found anywhere else.

Solution transferability

The project will be implemented at the Hochschule Ruhr-West. Its implementation will first be prototypical as a part of digital distance-learning. Following its first implementation Learnflix will be enhanced, refined and amplified.

Firstly a prototype (with the help of already established features) will be developed and implemented in the running winter term 2020/2021. This quick implementation serves the purpose of enabling an evaluation of the tool. This evaluation should then bring the tool to an upgrade. This upgraded tool will then be all done by the time the summer term 2021 starts. At this point a bigger study can take place.

Subsequently, with the help of the results of the evaluations, the tool will be brought to perfection. This should be completed by the time the winter-term 2021/2022 begins.

Lastly the perfected tool will be incorporated into learning-platform Moodle and will be field-tested by university-staff and students. This way Learnflix can be made accessible to all teaching staff and students and can then also be handed to other universities and colleges as a Moodle-Plugin. Provided it is technically convertible to other learning-platforms (e.g. ILIAS), Learnflix should be

incorporated into these platforms as well, as to enable possibly everyone to work with our educational interactive tool.

Solution sustainability

Once our Learnflix tool is developed, it can be used again and again. Teachers already rate digital teaching as a promising method for the future and the current methods will certainly still be used, even after the Covid-19 pandemic is over. Learnflix Party is and will remain a long-runner, even when the coronavirus disease is long gone. Videos and Learnflix facilitate everyday student life, especially for students who are not able to attend lectures and seminars because of different reasons. That's why Learnflix also helps to increase the diversity of students, because our tool gives students with different lifestyles equal access to learning content. In this way, Learnflix can help not to fall behind with the learning assignments and content and at the same time enable contact with fellow students. Additionally, by eliminating travel routes to the university, emissions are reduced! Use Learnflix, stay safe, stay green!

Solution team work

Our team consisted of six students and two university teachers from different universities and with different professional backgrounds. We quickly came together via video calls and started brainstorming. The initial idea: Making digital teaching and studying more interactive. The questions: What options do we have? What as students and teachers do we wish for? What would fresh students who are yet to meet their fellow students benefit the most from?

We documented our thoughts and inspirations with Post-its on a Miroboard. Existing programs for different audiences, such as Netflix Party and watch2gether, were a great starting point for our collection of ideas.

We ended up with the plan to implement a similar tool into Moodle and adding helpful features to it. Many universities are already using Moodle or similar platforms - adding onto these existing structures seemed more user friendly than creating an external program.

After making this initial plan, many meetings followed to improve and polish the concept. We worked in small groups on the different areas and came back together to present updates and give feedback.

One of the biggest difficulties we had to face was the technical implementation. Syncing the video progress, saving comments, showing synchronized flags and other tricky topics came up and took some precious hours of our time.

After solving the main questions, we continued adding small features into the concept and dared to think about the future: Who would continue to work on this project? Would it be possible to employ us as the initial creators as part of the team, giving us the opportunity to watch our idea grow and flourish, becoming a real help for many students around the globe?

Due to our diverse professional backgrounds we'd be able to shape many facets of Learnflix and spread the word about this cool new Moodle Addon through all of our universities. The more students profiting from new learning tools, the better!