USER-ORIENTED INTRODUCTION OF A DIGITAL LEARNING PLATFORM AT RWTH AACHEN UNIVERSITY: A FIELD REPORT OF FIRST-LEVEL SUPPORT

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Abstract
While the use of e-learning platforms in the university environment is largely considered useful, the factual introduction and implementation of such a system at a large institution is not a trivial task. Therefore, it is important to take a closer look at the “how-to” of introducing such a system. The present paper’s objective is to give an application-oriented report of the introduction of RWTHmoodle at RWTH Aachen University. The paper focuses on the role of the division “Service & Communication”, as it is of particular importance for the user orientation of the e-learning platform RWTHmoodle. As Single Point of Contact, the division has the closest contact to users and acts as the “user’s agent” within the RWTHmoodle project. In order to capture the needs of the different user groups of RWTHmoodle, different instruments are used. In addition to the regular exchange with the specialist departments and testing of new software versions, an analysis of tickets and regular user surveys were conducted. The user surveys in particular show that the needs of RWTHmoodle user vary and have to be taken into account when customizing the system.

Keywords: moodle, e-learning, evaluation, support.

1 INTRODUCTION
University teaching is no longer limited to attendance-based courses; rather e-learning instruments increasingly supplement seminars and lectures [4]. Using digital methods in teaching and learning is an important tool to keep education inclusive. Learning Management Systems (LMS) such as the well-known open-source software moodle help individualising teaching to students’ needs. Thus, LMS are important for enabling a low-threshold access to education. The national and state policy frameworks demand that teaching must take advantage of the opportunities offered by digitization [5] and universities want to adhere with these governance guidelines. RWTH Aachen University, as one of the biggest and most important technical universities in Germany, has written its “Digitalization Strategy for Teaching” in order to meet this claim and is actively implementing it with its LMS [6].

In 2017, RWTH Aachen University decided to change its LMS from L2P to RWTHmoodle [1]. The users play a special role during the changeover and for regular operation of the LMS. Only if they consider an LMS useful it will add value. The IT-ServiceDesk (IT Center’s “Service & Communication” division since 2018) plays a decisive role in adapting the new LMS to the user’s needs. The challenges in this process as well as the methods used to overcome them will be discussed in this paper. Three central questions will be addressed: 1) What specific role does first-level support play in introducing RWTHmoodle? 2) What difficulties can arise during the user-oriented introduction of an LMS and how were they resolved in the case of RWTHmoodle? 3) How can the wants and needs of users regarding an LMS and support structures be evaluated?

2 STRATEGIC AND ORGANIZATIONAL DEVELOPMENTS OF E-LEARNING AT RWTH AACHEN UNIVERSITY
Currently, a total of more than 45,000 students and 10,000 employees are studying or working at RWTH Aachen University [7]. With its strong focus on the natural sciences and engineering, the university was honored as one of the country’s leading universities in the federal Excellence Initiative [10]. Due to this leading position in the German university landscape, it is not surprising that RWTH Aachen University has relied on innovative LMS from an early stage. The first LMS with the name L2P was introduced in 2006 and was based on Microsoft’s software SharePoint. The objective of the introduction of L2P “was to integrate blended learning into established IT structures and teaching processes” [1]. Twelve years after introducing L2P, 73 percent of courses offered at RWTH Aachen University are using L2P to
support their teaching. This widespread use makes it clear that lecturers actively accept digital learning methods as an enrichment of their courses and that there is a corresponding demand for LMS.

Federal policy and state policies in Germany have strengthened digitization in education in recent years. Accordingly, the importance of e-learning at the university has increased significantly during the time that L2P has been in use. In recognizing this increasing importance, the university’s administration developed the “Digitalization Strategy for Teaching” in 2014 [8]. The strategy’s mission statement emphasizes that the university’s leadership sees digitization as a crucial element in ensuring high-quality teaching:

“The RWTH Aachen University is a place of excellent teaching. Digitization is firmly anchored in its teaching strategy in order to optimally develop and promote students’ competencies.” (Translated from German) [6]

The strategy also entails an extension of the demands for the university’s LMS. While L2P was designed primarily for the exchange of teaching materials and documents, more interactive functionalities are required. As a result, the university decided in 2017 to change the software of the LMS from L2P to moodle and this should take no longer than two years [1].

As shown in Fig. 1, RWTHmoodle was developed according to the requirements of RWTH Aachen University and tested in advance through selected seminars and lectures at all faculties during one test and two pilot phases. In the summer semester 2019, RWTHmoodle came into regular operation replacing L2P as central LMS. L2P will be kept as archive until further notice.

Figure 1. Project progress RWTHmoodle.

2.1 Change of responsibilities

The change from L2P to RWTHmoodle included not only a change of the software, but also an organizational change of the university’s e-learning management. Previously, one university department – the Center for Innovative Learning Technologies (CIL) – managed L2P independently. After the change to RWTHmoodle, important decisions on strategy, development, consulting, operation and support of the new LMS were organizationally separated. The university’s IT Center is now responsible for the operation, development, support, documentation and marketing of the new LMS [1]. The CIL was merged with other departments of RWTH Aachen University and renamed Department of Learning Platform Management of the Center for Learning and Teaching Services (CLS/LPM). The CLS/LPM remains responsible as second level support for RWTHmoodle, but it will focus primarily on didactic consulting and training, as well as parts of marketing and documentation. Furthermore, the change to RWTHmoodle also includes the participation of RWTH Aachen University in the nationwide and international moodle communities. In these communities, the involved departments of RWTHmoodle can actively contribute to the further development of moodle and get to know best practices of other institutions.
2.2 Focusing the users perspective

The changes, decisions and benefits described here were strongly driven from a top-down perspective. While the change to RWTHmoodle is an undeniable advantage for the university administration and the responsible departments of RWTH Aachen University, the change does not automatically represent an undeniable advantage for the users. LMS are only successful if users also recognize them as useful and actively integrate them into their teaching and learning. With an already existing and widely used LMS, the expectations for a new system were particularly high at RWTH Aachen University.

When talking about the users of RWTHmoodle, we must keep in mind they are divided into two groups with different wants and needs: 1) The staff that actively designs course rooms and 2) the students who operate within these designed course rooms. The differing perspectives of these two groups lead to varying user behavior, problems, and needs for support. Furthermore, the size of the university with its different disciplines leads to further diversification of user groups.

In order to keep the focus on the user groups during the project, two organizational units are particularly important: The Steering Committee for Blended Learning and the IT ServiceDesk as Single Point of Contact (SPoC). Compared to L2P, important decisions on the orientation and strategy of the LMS are not made by a single department, but a university-wide steering committee. It consists of the rectorate representative for blended learning, the prorector for teaching, the head of the teaching department, the coordinator for blended learning, as well as various faculty and student representatives [9]. In addition to deciding how the LMS should be set up, the task of the steering committee is to monitor the provision of the service by the service provider. This task derives from the “Digitalization Strategy for Teaching” as well:

“The Blended Learning Steering Committee also assumes responsibility for quality management and the management of internal service providers, insofar as their activities relate to the Digitalization Strategy for Teaching”. (Translated from German) [6]

In order to monitor the direction of the LMS and the success of digitization in teaching, the steering group needs appropriate figures, tools and assessments. The IT ServiceDesk plays a decisive role in order to keep the user’s perspective in view and to reflect this perspective back into the project group of RWTHmoodle. We will explain the specific role of the IT ServiceDesk in the next section.

3 THE IT-SERVICEDESK AS THE “USER’S AGENT”

Since the management of the IT Center decided in 2008 to align its operations with ITIL, customer orientation and quality assurance have played a decisive role for the IT Center and the IT ServiceDesk [2]. The IT ServiceDesk is the Single Point of Contact for the IT Center and can be contacted by users via various channels (e-mail, telephone, chat, ticket tool, in person at three different locations). Regular contact times between 7:30 a.m. and 6:00 p.m. allow for prompt assistance with enquiries. However, the tasks of the IT ServiceDesk are not limited to classic first-level support. As a distinctive feature of the IT Center at RWTH Aachen University, the IT ServiceDesk also carries out strategic tasks relating to customer contact and customer orientation [3]. In 2018, the IT ServiceDesk was transformed into the “Service & Communication” division, which reflects its specific role. The IT ServiceDesk will continue to exist as part of the division and, in particular, as a set brand in external communications. The new division bundles all customer-specific areas of responsibility, including support, marketing, event organisation, reporting, evaluation, documentation and user testing. The division is also quality-certified by an external authority (DIN ISO 9001:2015) so that the quality of the division’s services can be guaranteed on an ongoing basis [11].

With regard to RWTHmoodle, the IT ServiceDesk solves routine issues independently as first-level support and forwards advanced requests to the second level. The IT ServiceDesk not only performs this task for the IT Center, but also for the CLS/LPM. Thus, there is only one contact point for the user, which forwards the inquiries in a targeted manner. Due to the strong customer focus, the “Service & Communication” division also assumes the role of the “user’s agent” in the project RWTHmoodle, as shown in Fig. 2. The main tasks of the division are to make the changeover from L2P to RWTHmoodle as easy as possible for users, to relieve the specialist departments and carry the user’s demands into the project group and to the project management.

Although the IT ServiceDesk is in daily contact with the users, it is important to ask how the needs and assessments of users can be systematically identified. A number of factors make this difficult:
Firstly, due to the high number of employees in the division, inquiries are processed by different people. This can lead to different perceptions of the requests and ultimately to different assessments without systematic validation. Secondly, the various user groups with their different approaches to the use of RWTHmoodle make it difficult for first-level support to capture the different requirements. Thirdly, due to the previous structure of L2P, the lecturers are still used to contact the specialist department (CLS/LPM) directly. Some perceive the detour via the IT-ServiceDesk as cumbersome. As a result, a lot of knowledge, in particular about the needs of the lecturers, does not reach the IT-ServiceDesk. Fourthly and most importantly, only a small proportion of users become visible through customer inquiries and this leads to misrepresentations of opinion. Since feedback is often only given when difficulties arise, the reports paint a negative picture of the LMS, while positive opinions remain silent. Especially against the background of limited resources at the IT Center and CLS/LPM it is not target-oriented to act based on individual “loud” opinions. Considering these problems, the “Service & Communication” division uses various instruments to help adjust the LMS to the needs of the users.

4 EVALUATING THE OPINIONS AND NEEDS OF USERS – METHODOLOGY AND SELECTED RESULTS

The “Service & Communication” division uses a variety of methods to capture the user’s perspective on RWTHmoodle and its support. Firstly, it communicates with the specialist departments in regular meetings. The CLS/LPM in particular has close contact with the user group of lecturers due to didactic consulting and trainings. Secondly, the division tests new plug-ins and new developments on the test system. This is not only intended to ease the workload of the specialist departments, but also offers the advantage that the “Service & Communication” division continuously scrutinizes the user-friendliness of the system. Furthermore, the employees working in first-level support actively get in touch with the system as users instead of only getting to know the application in theory.

In addition, the “Service & Communication” division analyzes incoming tickets and conducts user surveys, which are discussed below.

4.1 Ticket analysis as systematic identification of user groups and requests

The specialist departments and the “Service & Communication” division use a ticket tool in order to systematically answer requests from users and, if necessary, pass them on. When users contact the IT-ServiceDesk with a request, a ticket is automatically created in the ticket tool and users receive a ticket-number, which they can quote when checking on their request.
In addition to a more systematic processing of the requests, the used ticket tool offers the advantage that requests can be evaluated systematically. At the beginning of 2019, all incoming tickets categorized in the RWTHmoodle service in 2018 were systematically analyzed. In total, this comprised 192 tickets. Due to some incorrect categorizations and duplicates, only 176 tickets were evaluated. The analysis of the tickets shows that – as expected - customer enquiries increased significantly at the beginning of the second pilot phase in October 2018. In addition to the quantitative evaluation, as displayed in Fig. 3, tickets were also evaluated qualitatively by their content – allowing for conclusions about future support requirements. Especially due to the dynamic test and pilot phases with continuous adjustments of the system, it could not be concluded from quantitative analyses alone that topics of the inquiries would remain relevant. The qualitative analysis has shown that the majority of requests indeed remain relevant for support. Fig. 4 shows clearly that employees and students, represent the most important user groups.

![Figure 3. Total number of tickets in 2018 in the category RWTHmoodle.](image)

![Figure 4. Total number of tickets in 2018 in the category RWTHmoodle distributed by status of requesting person.](image)

### 4.2 User surveys

While ticket evaluation often reflects negative opinions and problems, positive opinions remain unheard. Due to this the ticket analysis does not represent the experience of all users of RWTHmoodle. Especially since the entire university uses RWTHmoodle, individual opinions must always be put into proportion. Therefore, user surveys were conducted during the pilot phases and during regular operation.

In the pilot phases during summer semester 2018 and winter semester 2018/19 two anonymous user surveys were conducted among the participating courses. In order to increase participation, bilingual (German/English) online questionnaires were designed. The first survey contained more open,
qualitative questions to obtain as much detailed feedback as possible. The second survey during winter semester focused on closed, quantitative questions, using the results of the first survey to focus questions. As the number of users (and thus potential participants) was more than twice as high during the second survey period, open questions would not have been practicable. The response rate in the summer semester was 11.6 percent (505 participants out of 4371 users). In the winter semester, the response rate was 20.9 percent (1984 participants out of 9515 users).

In order to illustrate the benefits of these surveys for the user-orientation of RWTHmoodle, exemplary questions, answers and ratings from both surveys will be presented in the following sections.

4.2.1 Overall rating

To assess RWTHmoodle, it is important to inquire the overall rating of the users. For this purpose, the users of the pilot phases in the user surveys in the summer semester 2018 and winter semester 2018/19 were asked for their overall evaluation of the system. Similar to the results in the summer semester, about half of the respondents rated RWTHmoodle as “good” in the winter semester 2018/19. Adding up all the answers in the categories “very good”, “good” and “satisfactory”, we get positive feedback from more than 80 percent of the users.

![Overall rating of RWTHmoodle by all users (survey winter semester 2018/19).](image)

Figure 5. Overall rating of RWTHmoodle by all users (survey winter semester 2018/19).

4.2.2 Logout time

The users can reach RWTHmoodle via the RWTH Single Sign-On. This allows numerous services to be accessed via a single login process. Unlike with L2P, it is not possible to remain permanently logged in. The automatic logout time of RWTHmoodle was set to four hours. In the survey conducted during the summer semester 2018, users expressed complaints about the logout time not being practicable in the comments. If only these qualitative statements had been taken into account, the project team would have had to adjust the logout time. In the same survey, however, the users were also asked whether the automatic logout time was practicable or not. The results, which are displayed in Fig. 6, show that the logout time was considered sufficient for a total of 69 percent of the respondents. This shows that optional qualitative response fields may not reflect representative opinions. Thus, these response fields can lead to incorrect assessments of the systems functionality. The number of mentions should not be the only criterion of whether the project team should make adjustments or not. Conversely, a small number of mentions can also be relevant. Additionally, decisions must be weighed against top-down guidelines. In the case of the logout time, the project team decided to keep the four-hour time slot. However, this does not mean that the survey did not lead to action by the project group. The “Service & Communication” division communicates the reasons for the four-hour slot to the users in external communication and support, in order to increase the understanding for this decision.
4.2.3 Support offer

In order to adapt the support in a target-oriented way, it must be identified in which ways users get help. Here, again, the ticket analysis would only cover a small part of the possible help paths, since the users also seek informal ways to get support. In the winter semester 2018/2019, students and employees were asked which support methods they used. Multiple answers were possible and are displayed in Fig. 7. The answers clearly show that most of the help is informal. Only in second place formal support was mentioned. For the structure of support, this means that formal support especially via e-mail is important, but that the knowledge within the user groups must also be strengthened by informing and/or training multipliers among students and lectures.

With regard to the formal support offer for RWTHmoodle, it was also asked which support channels and tools were desired, as illustrated in Fig. 8. Multiple answers were also possible to this question. It turns out that students prefer tools for self-help as well as fast support options (especially chat). Students are mainly interested in Frequently Asked Questions (FAQs), documentation, instructions and video tutorials. These support requirements are understandable taking into account that in RWTHmoodle course rooms students are mainly passive users and therefore have a lower need for comprehensive consulting services. The wishes of the employees are correspondingly different. While documentations and FAQs are recognized as important tools, telephone support is still relevant for this user group.
4.2.4 User needs and implementation

As already mentioned, the user survey in the summer semester 2018 included numerous open questions. This explorative approach was useful as no user assessments were available for a new service like RWTHmoodle. Accordingly, given categories would have narrowed down opinions too much in advance. In addition, the open text fields enabled users to suggest improvements. In one question field, users were asked what they did not like about RWTHmoodle. The qualitative answers were categorized in the analysis, as shown in Fig. 9. The respondents particularly often mentioned the poor structure of RWTHmoodle. In addition, it was criticized that not all documents of a course room could be downloaded at once and that there was no integration into the existing RWTHApp. Due to the numerous responses, the integration of RWTHmoodle into the RWTHApp was realized during the winter semester 2018/19 and a plug-in could be integrated, which simplifies the download. The poorly evaluated structure showed the project team that the lecturers did not optimally use the different possibilities of course room design. However, this aspect was not technically solvable by the project team, since the lecturers should keep the creative freedom in the course rooms. Thus, the solution for this problem was found in the support - especially in consulting and training sessions for lecturers. The support material as well as the training sessions now focus on the didactic advantages and disadvantages of the various course formats in order to support the lecturers in designing their course rooms efficiently.
5 CONCLUSIONS

In order to design LMS successfully, it is important to adapt it to the users' needs. As the example of RWTH Aachen University shows, the Single Point of Contact can play a crucial role here. In addition to first-level support, the “Service & Communication” division also carries out other tasks related to customer orientation. Therefore, in the project structure of RWTHmoodle, the division takes on the operational role of the “user’s agent”. The paper has also made it clear that the users’ needs cannot be fully captured by customer requests. For this purpose, the “Service & Communication” division uses different methods in combination. These include regular exchange with the specialist departments, testing of new software versions, ticket evaluations and user surveys. However, the results of the various methods must be weighed up before they serve as a basis for action. It has been shown that the focus on optional feedback and problem reports of the users do not provide an objective picture of the overall user opinions. User surveys are an appropriate tool to capture a comprehensive overview of the different opinions and to supplement information gained from customer requests. However, the users feedback does not always lead to technical adaptations of the system. The project team must always consider whether it is possible to adapt the system against the background of top-down governance guidelines, other constrains, and external factors. If a technical adaptation is not possible, alternative solutions must be developed such as adjusted support, consulting or marketing.

REFERENCES


