
Plan It Visually: Designing Useful Visualizations for a Blended Learning Planner

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Abstract

Blended learning has become increasingly common in higher education, yet planning blended learning courses remains a complex task. This study explored how university teachers plan blended learning courses and how a digital system could support this process. A qualitative exploratory approach was used, combining semi-structured interviews with a card-sorting task. Eight university teachers and PhD students with teaching duties participated. The interviews examined teachers' definitions and experiences with blended learning and their planning practices, while the card-sorting task identified preferred system features. The results show that teachers generally share a common understanding of blended learning but differ in experience and attitudes. Course planning was found to be largely collaborative and supported by basic tools such as Excel and paper-based materials, which also presented practical challenges. Teachers valued features that support overview, flexibility, and collaboration, while emphasizing the importance of optional rather than mandatory guidance. Views on the system's potential usefulness for knowledge transfer between teachers varied and appeared to be context-dependent. Based on these findings, several recommendations and visualizations were developed as design implications. The study concludes that digital planning systems for blended learning should prioritize flexibility, reflection, and collaboration.

Keywords: Blended learning, course planning, digital planning systems, higher education

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1 Introduction

In recent years, blended learning has increased in popularity in higher education. Blended learning is commonly described as the integration of face-to-face and online learning activities (Garrison & Kanuka, 2004). A meta-analysis by Means et al. (2013) found that blended learning can be more effective than fully online learning or face-to-face instruction. At the same time, research has shown that designing blended learning places additional demands on teachers, particularly during the course planning phase (Alammary et al., 2014). Teachers are required to make pedagogical choices regarding the alignment between learning objectives, activities, and assessment, while also balancing online and on-campus activities.

Although a variety of digital tools are available to support planning, teachers are still expected to make key pedagogical design choices mostly unassisted. Teachers often rely on tools such as Excel or paper-based schedules, which may lack flexibility, overview, or explicit connections between learning goals and learning activities. As a result, planning blended learning courses can become time-consuming.

This study builds on an existing paper-based planner developed by the Centre for Academic Teaching and Learning at Universiteit Utrecht, aimed at supporting blended learning course design. While this planner offers structure and prompts reflection during the planning process, its paper-based format limits opportunities for flexibility and dynamic visualizations. This raised the question of how a digital version of such a planner could better support teachers' planning practices and needs.

This study aims to explore how university teachers plan blended learning courses and how a digital system could support this process. By examining teachers' experiences, planning practices, and preferences for system features, this research seeks to contribute insights into how a digital planning tool can be designed to better align with teachers' needs. Rather than evaluating the effectiveness of a specific system, this study takes an exploratory approach to identify design implications for a digital system.

The main research question of this study is:

What insights, features, and support do university teachers need from a digital system when planning blended learning courses?

To answer this question, the following sub-research questions were formulated:

1. How do university teachers define blended learning, and how do or would they apply it in courses?
2. What planning practices do teachers currently use, and which obstacles or supporting factors do they encounter in this process?
3. What features do teachers consider essential, desirable, or unnecessary in a digital planning system?
4. How do teachers believe a digital system could support knowledge transfer when courses are taken over by different teachers?

To answer these questions, a qualitative approach was used, combining semi-structured interviews with a card-sorting task. This methodology allows for an in-depth exploration of teachers' experiences and perspectives, while also encouraging participants to prioritize concrete system features.

Following the introduction, Chapter 2 presents the theoretical framework, outlining relevant literature on blended learning and course design. Chapter 3 describes the research method and materials. Thereafter, Chapter 4 presents the results, and Chapter 5 presents the conclusion. Finally, Chapter 6 discusses the findings in relation to existing literature and provides recommendations for implementations and future research.

2 Theoretical Framework

2.1 Definition

The term *blended learning* is a concept that has been defined in various ways in education research. This section will discuss a few different definitions.

In their study on blended learning design approaches, Alammery et al. (2014) review several commonly used definitions of blended learning and discuss their limitations. Based on this review, they define blended learning courses as courses that

- (1) thoughtfully integrate different instructional methods such as lecture, discussion group, self-paced activity, and
- (2) contain both face-to-face and computer-mediated portions.

According to the authors, this definition captures the two core aspects of blended learning: a pedagogically grounded process and a course structure that combines face-to-face and online elements.

A slightly different emphasis is found in the definition used in an online blended learning course developed by Utrecht University's Centre for Academic Teaching and Learning (CAT)(n.d.), which is based on Torrisi-Steele (2011): "Blended learning refers to enriched, student-centered learning experiences made possible by the harmonious integration of various strategies, achieved by combining f2f interaction with ICT." This definition highlights the role of blended learning in student-centered learning experiences.

While several definitions of the term *blended learning* have been suggested, this study adopts the definition Utrecht University uses, offered by Staker and Horn (2012). According to this definition, blended learning is defined as the integration of online and on-campus education. Each course arranges the relationship between online and on-campus elements differently, but it is important that the various elements are efficiently coordinated and that they reinforce one another (Garrison & Vaughan, 2008). This definition is suitable for the present study, as it aligns with the framework used by Utrecht University, and this study researches a digital system based on the physical blended learning planner developed by the CAT.

2.2 Benefits

Having established a working definition of blended learning, this section outlines key benefits associated with integrating blended learning in education. Smyth et al. (2012) researched students' experiences of blended learning and identified several benefits. Students reported increased autonomy and responsibility, with one participant noting that "you have to be focused, motivated, and really self-disciplined, you feel that you are doing it for yourself". In addition, blended learning was found to enhance learning and improve the application of knowledge to practice, while also improving accessibility and flexibility. These results are supported by Heterick and Twigg (2003), who found improved student learning in 19 of the 30 projects they researched. Additional benefits found were increased course completion rates, improved retention, better student attitudes toward the subject matter, and increased student satisfaction compared to traditional formats.

Similarly, Owston and York (2018) concluded that students perform significantly higher in blended courses when about 33% to 50% of the course is online. With this ratio, they also perceive blended learning more favorably. Evidence suggests that blended learning can also improve completion rates and efficiency. Singh (2003) reports that the introduction of live e-learning into self-paced enrichment programs offered by Stanford University increased completion rates from a little more than 50% to 94%. Additionally, research from the University of Tennessee's Physician's Executive MBA program showed that a blended learning program could be completed in approximately half the time and at less than half of the cost, while achieving learning outcomes that were 10% higher than those of traditional classroom learning formats. Vallée et al. (2020) provide further evidence by showing that a majority of comparative studies (26 out of 41) reported higher student performance in blended learning contexts than in traditional learning environments. Overall, the literature suggests that although fully online learning is generally as effective as face-to-face instruction, blended learning tends to outperform both formats (Means et al., 2013).

2.3 Challenges

Despite the many benefits of blended learning, the literature has also reported some challenges that teachers experience while applying blended learning in their courses.

A systematic review by Rasheed et al. (2020) identified several themes regarding the challenges teachers face in the online component of blended learning. The first theme is regarding teachers' technological literacy. This includes issues such as a lack of confidence, time constraints, and resistance to adopting new technologies. Another challenge they report is that teachers experienced difficulties in creating online educational content, particularly video materials, which were described as time-consuming and demanding. Additionally, teachers' skepticism about the effectiveness of blended learning and their negative perceptions were also reported.

In addition to these findings, teachers' experiences and competencies play a significant role in the successful implementation of blended learning. Jokinen and Mikkonen (2013) found that teachers inexperienced with blended learning often fell back into traditional approaches for their teaching, even when they expressed the will to adopt more student-centered teaching practices. The authors conclude that teachers need both professional development support and pedagogical knowledge to effectively redesign teaching and learning. The need for professional development and instructional support is further emphasized by Fernandes et al. (2023). Their study reported that a significant portion of teachers experienced problems with implementing pedagogical strategies learned during training. Even more teachers reported a need for additional support to innovate their teaching practices. Finally, the balance between face-to-face and online environments was also a challenge for teachers, concluded Gedik et al. (2013). Other issues they found included a higher workload and course and time management.

Taken together, these challenges illustrate that while blended learning offers significant potential, it requires pedagogical and technological support for teachers for successful implementation.

2.4 Design approaches

Given the complexity of designing effective blended learning courses, several authors have proposed frameworks to guide teachers in choosing an appropriate design approach. One frequently cited framework is proposed by Alammery et al. (2014), who distinguish between three different design approaches.

The first approach is the *low-impact blend*, where teachers add online or blended activities to an existing course without significantly changing its overall structure. This approach is considered to have the lowest risk of failure, and it can be applied relatively quickly with minimal effort and experience required. However, this approach also has challenges, such as the risk of creating two courses, one online and one face-to-face. Moreover, students might see the additional activities as a burden, and if the extra activity does not replace an existing one, the teachers' workload could be excessively increased.

The *medium-impact blend* requires replacing some face-to-face activities in an existing course with online or blended activities. This allows teachers to implement blended learning gradually, offering experimentation with different approaches while maintaining the benefits of a traditional course. While this can help build teachers' confidence, it also requires good technological knowledge, dedicated time and effort, and successful implementation depends on evaluation and thorough long-term planning.

The final approach is a *high-impact blend*. This approach involves a complete redesign of the course and building the blended course from scratch, allowing the opportunity to achieve maximum benefits and tailoring to students' needs. At the same time, it poses challenges, including a higher risk of failure, significant time and effort, and the need for experience in designing and blended learning. The authors note that planning and developing a course with this approach can take two to three times longer than designing a traditional course.

This distinction is particularly relevant for the present study, as teachers differ in their experience and readiness to redesign courses. To account for these differences, participants were asked to complete a checklist to identify which blended learning approach best matched their current teaching practices.

2.5 Existing tools for planning and designing blended learning

To support teachers in designing and planning blended learning courses, a variety of tools and frameworks have been developed. These tools differ in their area of focus, ranging from toolkits to digital systems.

One commonly used approach is backwards course design, which encourages teachers to start with identifying the desired student-learning goals, followed by appropriate assessment methods and learning activities (Reynolds & Kearns, 2017). Based on this approach, Reynolds and Kearns introduce a planner aimed to support teachers in developing day-to-day activities that align with course goals. This could allow them to shift towards more student-centered and active learning practices. The planner offers support in structuring activities by considering aspects such as learning objectives, methods, activity types, student work, location, and media or materials. The final step of the planner is a reflection on the course period after applying the plan.

In addition to planning frameworks, several development tools focus on introducing teachers to blended learning concepts and design principles. An example of this is the online course *Aan de slag met Blended Learning* developed by the Centre for Academic Teaching and Learning at Utrecht University (n.d.). The course provides an overview of blended learning, including definitions, design considerations, examples of application, and related concepts such as constructive alignment. It also introduces the three design approaches proposed by Alammery et al. (2014) and offers a tool to help teachers identify which approach best suits them. While such resources provide valuable information and guidance, they largely rely on self-directed learning and do not offer continuous feedback during the design process.

Other toolkits, such as *Blend je onderwijs*, developed by Last and Heidinga (2022), offer collections of resources aimed at supporting decision-making around blended learning. This specific toolkit consists of several documents, templates, and overviews of design techniques. Although this provides substantial support, they place the responsibility for applying this information entirely on the teacher.

More digital planning tools have also been developed, aimed at supporting teachers in making informed design decisions. Masterman and Manton (2011) describe several examples, including DialogPlus, The London Pedagogy Planner, and CompendiumLD. These systems often offer advice and guidance, sometimes allowing teachers to model and analyze the consequences of design decisions, and map connections between elements such as activities and tools. The authors introduce a tool they developed themselves, called Phoebe, which combines several of these features. The system offers customizable templates that can be shared with other users. It also has a reference system where users can find additional information about various pedagogic approaches.

Overall, existing tools provide valuable support for blended learning course planning. However, they differ in the extent to which they offer real-time feedback or support for collaboration between teachers. These differences highlight the need to further explore what types of support teachers value most when planning blended learning courses.

3 Method and Materials

The current study employed a qualitative approach to answer the research question: “What insights, features, and support do university teachers need from a digital system when planning blended learning courses?”, combining semi-structured interviews with a card-sorting task. The interviews provided qualitative insights regarding teachers’ knowledge and experience with blended learning, and their requirements and wishes for the system. Card-sorting yielded additional qualitative input by showing how participants prioritized different features and which elements they considered essential or unnecessary.

3.1 Research design

Multiple research methods were considered: interviews, surveys, and focus groups. A major advantage of interviews, compared to surveys, was the ability to ask follow-up questions and explore answers in more depth. A semi-structured approach was therefore chosen. A focus group was also considered because of the advantage that teachers could build on each other’s insights, but was eliminated due to the perceived difficulty of aligning the schedules of busy teachers.

3.2 Ethics and Privacy Quick Scan

Prior to recruiting possible participants, the Ethics and Privacy Quick Scan of the Utrecht University Research Institute of Information and Computing Sciences was conducted (see Appendix A1). Whilst the Quick Scan identified a potential ethical issue, the existence of a power relationship between participants and researchers due to the participants being lecturers, this study was allowed to proceed after additional human scrutiny. The approval email can be found in Appendix A2.

3.3 Participants

The participants were recruited by email, using a short explanation about the study in English and Dutch, with the informed consent form attached. The recipients were all professors or PhD students with teaching duties at different faculties at Utrecht University. This group was contacted because they represent the system’s potential end users, meaning that recruitment primarily followed a purposive sampling strategy. A total of 72 people were sent the invitation e-mail, of whom 41 received a reminder. The emails were sent in several rounds, over the course of multiple weeks, during October and November. From these 72 recipients, 8 agreed to be interviewed. No one was excluded from participating by the researcher. However, several recipients declined due to busy schedules or lack of interest, which introduced an element of convenience sampling based on availability. Knowledge of, or experience with blended learning was not required to ensure that the results would be representative of a diverse group of potential users.

3.4 Materials

3.4.1 Recruitment

As previously mentioned, the invitation e-mail contained a short explanation about the study in English and Dutch, with changing dates as more participants were needed and the interview window had to be extended. An example of the email can be found in Appendix A3. Each email had the information letter and consent form attached as a PDF file (Appendix A4).

3.4.2 Questions and audio

Beforehand, a total of 12 interview questions were prepared, see Appendix A5. To record audio of the interviews, two password-protected devices were used: a phone and a laptop. This was done to reduce the risk of ending up with unusable audio. No video material was collected due to privacy considerations and was not expected to add substantial value beyond the data already collected.

3.4.3 Checklist

A short checklist was used to determine which approach to blended learning suited the participants best. This checklist is used in an online module of Utrecht University, developed by the CAT (Centre for Academic Teaching and Learning, Universiteit Utrecht, n.d.), and is based on the study conducted by Alammery et al. (2014), who developed three design approaches, as explained in the previous chapter (Section 2.4). The checklist in Figure 1 was printed and given to the participants to fill in.

	Low impact	Medium impact	High impact
I have teaching experience	☐ A little	☐ Average	☐ A lot
I have designing experience	☐ A little	☐ Average	☐ A lot
I possess technological knowledge and skills	☐ A little	☐ Average	☐ A lot
I am confident in integrating technology.	☐ A little	☐ Average	☐ A lot

Figure 1

Checklist Impact Blends

3.4.4 System

During the interviews, participants had the opportunity to walk through a prototype of the system. The code was developed and provided by the researcher's supervisor, and the system (Figure 2) was locally hosted on the researcher's laptop. The interface consists of a central planning area and a right-hand side panel containing learning objectives and a list of activities. Activities can be dragged from the panel into one of the ten weeks displayed at the top of the interface. The schedule is structured around two main sections: *outside class* and *in class*, each further divided into three subsections. Users may optionally add a description for each activity. Learning

objectives can be linked to activities by selecting the grey circle within an activity and choosing an objective in the side panel. When a learning goal is selected, all linked activities remain visible, while others turn more transparent. Activities added while a learning goal is selected are automatically linked to it. Activities can be removed by hovering over them and selecting the trash icon that appears in the activity element.

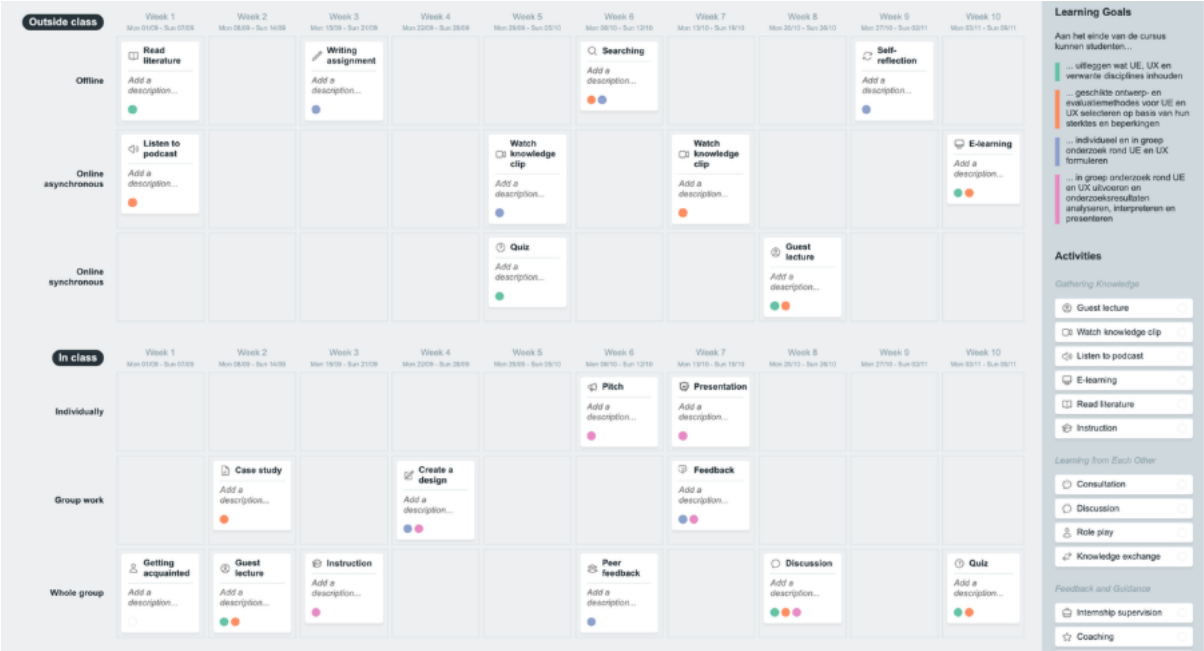


Figure 2
Screenshot System

3.4.5 Card-sorting task

The participants were asked to write down ideas and wishes they had for the system on separate yellow sticky notes. Upon finishing, the researcher placed three blue sticky notes on the table. On these were written three categories: *must have*, *could have*, *won't have*. When the participants were finished sorting their own ideas, they were handed nine additional ideas written down on pink sticky notes. They were asked to sort these notes into the three categories as well.

Several features on the pink sticky notes were intended to support novice teachers, or teachers inexperienced with blended learning, see Table 1.

Table 1
Supporting Features for Beginners

A step-by-step guide to walk you through the planning process	In previous studies on the impact on pedagogical training perceived by teachers (Fernandes et al., 2023), teachers indicated the need for supervision, and additional support to implement innovation in their pedagogical practice. We extend this finding to the application of blended learning and considered the possibility
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	that there was also a need for additional support and guidance. This finding is supported by Garone et al. (2025) who researched teachers' preferences for blended learning and their technological acceptance profiles. They found that in each technology acceptance group there was a need for some degree of guidance and coaching.
Explanation of the learning activities	A study by Masterman and Manton (2011) researched teachers' perspectives on digital tools for planning and design, where they develop and evaluate <i>Phoebe</i> . In their tool, an icon was included besides elements in the design, which users could click to obtain guidance. They could also consult a reference system for information about pedagogic approaches. This inspired the idea to offer users additional information and an explanation of the learning activities that are available.
Receive checklist at the end with a to-do for every week	Course planning typically involves coordinating multiple elements, such as weekly activities, learning materials, and deadlines. To support teachers in keeping track of these elements, a checklist at the end was included as one of the proposed features.
Visualization for amount of hours needed (TA, students, teacher) or (per learning goal)	The paper canvas for designing blended learning courses (Centre for Academic Teaching and Learning, Universiteit Utrecht) included a scale to indicate teacher and student workload per week. This prompted the idea for an intelligent visualization showing the time required from teachers and students, potentially also visualizing the number of hours allocated to each learning objective.

Three ideas for future features were different recommendations that the system could provide to users, see Table 2. These could possibly be useful to both novice and more experienced teachers.

Table 2

Recommendations Features

Recommendations for digital tools appropriate or available for different learning activities	Users of <i>Phoebe</i> , a digital, pedagogical planning tool, could “consult the reference system for information about digital tools to support different forms of learning activity”. Novice teachers and teachers working alone found the reference system particularly beneficial (Masterman & Manton, 2011).
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Recommendations for possible next learning activities	Teachers addressed that balancing face-to-face and online activities was a challenge (Gedik et al., 2013). If they were new to blended learning, they tended to take on a traditional approach for their teaching. Some teachers had the most trouble with reducing the face-to-face teaching (Jokinen & Mikkonen, 2013).
Recommendations for what type of classroom or learning space fit best/are available	The reference system of Phoebe (Masterman & Manton, 2011) was valued by many teachers, especially by novice or isolated teachers. Future Learning Spaces is a project that offers and develops experimental educational spaces at Utrecht University (Utrecht University, n.d.). Currently there are four learning spaces accessible for the entire University, but they are researching and developing new spaces. The recommendations possibly could help raise awareness of their existence, and support novice teachers or teachers new to blended learning and different teaching approaches.

The last pink sticky notes contained features that would support collaboration and peer support, see Table 3.

Table 3

Features that allow Collaboration with Colleagues

Shared option to collaborate with other teachers	In a study about teachers' experiences while teaching in a blended learning environment, collaborative planning was a theme that emerged and viewed as essential. Teachers found it fascinating and educating, and "supported the development of their wide expertise as teachers" (Jokinen & Mikkonen, 2013). From experience in previously taken courses, and conversations with teachers, we also found that most courses are taught and coordinated with multiple teachers, which suggested the potential value this feature could offer.
Templates to choose from and customize	Another feature of <i>Phoebe</i> (Masterman & Manton, 2011) was the option to customize and share learning designs with other teachers. Some participants valued the possibility of accessible examples and ideas of other teachers, but some also found that, in reality, these examples are rarely employed. These differing perspectives encouraged further investigation for the current study.

3.5 Procedure

The interviews were conducted in October and November 2025, at the campus of Utrecht University. Some of the interviews took place in the participants' offices, and some were conducted in rooms the researcher or participants booked. The time frame was between 20 and 45 minutes.

After meeting the participants, they were given the information letter and consent form, which they could read while the researcher prepared the materials and answered any questions the participants had. After the participants consented, the audio recording was started, and the researcher started asking the questions. Whenever it seemed necessary or useful, the researcher asked follow-up questions to gather additional information. The first two questions regarded the participant's definition and experience with blended learning in previous or current courses. The blended learning definition Utrecht University uses was given to ensure a uniform definition during the interview. The next questions were about the process of coordinating and planning courses currently. Subsequently, the participants were handed the checklist to identify which approach to blended learning was most suitable for them. The result was explained, and participants could then walk through a mock-up of the system. The researcher explained and showed the basic functionalities and answered any questions the participants had. Upon familiarization with the system, the yellow sticky notes were handed over, and the task was explained to them. A more detailed explanation of the task can be found in Section 3.4.5. If the pink sticky notes were similar to the participant's own ideas, the pink sticky note was excluded or combined and viewed as one idea. If during the sorting process any additional ideas arose, they were encouraged to write these down on a new yellow sticky note and sorted into a category. Once the card sorting process was completed, they were asked, "would the system with these functionalities help with transferring knowledge to next year's teachers?". Thereafter, the participants were thanked for their time, and the interview was finished.

After each interview, pictures were taken of the sorted sticky notes and later copied into an Excel table. The audio recording was transcribed with Microsoft Word Online Transcribe and edited manually where necessary. Any names or identifying information, such as the name of the course they teach, were removed from the transcript.

3.6 Data analysis

After transcription, the pseudonymized interview transcripts were uploaded to Dovetail (*Dovetail | Customer Intelligence Platform*, n.d.), a platform that allows transcription analysis of mostly qualitative data, including interviews. Dovetail offers AI support for paying users, but these features were not employed in the analysis of the current study. All coding and interpretation were conducted manually by the researcher.

Before detailed analysis, the data were initially organised using the interview guide, which resulted in several broad categories related to the sub-research questions (e.g., definitions of blended learning, current planning practices). Within each transcript, relevant sections from answers were highlighted and categorized into one of these categories. An example of the process is provided in Appendix A6, illustrating how interview excerpts were grouped into categories.

For the coding, each category was analyzed separately. For each participant, key points and short summaries were written per subsection to capture the core ideas expressed. These were then compared across participants to identify patterns, similarities, and differences in responses. This inductive approach allowed themes to emerge from the data, rather than applying a predefined coding scheme.

For the analysis of the system features, the data from the card-sorting task were analyzed separately. All card-sorting results were added to Excel, with a separate sheet for each participant, including their categorization of features, as well as their explanations for these choices. The categorizations were added up to calculate the number of times each feature was placed in each category. These results were used to identify overall patterns in feature preferences. In addition, features that were suggested by participants were analysed. When multiple participants described similar ideas, these were grouped and seen as a single feature. Participants' explanations were then reviewed to interpret the observed patterns, and quotes were selected to support the interpretation of the results.

4 Results

This chapter presents the results of the study, structured according to the four sub-research questions, to answer the main research question: “What insights, features, and support do university teachers need from a digital system when planning blended learning courses?”

4.1 Definitions and experiences with blended learning

How do university teachers define blended learning, and how do or would they apply it in courses?

Table 4

Teachers’ Experience with and Attitudes toward Blended Learning and corresponding Impact Blend

Teacher	Familiarity with blended learning	Attitude	Impact blend
1	Yes	-	Medium
2	Yes	-	High
3	Yes	Positive	High
4	Yes	Positive	High
5	Limited (COVID-related)	Negative	High
6	Yes (COVID-related)	Mixed	Medium
7	Yes	Mixed	Medium
8	Limited	Mixed	High

Nearly all teachers described blended learning similar to the generally accepted definition of “the combination of online and on-campus activities” (Garrison & Vaughan, 2008; Staker & Horn, 2012). A quote from Teacher 7 is an example of this: “[...] that was kind of your independent digital preparation time. Where you do things at home or digitally, and you combine that with things on campus or in person with a teacher.”

Only Teacher 8 did not know how they would describe blended learning. Interestingly, five teachers alluded to the idea that blended learning is “something with videos or knowledge clips” and “not only books” (Teacher 5). For example, Teacher 6 described blended learning as “forms of education where you use multiple formats, or videos, or turn things around so that you don’t explain everything yourself in class, but people work on it themselves and then pick things up from there, with the help of videos and so on”.

All teachers indicated some form of experience with applying blended learning in current or past courses (Table 4). The level of experience ranged from almost none; “If a week was cancelled, I sometimes gave out videos that could be watched with some follow-up material, and then we discussed it briefly the next time” (Teacher 8), to actively incorporating blended learning activities into their courses. Teacher 3 is an example of the latter: “We do a flipped classroom where there is a lot of online content, and then we also have on-campus content as well.”

The teachers had varying opinions on how they experienced applying blended learning in their courses. A few recalled the COVID lockdown when asked about their experience with blended learning, *“Unfortunately, I had to do it during corona, but I’m not dissatisfied about it”* (Teacher 6). Teacher 5 had a less positive experience; *“I think back to that time with displeasure... I was completely done with cameras, so I didn't do anything else with them”*.

A few teachers spoke about their students. Two teachers (Teachers 6 and 7) noted challenges related to students’ limited independence and level of preparation.

“I always find that to be the big disadvantage, that very often students haven’t done it and then they hope that when they come to the on-campus or joint activity, they will get the explanation. So that’s what I find difficult about blended learning, because how do you ensure that? You don’t want to ‘punish’ the students who have done it by giving the same explanation again [...]” – Teacher 6

Other teachers mentioned how their students experienced blended learning. *“Students hate it, [...] but it does not affect their grades”*, said Teacher 3. The same teacher also received comments from students who were *“not super positive about having experiences where they are learning in multiple different formats”*. Nevertheless, the teacher themselves had a positive attitude toward blended learning: *“...how we can better bring students on our side and show them that we're not only training them for that course, but to be scientists. And to be a scientist, no one gives me a textbook on what I'm studying. I'm the one developing that new knowledge. So being able to read and understand and formulate new ideas is super important. And you don't get that just from sitting in a lecture hall half awake.”*

Several teachers brought up benefits and advantages of applying blended learning in their courses. Teacher 4 mentioned how blended learning could improve education for a variety of students: *“People with ADHD, for example, need those videos, because you can pause them and then do something else. So, I think blended learning is also a good approach to see if we can provide everyone with something that suits them, without being able to give [...] every student a tailored education”*. Another teacher (6) talked about how having several explanations ready to go and easy to look up, resulted in being able to focus on *“the interesting things when explaining”* during lectures.

Out of the eight participants, five would fit a high-impact blend best according to the checklist, and three a medium-impact blend. One teacher of those three had a tie between a medium and a high-impact blend and chose a medium-impact blend. *“[...] but then there's just no time. That's the bottleneck in everything. I want to do a lot, but it's not possible, but that's the trade-off I make every time.”* – Teacher 6

Reactions to the results of the checklist were varied. Several teachers were confident in their result *“That checks out, because that’s what we are trying to do as well,”* said Teacher 1. Others responded with some uncertainty: *“While I do see that I have the opportunity to do this, I'm not convinced that it's always the best approach.”* (Teacher 8).

A theme that emerged was the aspect of time; half of the teachers brought this up when discussing their impact blend. *“I think if you have unlimited time, then yes, it is indeed fun to take a comprehensive look at ‘OK, how can we make all of this fit together as well as possible?’ But that does require you to have unlimited time,”* said Teacher 2.

4.2 Current planning practices

What planning practices do teachers currently use, and which obstacles or supporting factors do they encounter in this process?

All teachers indicated that at least a part of the planning process is collaborative. A few develop the initial structure individually, which they later discuss with the other teachers in the course. For example, Teacher 7 said: *“I always draw up the outline myself, one or two draft schedules. I then discuss these with a co-coordinator of the course.”* Others complete the entire planning process in collaboration with the course team.

“[...] it’s a large team that’s part of this. We have six different lecturers, [...] so to plan out their sections without their input would, I think, lead to a worse course.” – Teacher 3

“One period before we start teaching, we meet, all the teachers and me, and then we go through the organization, and then we structure what needs to be done online, what needs to be done by students when they are at home.” – Teacher 1

Six teachers use Excel during the planning process. Some use it for the entire process, others first draft a schedule on paper and later finish it in Excel. Two teachers use a large piece of paper or a whiteboard when planning with colleagues. The following comment from Teacher 1 is an example of this: *“We printed a very big piece of [paper] and divided it into the 10 weeks of the course. Then we divided between whatever needs to be done in class and at home. And week by week, we went through it. So, it was pen and paper, and sticky notes. It comes from an exercise that I did during a teaching course. It was actually meant to be a blended learning wave.”*

A few teachers mentioned the challenge of planning around public holidays. As Teacher 7 put it: *“It’s more of a puzzle: are there any holidays during our course? Do we need to shift something around in the weekly schedule?”*

When asked about helpful and supporting factors during the planning process, many teachers mentioned using the previous year’s schedule or student evaluation forms. Teacher 5 commented: *“What we typically do is, out of habit, take last year’s Caracal-, we also have an OAC that discusses this and has an opinion on it, and we get that too. So, you start by looking at what went wrong last year or what could be improved”*. This is in line with a comment from Teacher 2: *“I think it helps if you already have a schedule that you can copy and then adjust. If you have to start from scratch, it’s just more difficult. Because then you also know [the layout] from the previous year, and maybe you still remember what problems you encountered”*.

A few teachers highlighted that the help of others, or teamwork, was a supporting factor during the planning process. A comment from Teacher 8 illustrates this theme: *“Especially as a group process where you are shifting things around and also looking at: if we remove this, what do we want to do instead? And what is the impact on the rest? Oh wait, the midterm is then, so that subject also has to be tested somewhere else. That helps in a discussion, of course.”*

When asked about any obstacles that occurred during the planning process, frustrations about practical aspects of Excel arose. Teacher 2 commented: *“At the end of the planning, you realize that instead of Tuesday’s date, you took*

Wednesday's date. So, everything has been moved, and suddenly there's a lecture in the weekend [...] in your planning."

These practical obstacles also arose when planning on paper, as Teacher 1 said: "[...] you have to zoom out and see the whole picture and zoom in to the precise lecture and the precise seminar very quickly. [...] So, there are tons of pens and paper, and then we have the sticky notes [...]. So going from that level of detail to the overview, sometimes it gets very confusing."

4.3 Features for the planning system

What features do teachers consider essential, desirable, or unnecessary in a digital planning system?

Participants' preferences regarding features were categorized into four categories: *supporting features for beginners*, *recommendation features*, *features that allow collaboration with other colleagues*, and *other practical features*. In Figure 3 to Figure 6, features with an asterisk in front of them are participants' ideas. Numbers in the white fields in the bar charts indicate the number of participants who wrote a feature down in the first part of the card-sorting task. Furthermore, the graphs are ordered according to priority, with features most frequently categorized as *must have* displayed at the top, followed by *could have* and *won't have*.

4.3.1 Supporting features for beginners

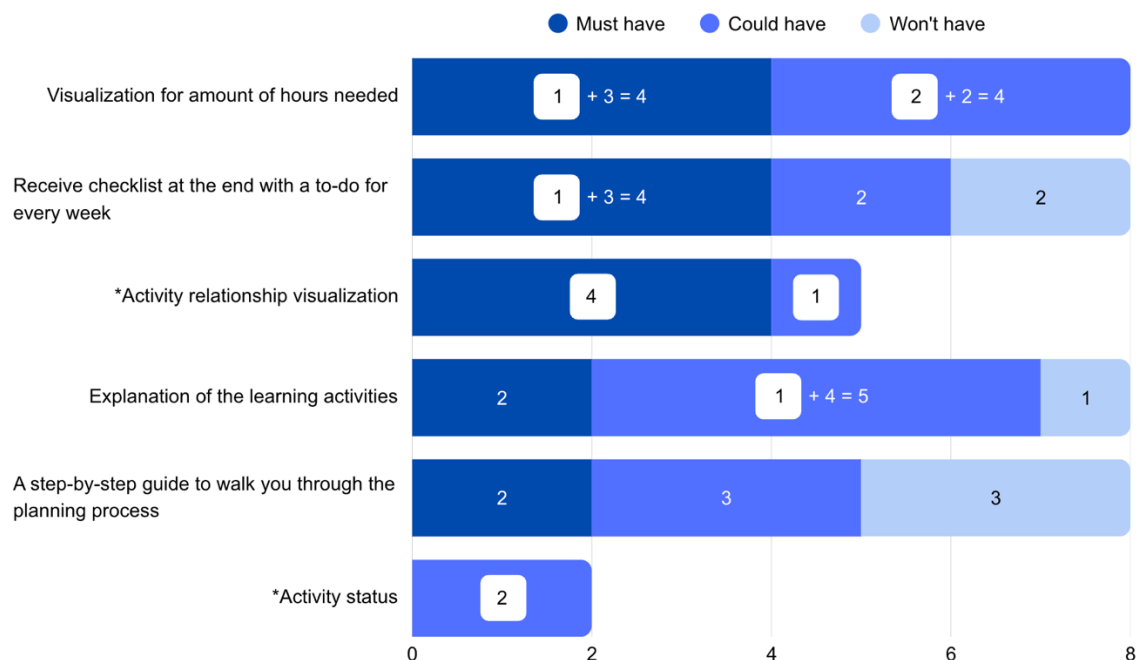


Figure 3

Supporting Features for Beginners

As can be seen in Figure 3, the feature *visualization for amount of hours needed* scored the highest in the category *supporting features for beginners*. None of the teachers categorized this feature in the *won't have* category, with four teachers placing it in the *must have* category, equal to the number of teachers placing it in the *could have* category. Three participants thought of this feature themselves during the first part of the card sorting task. Teacher 3 was one of those participants and said: “[...] *other visualizations of the learning goals. So, I think we have now where you click on one [learning goal], and it shows you which ones [light up]. But if you had charts, like a pie chart showing like how much of one learning goal is being focused on compared to the other ones, that also might be helpful*”.

The feature *receive checklist at the end with a to-do for every week* was generally received positively. One teacher (Teacher 2) thought of this feature themselves: “[...] *it's also important for us to know, 'OK, when will those things [assignments] come in and when do they need to be checked?' So, you could include something like that as well*”. The teachers who put it in the *won't have* category motivated this choice by saying: “*When you say, 'I'm going to do this this week, I'm going to do that this week.' Yes, that's too detailed for me. Then you have to keep a diary, and I don't want to do that*” (Teacher 6). This teacher was also one of the teachers who thought of the *status activities* feature, which they explained as giving the activity a status color to have a global overview of what still needs to be completed and what is already done. This view is supported by Teacher 5, who said: “*What I would find useful is to see in one overview how ready this part is. How close to completion, done, not done, completed. If you see that [I still have to do something], per item. These are grey, for example, if they have a green border, [we know] we've done them right away*”.

The feature *activity relationship visualization* is a merging of similar features that five teachers wrote down. Two teachers wrote down a feature that would enable them to filter activities, both explained it to be similar to the existing feature of clicking on a learning goal and having all activities linked to that goal light up. They would like to be able to click on an activity in the right-side panel, and have all planned activities of this type light up. This would allow them to see “*how [an activity] is distributed across the schedule in one go*” (Teacher 2). The other teachers indicated the desire to see a line between activities connected to the same learning objective. This would be an extension to the existing feature of having the connected activities light up when clicking on a goal. One teacher would like to see dependencies between activities to indicate the order of activities. These features were all combined in the *activity relationship visualization* feature.

One teacher thought of the feature *explanation of the learning activities* when they had the opportunity to write down own ideas for the system: “[...] *because it would be useful to have something like 'what do you mean by activities'. [...] if you use the activities differently, it might become a bit confusing. So, a bit more explanation for the teacher too, [...] just an 'i' button that explains the activity itself*.” (Teacher 2). While some participants indicated that most teachers would already be familiar with most learning activities or could find the information elsewhere, they still considered it a useful feature. Another teacher thought of an addition to this feature, they said: “[...] *if you had an explanation of, say, Bloom's taxonomy, that it's important for that particular goal. It's really useful for people like me, I'm really a researcher who teaches, instead of a teacher who does research*” (Teacher 3).

The categorization of the feature, *a step-by-step guide to walk you through the planning process*, was divided. As Teacher 1 commented, “*Very undecided about that. On one side, it could be very nice. On the other side, I can really see myself and also other teachers wanting to do things in the order that they want to. I will put it as won’t have, because I think the process to plan really differs across teachers. [...] I think it would be better to just have a quick visual guide of ‘these are the learning goals, these are activities’, a bit like you explained to me before, and then leave the teacher play with it*”. This view was supported by other teachers, who emphasized the importance of keeping the feature optional. Although they indicated they would unlikely use it themselves, they recognized its value for others and in situations where the system is used for the first time.

4.3.2 Recommendation features

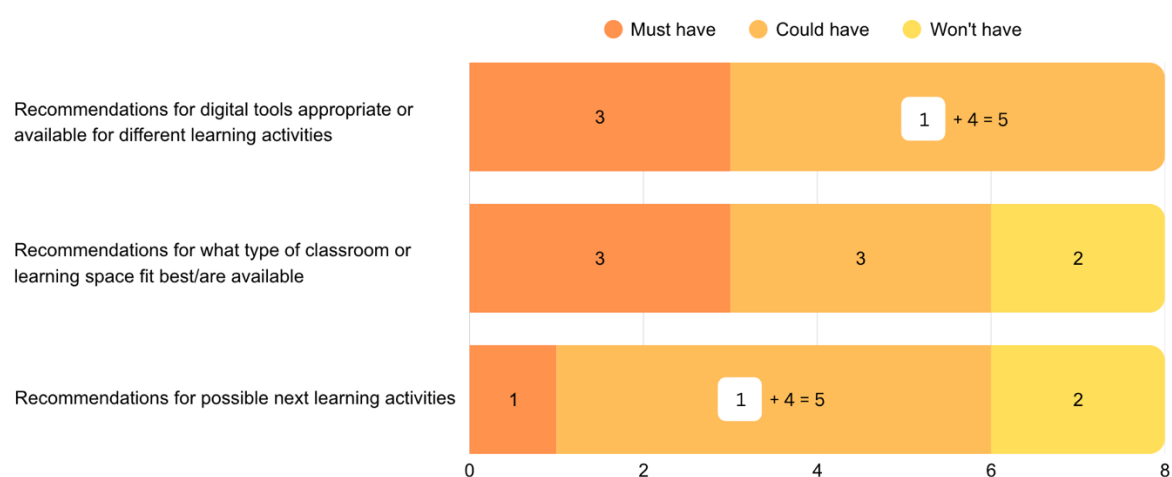


Figure 4

Recommendation Features

None of the participants categorized the feature *recommendations for digital tools appropriate or available for different learning activities* in the *won't have* category (Figure 4). One teacher thought of this idea themselves and said: “*I have a great example of e-learning here, and you can put it somewhere. Will you also get a list of which e-learning platforms you can use, for example? [...] Maybe there's something I've never thought of [...]*” (Teacher 4). One teacher felt that this feature should be combined with the features *recommendations for what type of classroom or learning space fit best/are available*, and *explanation of the learning activities*. They emphasized the importance of keeping this optional, and that the user could retrieve the recommendations when needed, as they put it: “*I'm not really into active recommendations... ‘You might find this interesting’. That's just not my thing*” (Teacher 5).

The opinions about the feature *recommendations for what type of classroom or learning space fit best/are available* were very divided. They ranged from comments similar to Teacher 3, who said: “*Yeah, that would be fantastic, because I already have to do that*”, to a comment from Teacher 1: “*I would put it into the won't have ... I've been in one of those active learning spaces they're actually really cool, but I*

don't think they are as easy to use. I don't think it's as easy to bring students, and it wouldn't be my preference to plan an activity that can only be conducted in such a space." A theme that emerged frequently among participants was the lack of availability for these spaces. Many commented along the lines of "in an ideal scenario where there are enough available spaces" as a condition when categorizing this feature.

The feature *recommendations for possible next learning activities* also had a divided categorization. Many participants did not offer an extensive motivation, and thought it was "*nice to have, but I don't think it's necessary*" (Teacher 3). One participant thought of this feature themselves during the first part of the card-sorting task, and said: "[...] *I would also like to see: 'hey, is this completely group-driven? Shouldn't there be some individual input?' So, I would like to see that visualized.*" (Teacher 8).

4.3.3 Features that allow collaboration with other colleagues

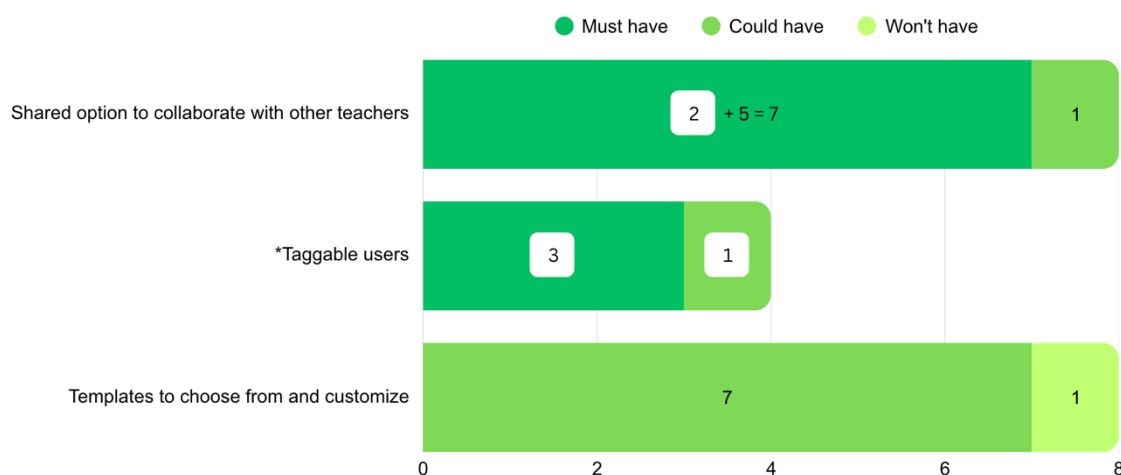


Figure 5

Features that allow Collaboration with other Colleagues

The feature *shared option to collaborate with other teachers* was placed into the *must have* category the most out of all features (Figure 5). Most teachers immediately reacted with a similar reaction to Teacher 7: "*must have because I work in a team, it is extremely useful, as I cannot walk over there with my laptop every time. That is inconvenient*". Two teachers thought of this feature themselves and wrote it down during the first part of the card-sorting task.

Four teachers came up with a feature to allow users to tag or link others to an activity. Teacher 5 was one of those teachers: "*For me, it's always immediately linked to: who does it? [...] That's something I would like to see there, because I'm thinking now from the perspective of that Excel file you make every time, which has all that information in it. Who? When?*" Three teachers categorized this feature in the *must have* category, and one in the *could have* category.

Templates to choose from and customize was primarily categorized as a *could have*, with seven participants placing it in this category and one participant placing it in

won't have. Many thought it was “not *really necessary*, because all those subjects are a bit different anyway” (Teacher 2) or they thought it was not “a *must-have*, but I think it's a good idea” (Teacher 5). Another teacher would place this feature in the *won't have* category if the templates would be for the whole course, but “if it's small blocks, as in a block with homework, lectures, seminars, then I say yes, that's useful, those modules that you use” (Teacher 7), and sorted it in the *could have* category.

4.3.4 Other practical features



Figure 6

Other Practical Features

The features in this category were all proposed by participants.

Day-to-day scheduling was a concept four teachers wrote down, as shown in Figure 6. While writing down this feature, Teacher 2 commented: “We always have two lectures a week. If you're going to plan it now, [...] then you say: ‘we have a guest lecture’, but then you don't know which day it is. And especially if you want to coordinate things, it's useful to know what should follow what”.

Three participants came up with the feature *exportable version for students*. One of those teachers indicated that they currently give students the schedule they create and use themselves. One teacher who wrote this feature down categorized it in the *won't have* category. Their reasoning behind this feature was to “make it clear to students why the course is structured the way it is”. When asked about their motivation for the categorization, they said, “It's not important for the planning and can always be done in other ways. [...] So, for me, that has a lower priority... I don't want to say that I don't think it's important, but if I just look at the system, I can achieve that in other ways” (Teacher 6).

The ability to include *assessments* was important to a few teachers. As Teacher 1 described it: “I would like to have labels that are connecting the activity with the way that the activity will be assessed. [...] for example, the watch knowledge clip,

it's something that [...] will be assessed with a multiple choice. Then [...] I can immediately see if the two formats are matching in some way." The same teacher thought of an additional feature to add: *"If you go with the recommendation, it could even be very nice to get a recommendation there based on Bloom's levels of teaching. [...] it could even be super cool if I were to click here discussion and then 'do you want to test this one with remembering? Then you can do a quiz. Do you want to test this one with putting it into practice? Then you can make this a type of assignment."*

4.3.5 Other ideas and suggested improvements

In addition to the previously discussed features, several participants suggested changes and minor improvements to the existing prototype. One issue that emerged was the absence of a standard lecture activity type. Furthermore, several participants noted that the light grey save button was not clearly visible or that it was unclear whether they could click it.

Several additional ideas were mentioned by individual participants. These included the option to temporarily park activities without placing them in the schedule or deleting them, the ability to move multiple activities at once, and grouping learning objectives into clusters. A participant also suggested that the system could indicate public holidays to help prevent scheduling issues during the planning process.

4.4 Knowledge transfer

How do teachers believe a digital system could support knowledge transfer when courses are taken over by different teachers?

Participants expressed differing views on whether the system would support the transfer of knowledge between different teachers. While the majority believed that the system could be beneficial, three teachers were more hesitant and unsure if it would add value compared to current practices.

Several teachers mentioned how difficult taking over courses from other teachers sometimes is. They believed the system could provide some clarity in design choices and course structure. One participant described how they *"sometimes feel a bit like a detective trying to find out the details of the previous year courses"* (Teacher 1). The same teacher mentioned how this system *"could provide a shared language to visualize the course"*. This view is supported by other teachers, as Teacher 8 commented: *"You can often see what happens in which week, but you often don't see the design principles that have been used, so how does that relate to the learning objectives and how are the activities linked to them? I think there's a big difference between how teachers administer that, and this would help to bring some uniformity to it"*.

Additionally, participants believed in the benefit of increasing reflection in teachers while designing courses. Teacher 6 described this as: *"I think it helps to get teachers to rethink things in general. Why is the course structured the way it is?"*

However, a few participants questioned whether the system added any value to existing practices; *"It may be helpful, yes. Whether it is more helpful than current*

methods such as Excel and ultimately MyTimetable, I cannot say." (Teacher 7). A similar perspective was shared by Teacher 2, who said: *"You have last year's Brightspace environment, and you go back there to look. So I don't think this adds much to that, because you already have the planning and everything there"*. Another teacher mentioned how the system could offer support when there is little contact between teachers, but in their department, this was not the case.

Overall, the results indicate that teachers primarily appreciated the system's potential to support reflection on design decisions and increase clarity in course structures. However, views on its usefulness for knowledge transfer also differed based on current tools and collaboration.

5 Conclusion

This study explored how a digital system can support university teachers in planning blended learning courses, with a focus on identifying teachers' needs, preferences, and desired forms of support.

5.1 Definition and experience

Regarding teachers' definitions and experiences with blended learning, the findings show a generally shared understanding of blended learning as a combination of online and on-campus activities. Most participants were familiar with the concept and reported some degree of experience with applying blended learning in their courses, although the depth and intention of this application varied. Several teachers mostly associated blended learning with the use of videos. Experiences with blended learning were mixed and sometimes influenced by other factors, such as the COVID-19 period, and students' level of preparation and engagement. Despite these challenges, several teachers recognized some benefits of blended learning, such as increased flexibility, opportunities to use face-to-face time more meaningfully, and the ability to meet different students' needs. Although attitudes toward blended learning differed, most participants were identified as fitting a high-impact blended learning approach.

5.2 Current practices

The results related to course planning practices show that course planning is often a collaborative process, although the degree of collaboration varies. While some teachers develop an initial course structure individually and refine it with colleagues, others plan the course entirely as a team. Across participants, planning was mostly supported by basic tools, most often Excel, as well as physical tools such as a whiteboard, paper, and sticky notes. Teachers frequently relied on materials from previous course editions, such as schedules and student evaluations, which were seen as helpful starting points. Team-based discussions and collaboration were described as important supporting factors, helping teachers to reflect on the effect of changes. At the same time, several obstacles were found. These included errors when making changes in tools such as Excel, scheduling around national holidays, and maintaining both a detailed and an overarching view of the course.

5.3 Desired features for the system

The findings related to the desired system features suggest that teachers mainly value features that increase clarity, alignment, and collaboration during the planning process. Visualizations that show workload and activity relationships were perceived as useful, as they supported teachers in reflection on course organization. While features intended to guide less experienced teachers were seen as potentially valuable, the participants emphasized the importance of keeping such support optional. In line with earlier findings on collaborative planning, features that allow cooperation with colleagues were considered essential. Overall, these results suggest

that teachers prefer a flexible system that supports different planning styles while offering optional guidance and visual support.

5.4 Knowledge transfer

Regarding the potential of a digital system to support knowledge transfer between teachers, the findings reveal mixed views. While most participants believed that such a system could add value, others questioned whether it would offer benefits beyond existing tools. Teachers who were positive mentioned the system's ability to make underlying design choices clearer, thus providing more clarity about course structure. From this perspective, the system was viewed as a way to create a shared language for course design and to support reflection on course structure. At the same time, a few teachers questioned whether the system would offer advantages over existing tools, particularly in situations where course information is already well-documented or where collaboration between teachers is strong. These differing perspectives suggest that the perceived usefulness of the system for knowledge transfer is context-dependent.

6 Discussion

This study was designed as qualitative exploratory research into how university teachers plan blended learning courses and how a digital system could support this process. By conducting semi-structured interviews, participants could explain their experiences and reasoning in depth and in their own words. In addition, the card sorting task encouraged participants to make concrete choices about system features, adding further insight to the interview data. Across participants, several shared themes emerged, such as the importance of collaboration, overview, and flexibility in planning.

6.1 Interpretation

Regarding the first sub-research question, which examined how university teachers define blended learning and how they apply or would apply it in their courses, the findings suggest that teachers share a broadly similar understanding of blended learning as a combination of online and on-campus activities. This aligns with the definition used by Utrecht University and commonly used definitions in the literature, where blended learning is described as the integration of face-to-face and online elements. Although teachers' understanding appears relatively consistent, the application of blended learning varies considerably between teachers. A small number of participants reported making very limited use of blended learning, for example, by occasionally incorporating videos, whereas others actively attempted to implement blended learning activities in their courses. This variation is interesting, as the majority of participants would theoretically be able to implement a high-impact blend approach. These findings are in line with the literature, which suggests that teachers often revert to more traditional teaching practices despite expressing the desire to change their current practices. Some of the benefits mentioned by participants corresponded with those found in the literature, particularly increased flexibility and accessibility. However, other commonly reported benefits, such as student satisfaction and improved efficiency, were less consistent in this study, as a few participants reported challenges related to insufficient student preparation and attitude. Finally, some of the challenges found in the literature were also reflected in this study, most notably time constraints.

The second sub-research question aimed to identify what planning practices teachers currently use and which obstacles or supporting factors they encounter. The findings indicate that course planning is mostly a collaborative activity, although the extent and form of collaboration vary between teachers. Collaboration itself was also mentioned as an important supporting factor, alongside the use of materials from previous course editions, which were frequently described as helpful references or starting points. At the same time, participants reported several challenges related to their current planning practices. These challenges mainly concerned practical issues, such as the limited flexibility of tools such as Excel when rearranging elements or adjusting cell properties, and the difficulty of maintaining a clear overview when planning on paper, which could quickly become chaotic. These findings highlight both the strengths and limitations of existing planning practices, which provide important background for understanding teachers' perspectives on potential system features.

The third sub-research question sought to determine what features teachers consider essential, desirable, or unnecessary in a digital planning system. Features related to collaboration were generally evaluated positively, as reflected in the card-sorting results (see Section 4.3.3). This aligns with the findings from the second sub-research question, which showed that all participants engaged in some degree of collaboration during the planning process. Interestingly, however, within this same category of collaborative features, templates were never categorized as a must have. This contrasts with findings from sub-research question two, where materials from previous course editions were described as particularly helpful starting points. One possible explanation is that teachers value past materials as reference material, rather than fixed templates that might constrain them during the planning process.

Most recommendation features were categorized relatively positively, but rarely as essential. This is notable, as previous studies suggest that teachers often need pedagogical support and guidance when designing blended learning courses. Based on this literature, a stronger preference for recommendation features might have been expected. The relatively moderate evaluation of these features in the current study suggests that teachers may be cautious about automated advice and would prefer human professional judgment. A similar pattern was observed for support-oriented features. While many were considered useful (Section 4.3.1), the feature offering a step-by-step guide to walk teachers through the planning process was not strongly supported. Specifically, three participants categorized this feature as a *won't have*. This finding contrasts with previous studies indicating that teachers often require additional support when adopting blended learning. However, the results suggest that participants were less resistant to support itself than to the idea of being guided through a fixed process. The importance of keeping the support and advice from this feature optional emerged as a critical factor, which is consistent with earlier findings related to recommendations.

The fourth sub-research question focused on teachers' perceptions of whether a digital planning system could support knowledge transfer when courses are taken over by different teachers. The mixed views expressed by participants suggest that the perceived usefulness of such a system strongly depends on the context. Teachers who expected added value emphasized the system's potential to make underlying design choices more explicit, thereby supporting transparency and creating a shared language around course design. In contrast, teachers who were more skeptical often work in environments where course information is already well-documented or where contact between teachers is more frequent. In these cases, the system was considered redundant rather than offering additional benefits to existing tools. This highlights that the value of a digital planning system depends on contextual factors, such as current practices and the degree of interaction between teachers.

6.2 Recommendations

This section presents a set of design recommendations for features to be implemented in a digital planning system, based on the findings described in the previous chapters. Several visualizations were created by the researcher using *Canva* (n.d.) to support the recommendations.

6.2.1 Visualization of required workload

The *visualization for the amount of hours needed* emerged as a promising feature, as none of the participants placed this feature in the *won't have* category, and three participants mentioned a similar feature independently (see Figure 3). This suggests that providing insight into workload could be a valuable addition to the system.

Participants differed in their preferences regarding the most useful form of visualization, which led to the development of two design concepts. Several participants expressed the need for an overview of both the estimated student workload and the time investment required from teachers. Figure 7 presents a mock-up of this feature. On the left side of the figure, two variations of the visualization are shown. Within each activity element, two additional input fields are included, where the user would add the estimation of the required hours. The upper field represents the teacher's workload, while the lower field represents the expected student workload.

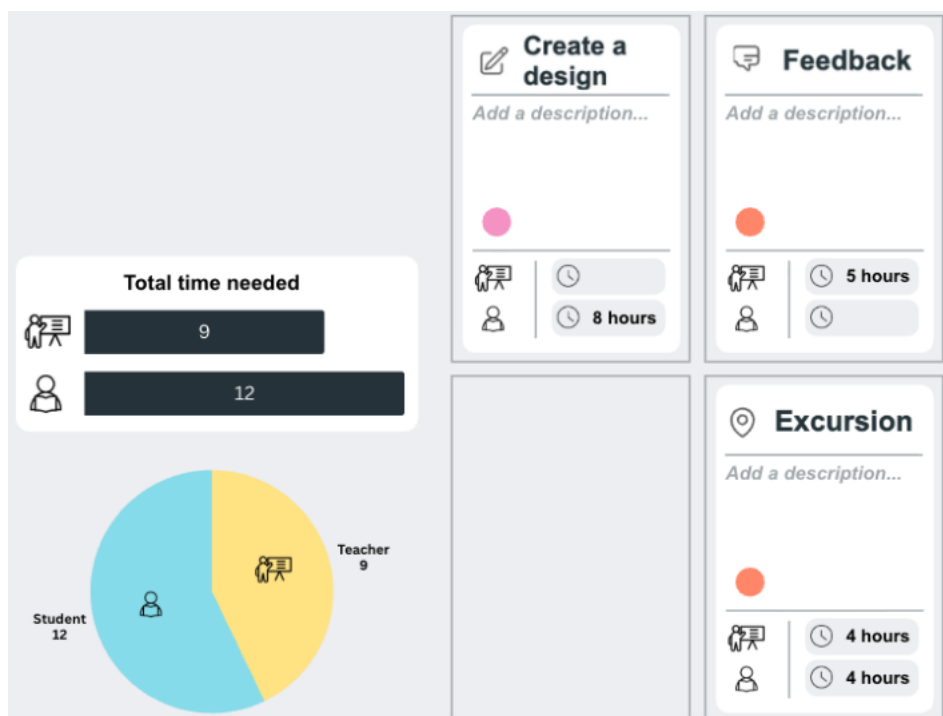


Figure 7

Visualization of Estimated Workload for Students and Teachers

Other participants indicated a preference for a visualization focused solely on student workload, particularly in relation to the learning goals. A mock-up of this feature is shown in Figure 8. In this design, the system calculates the estimated student workload for activities linked to each learning objective and combines them to provide an overview per learning objective.

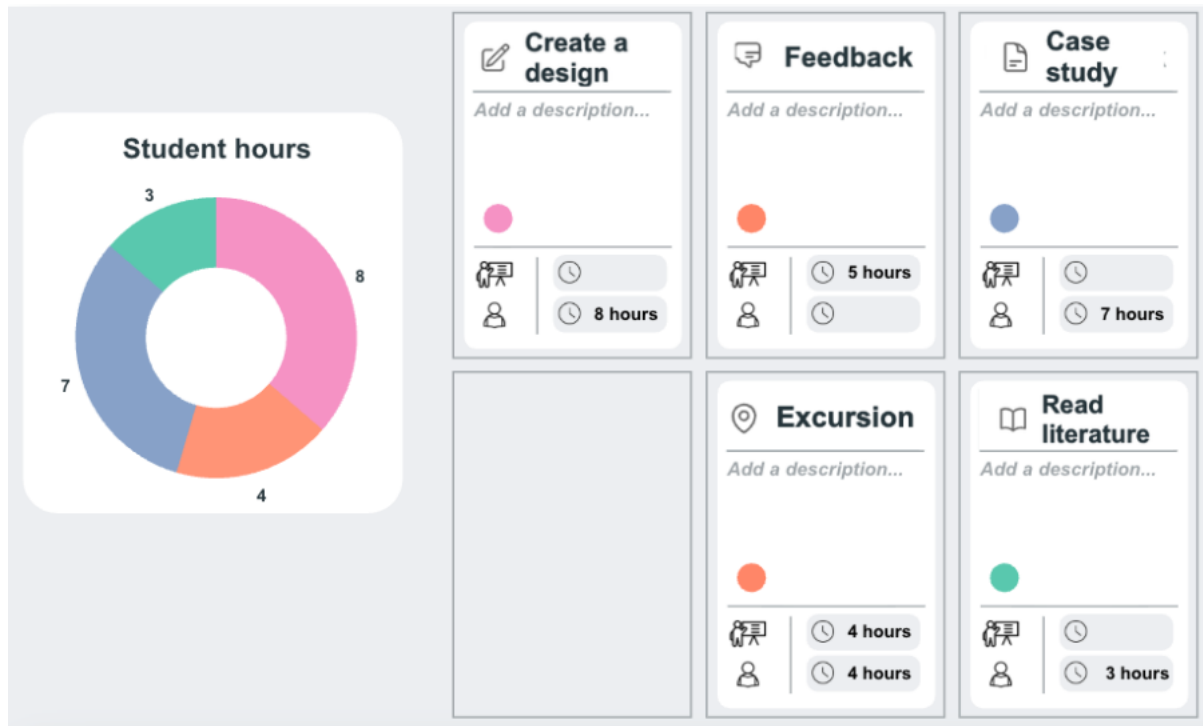


Figure 8

Visualization of Estimated Student Workload per Learning Objective

6.2.2 Activity status visualization

The researcher-provided feature of providing a checklist with weekly to-do items was received relatively positively by participants (see Figure 3). In addition, two participants expressed a need for an overview of completed and pending tasks from the teacher's perspective (Section 4.3.1). Based on these findings, these two ideas were combined into a single design recommendation.

Figure 9 presents a visualization in which the status of each activity is shown directly within the course overview. The border of an activity element is displayed in green when the task is completed and in red when it is still pending. As an alternative, the color coding can be applied to the entire activity element rather than only the border. By integrating activity status into the dashboard, this design aims to provide teachers with a continuous overview of progress, without a separate checklist. This way, the visualization serves a similar function to a checklist, while remaining embedded in the planning dashboard.

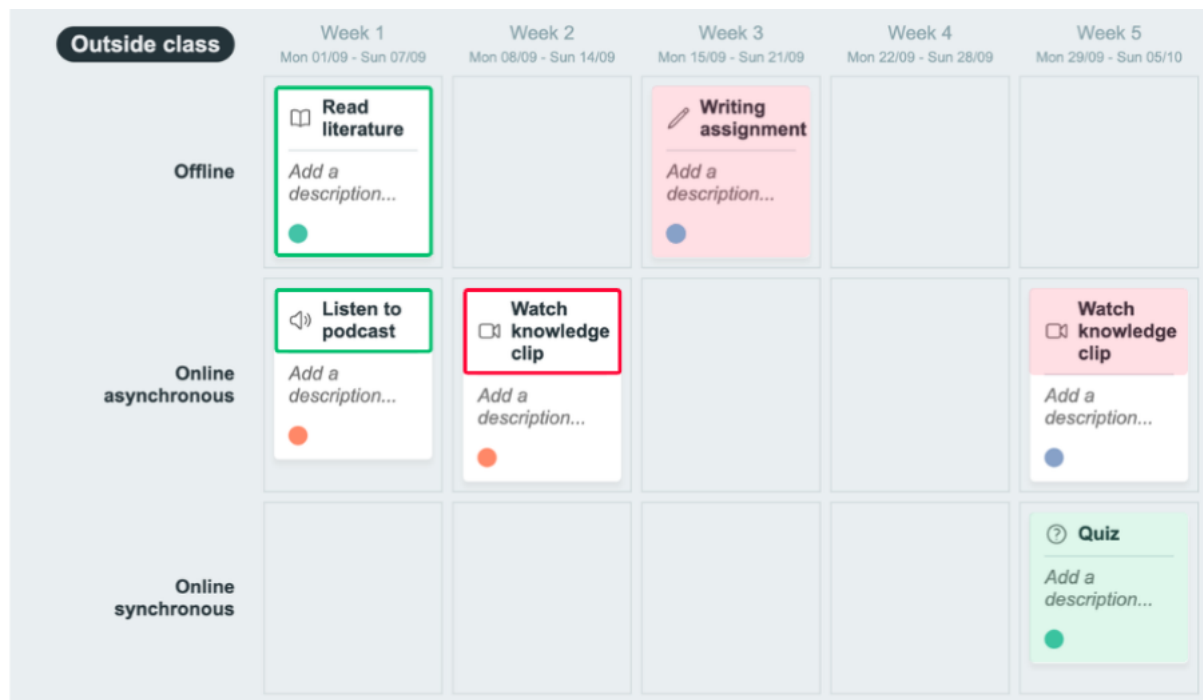


Figure 9

Visualization of Activity Status within the Course Overview

6.2.3 Activity relationship visualization

Several participants expressed a need for an overview that clarifies the relationships between activities within a course, as reported in the results (Section 4.3.1).

Preferences differed regarding how these relationships should be visualized. Some participants favored the use of colored lines connecting activities that relate to the same learning objective, while others preferred an approach in which selecting an activity in the right menu highlights all activities of the same type. Figure 10 illustrates the use of colored lines, while Figure 11 shows the highlighting of related activities.



Figure 10
Visualization of Relationships between Activities linked to the same Learning Objective

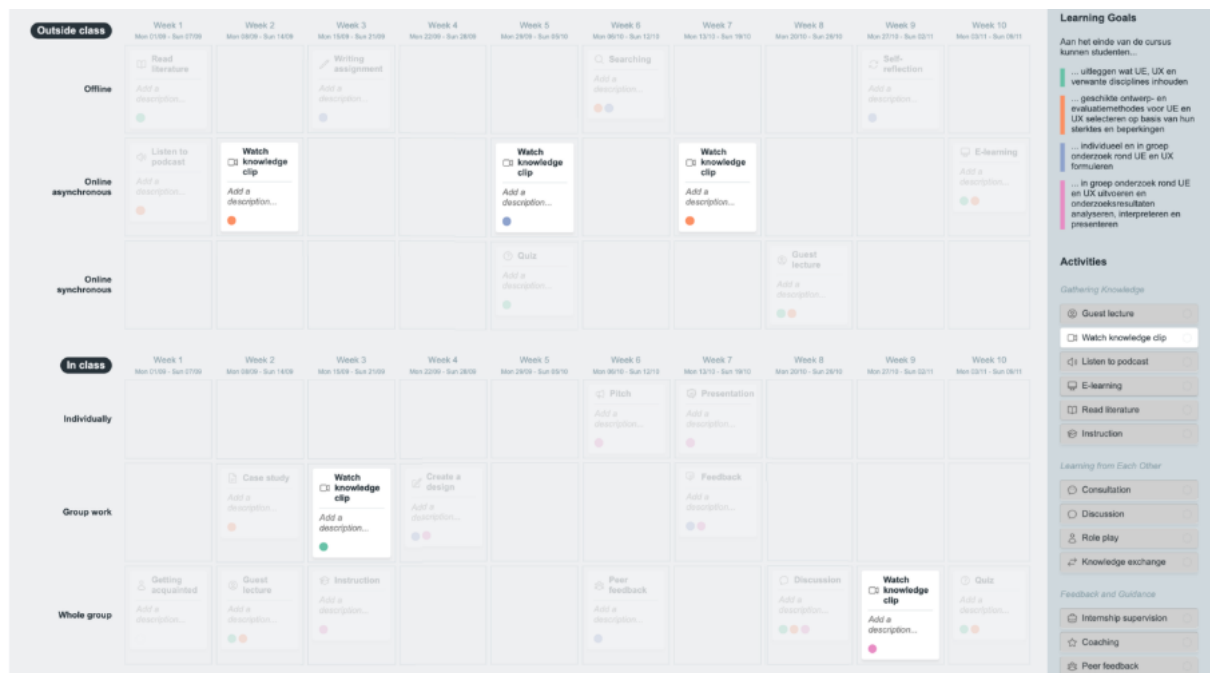


Figure 11
Visualization of Filtering Activities of the Same Type

6.2.4 Extra information per activity

This recommended feature combines several ideas that were initially introduced by the researcher. During the interview, one participant suggested that multiple elements could be integrated into a single feature, as reported in the results (Section 4.3.2). Specifically, the participant proposed that additional information about an activity could be accessed when needed, and that this information could also include recommendations for suitable learning spaces and relevant digital tools. These ideas were therefore combined into one feature, as illustrated in Figure 12. In this visualization, teachers can expand an activity in the right-hand panel via a dropdown menu. When the arrow is selected, three information boxes become visible: an explanation of the activity, recommendations for appropriate learning spaces, and suggestions for relevant digital tools. In Figure 13, the right-side menu is shown before the arrow is clicked. This approach keeps the main planning interface simple, while still allowing teachers to access additional pedagogical and practical information when desired.

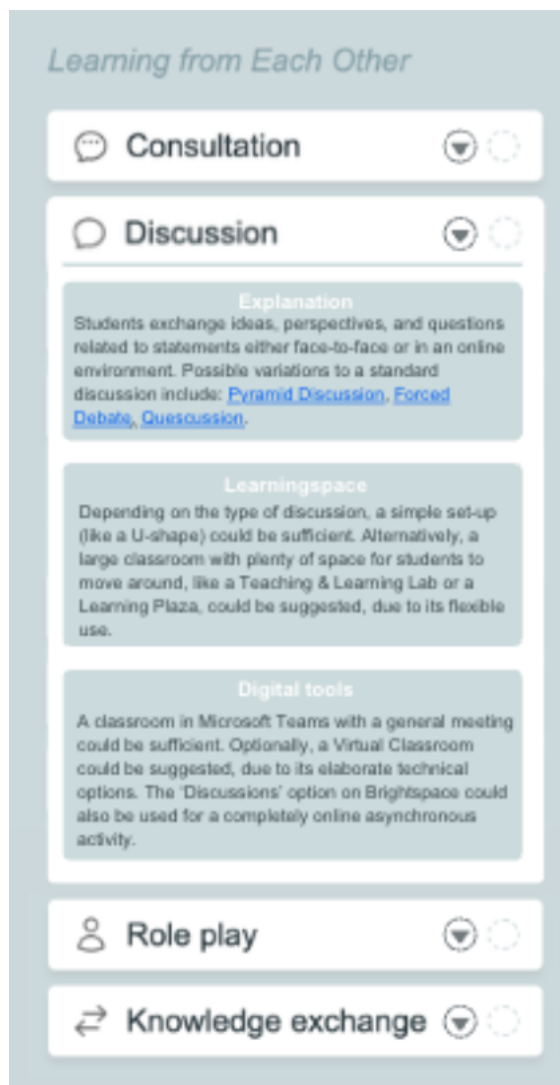


Figure 12

Visualization Extra Information

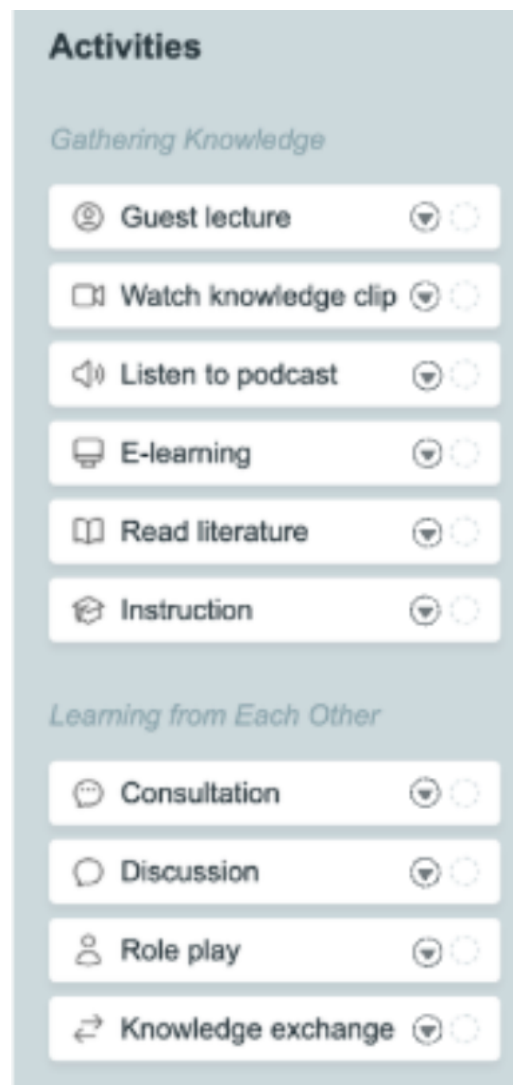


Figure 13

Default Menu

6.2.5 Taggable users and collaboration

The feature *shared option to collaborate with other teachers* was categorized in the must have category the most, with a few participants writing down this feature themselves (Figure 5). This feature is therefore combined with another idea several teachers had, which was the concept of taggable users. In Figure 14, the right-side menu can be seen with an additional subsection, *Teachers*, where users can add extra names when planning or teaching with colleagues. In Figure 15, the dashboard is shown with the activity elements having an extra field to indicate the teacher linked to that activity.



Figure 14

Adding Teachers in the Menu

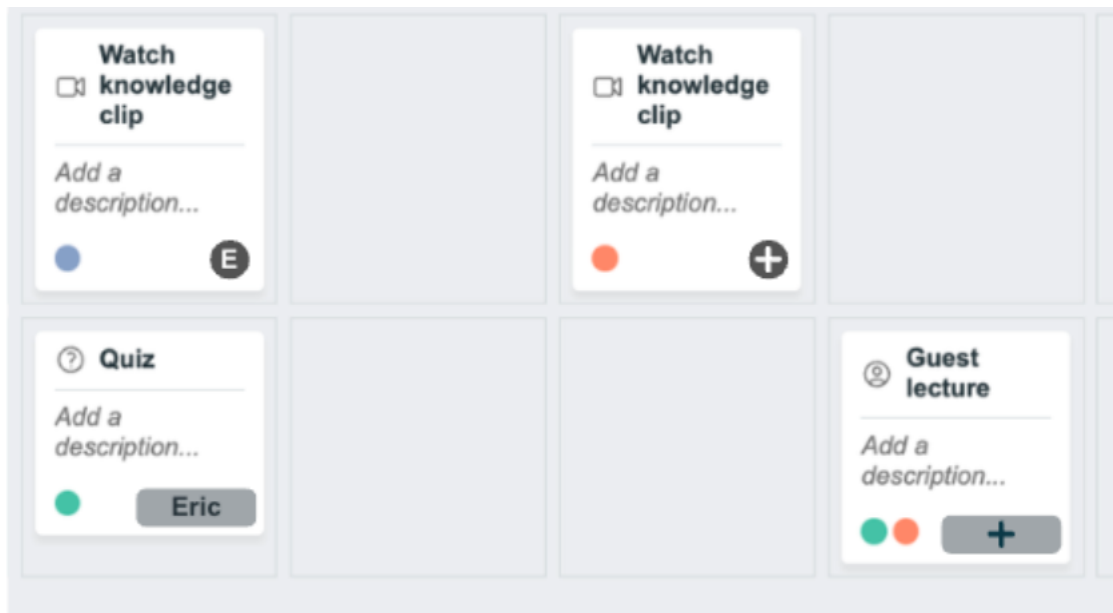


Figure 15

Visualization of Activities with Taggable Users

6.2.6 Day-to-day scheduling

This recommendation is based on ideas proposed by the participants. Several teachers expressed the need to plan courses on a day-to-day basis rather than only at a weekly level, as outlined in Section 4.3.4. As illustrated in Figure 16, this feature adds the day, date, and time to individual activity elements, allowing teachers to specify more precisely when activities take place. Figure 17 shows the adapted dashboard, where users can select a specific week, after which the weekly overview expands into a daily structure. This design aims to provide a more detailed daily overview, while still allowing teachers to switch back to a weekly view when needed.

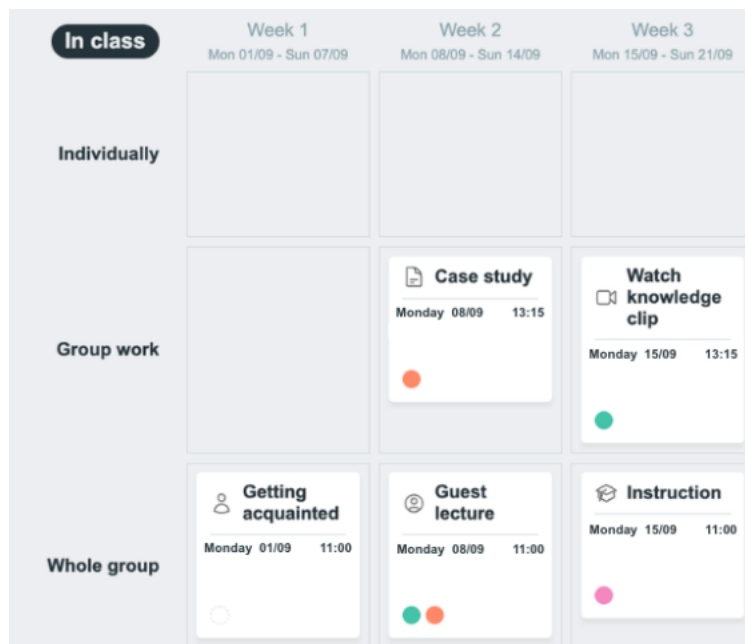


Figure 16
Activities with Day, Date, and Time

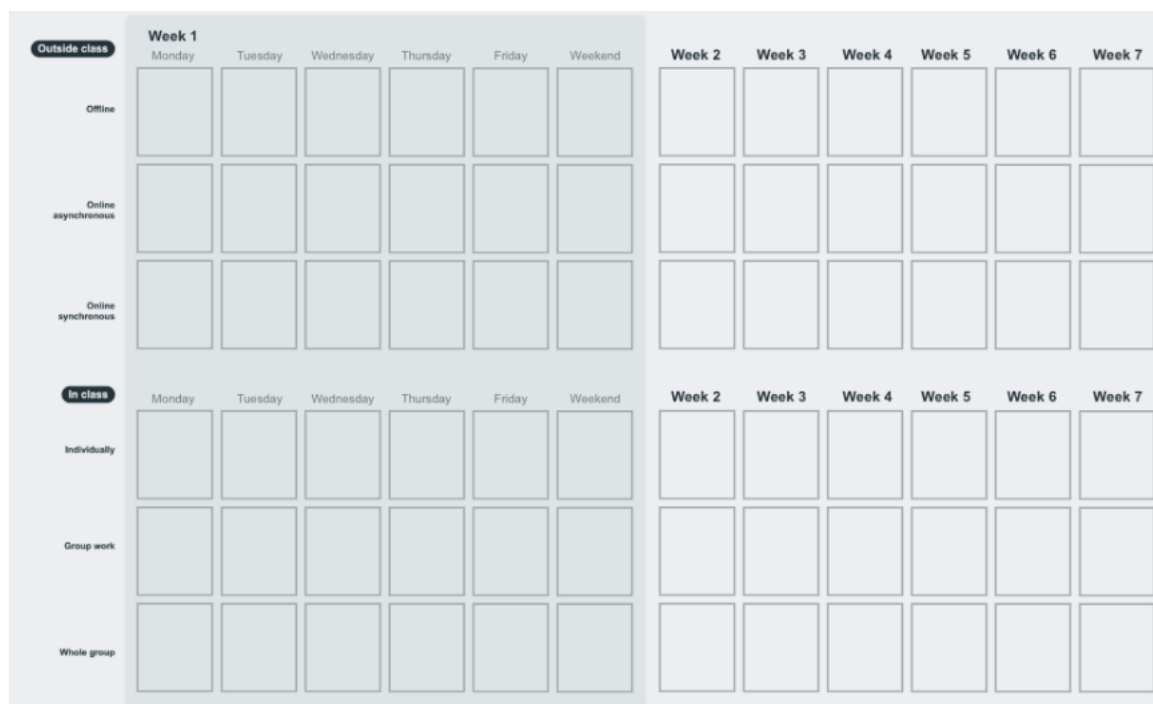


Figure 17
Adapted Dashboard with Daily Overview

6.2.7 Recommendations for next learning activities

Given that participants repeatedly emphasized the importance of keeping recommendation features optional (Section 4.3.2), this preference was integrated into the proposed implementation. In the recommended implementation, the system would collect pedagogical advice that users can access when needed by clicking the ‘Need help?’ button, as shown in Figure 18. When selected, the system suggests possible next learning activities within the dashboard, indicated by a dotted line, along with a short explanation based on pedagogical theories (Figure 19).

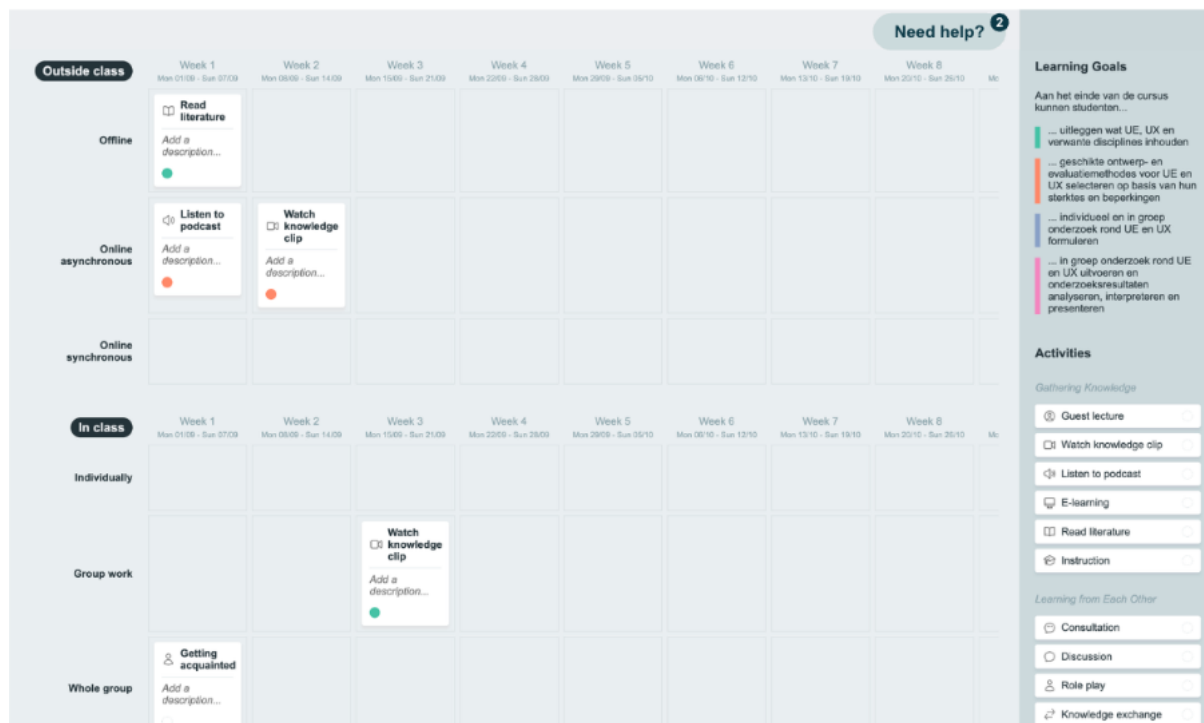


Figure 18

Dashboard with ‘Need help?’ Button

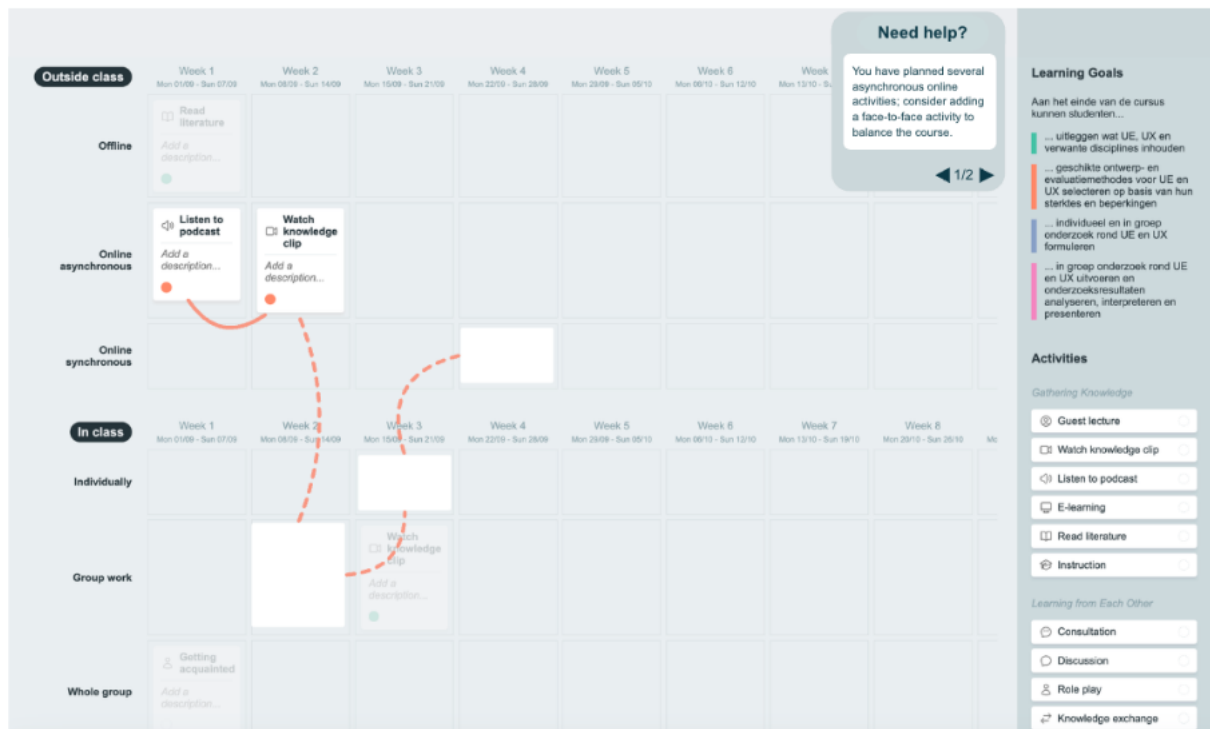


Figure 19
Visualization of suggested next Learning Activities

6.2.8 Recommendation based on Bloom's taxonomy

Following the suggestion from a participant to base recommendations on Bloom's taxonomy (Section 4.3.4), this feature combines two ideas that emerged during the study. First, it recommends possible next learning activities, and second, it provides suggestions for appropriate assessment types, which was an idea raised by two participants (Section 4.3.4). The dashboard would function as usual, but users could access an alternative layout by clicking the button in the bottom-left corner of the interface (Figure 20). In this view, learning activities are grouped according to the levels of Bloom's taxonomy, and the distribution across these levels is visualized (Figure 21). For each level (e.g., *create* or *evaluate*), a bar chart indicates the percentage of activities in that level, offering teachers an overview of the balance within the course.



Figure 20

Visualization of Bloom's taxonomy button in Dashboard



Figure 21

Visualization of Activities in Bloom's taxonomy Levels

6.3 Limitations and Future Work

This study has several limitations that should be considered. The sample consisted of eight participants from two departments within a single university, which limits the extent to which the findings can be generalized. While conducting the interviews in familiar settings, such as participants' offices or meeting rooms, may have increased their comfort and openness, the use of self-reported data also introduces the possibility of social desirability bias, as participants may have felt inclined to provide responses they perceived as appropriate or were expected. Additionally, as the interviews were coded and analyzed by a single researcher, the interpretation of the data may reflect the researcher's perspective, which could have influenced the emphasis placed on certain themes. Despite these limitations, the study provides valuable insights into how some university teachers plan blended learning courses and how a digital support system might be designed.

Future research could further explore whether teachers' preferences for system features are related to their blended learning design approach. With a larger and more diverse sample, it would be possible to examine whether teachers with different levels of experience value different types of support. This could guide the development of adaptive system versions. Furthermore, future research could examine the system in different contexts and disciplines to assess whether the identified needs and preferences extend beyond the current setting. In addition, the recommended features and visualizations from this study could be implemented and evaluated through experiments. Future research could compare course planning with the proposed implementations to existing tools, such as Excel, to analyze efficiency or user experience. Further work is also needed to explore how recommendation features could be implemented in practice. This includes which types of data the system could collect and how recommendations would be generated.

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Appendix A

A1. The Ethics and Privacy Quick Scan of the Utrecht University Research Institute of Information and Computing Sciences

Response Summary:

Section 1. Research projects involving human participants

P1. Does your project involve human participants? This includes for example use of observation, (online) surveys, interviews, tests, focus groups, and workshops where human participants provide information or data to inform the research. If you are only using existing data sets or publicly available data (e.g. from X, Reddit) without directly recruiting participants, please answer no.

- Yes

Recruitment

P2. Does your project involve participants younger than 16 years of age?

- No

P3. Does your project involve participants with learning or communication difficulties of a severity that may impact their ability to provide informed consent?

- No

P4. Is your project likely to involve participants engaging in illegal activities?

- No

P5. Does your project involve patients?

- No

P6. Does your project involve participants belonging to a vulnerable group, other than those listed above?

- No

P8. Does your project involve participants with whom you have, or are likely to have, a working or professional relationship: for instance, staff or students of the university, professional colleagues, or clients?

- Yes

P9. Is it made clear to potential participants that not participating will in no way impact them (e.g. it will not directly impact their grade in a class)?

- Yes

Informed consent

PC1. Do you have set procedures that you will use for obtaining informed consent prior to collecting data from all participants, including (where appropriate) parental consent for children or consent from legally authorized representatives? (See suggestions for information sheets and consent forms on [the website](#).)

- Yes

PC2. Will you tell participants that their participation is voluntary?

- Yes

PC3. Will you obtain explicit consent for participation?

- Yes

PC4. Will you obtain explicit consent for any sensor readings, eye tracking, photos, audio, and/or video recordings?

- Yes

PC5. Will you tell participants that they may withdraw from the research at any time and for any reason?

- Yes

PC6. Will you give potential participants time to consider participation?

- Yes

PC7. Will you provide participants with an opportunity to ask questions about the research before consenting to take part (e.g. by providing your contact details)?

- Yes

PC8. Does your project involve concealment or deliberate misleading of participants?

- No

Section 2. Data protection, handling, and storage

The General Data Protection Regulation imposes several obligations for the use of **personal data** (defined as any information relating to an identified or identifiable living person) or including the use of personal data in research.

D1. Are you gathering or using personal data (defined as any information relating to an identified or identifiable living person)?

- Yes

High-risk data

DR1. Will you process personal data that could jeopardize the physical health, (physical, social, etc) safety, or legal rights of individuals in the event of a personal data breach?

- No

DR2. Will you combine, compare, or match personal data obtained from multiple sources, in a way that exceeds the reasonable expectations of the people whose data it is?

- No

DR3. Will you use any personal data of children or vulnerable individuals for marketing, profiling, automated decision-making, or to offer online services to them?

- No

DR4. Will you profile individuals on a large scale?

- No

DR5. Will you systematically monitor individuals in a publicly accessible area on a large scale (or use the data of such monitoring)?

- No

DR6. Will you use special category personal data, criminal offense personal data, or other sensitive personal data on a large scale?

- No

DR7. Will you determine an individual's access to a product, service, opportunity, or benefit based on an automated decision or special category personal data?

- No

DR8. Will you systematically and extensively monitor or profile individuals, with significant effects on them?

- No

DR9. Will you use innovative technology to process sensitive personal data?

- No

Data minimization

DM1. Will you collect only personal data that is strictly necessary for the research?

- Yes

DM4. Will you anonymize the data wherever possible?

- Yes

DM5. Will you pseudonymize the data if you are not able to anonymize it, replacing personal details with an identifier, and keeping the key separate from the data set?

- Yes

Using collaborators or contractors that process personal data securely

DC1. Will any organization external to Utrecht University be involved in processing personal data (e.g. for transcription, data analysis, data storage)?

- No

International personal data transfers

DI1. Will any personal data be transferred to another country (including to research collaborators in a joint project)?

- No

Fair use of personal data to recruit participants

DF1. Is personal data used to recruit participants?

- No

Participants' data rights and privacy information

DP1. Will participants be provided with privacy information? (Recommended is to use as part of the information sheet: For details of our legal basis for using personal data and the rights you have over your data please see the University's privacy information at www.uu.nl/en/organisation/privacy.)

- Yes

DP2. Will participants be aware of what their data is used for?

- Yes

DP3. Can participants request that their personal data be deleted?

- Yes

DP4. Can participants request that their personal data be rectified (in case it is incorrect)?

- Yes

DP5. Can participants request access to their personal data?

- Yes

DP6. Can participants request that personal data processing is restricted?

- Yes

DP7. Will participants be subjected to automated decision-making based on their personal data with an impact on them beyond the research study to which they consented?

- No

DP8. Will participants be aware of how long their data is being kept for, who it is being shared with, and any safeguards that apply in case of international sharing?

- Yes

DP9. If data is provided by a third party, are people whose data is in the data set provided with (1) the privacy information and (2) what categories of data you will use?

- Yes

Using data that you have not gathered directly from participants

DE1. Will you use any personal data that you have not gathered directly from participants (such as data from an existing data set, data gathered for you by a third party, data scraped from the internet)?

- No

Secure data storage

DS1. Will any data be stored (temporarily or permanently) anywhere other than on password-protected University authorized computers or servers?

- Yes

DS2. Does this only involve data stored temporarily during a session with participants (e.g. data stored on a video/audio recorder/sensing device), which is immediately transferred (directly or with the use of an encrypted and password-protected data-carrier (such as a USB stick)) to a password-protected University authorized computer or server, and deleted from the data capture and data-carrier device immediately after transfer?

- Yes

DS4. Excluding (1) any international data transfers mentioned above and (2) any sharing of data with collaborators and contractors, will any personal data be stored, collected, or accessed from outside the EU?

- No

Section 3. Research that may cause harm

Research may cause harm to participants, researchers, the university, or society. This includes when technology has dual-use, and you investigate an innocent use, but your results could be used by others in a harmful way. If you are unsure regarding possible harm to the university or society, please discuss your concerns with the Research Support Office.

H1. Does your project give rise to a realistic risk to the national security of any country?

- No

H2. Does your project give rise to a realistic risk of aiding human rights abuses in any country?

- No

H3. Does your project (and its data) give rise to a realistic risk of damaging the University's reputation? (E.g., bad press coverage, public protest.)

- No

H4. Does your project (and in particular its data) give rise to an increased risk of attack (cyber- or otherwise) against the University? (E.g., from pressure groups.)

- No

H5. Is the data likely to contain material that is indecent, offensive, defamatory, threatening, discriminatory, or extremist?

- No

H6. Does your project give rise to a realistic risk of harm to the researchers?

- No

H7. Is there a realistic risk of any participant experiencing physical or psychological harm or discomfort?

- No

H8. Is there a realistic risk of any participant experiencing a detriment to their interests as a result of participation?

- No

H9. Is there a realistic risk of other types of negative externalities?

- No

Section 4. Conflicts of interest

C1. Is there any potential conflict of interest (e.g. between research funder and researchers or participants and researchers) that may potentially affect the research outcome or the dissemination of research findings?

- No

C2. Is there a direct hierarchical relationship between researchers and participants?

- Yes



Ethics Warning. As you replied yes to C1 or C2, a fuller ethical review is required. Please provide more information regarding possible conflicts of interest and how you mitigate them here:

When interviewing participants, there is generally always the existence of a direct hierarchical relationship between researchers and participants. Given that I am a student, and the lecturers participants, I however consider that the power imbalance between me and the participants is significantly reduced: there is indeed the existence of a professional relationship, and research interactions often involve researchers being in a position of power than participants (the participants "give" data, the researcher "takes" them, analyses them, interprets them, use them to draw conclusions); however the participants are also lecturers and have a higher power than students. So, in this context, I would say that the power balance between me and the participants is somewhat "equalized".

Section 5. Your information.

This last section collects data about you and your project so that we can register that you completed the Ethics and Privacy Quick Scan, sent you (and your supervisor/course coordinator) a summary of what you filled out, and follow up where a fuller ethics review and/or privacy assessment is needed. For details of our legal basis for using personal data and the rights you have over your data please see the [University's privacy information](#). Please see the guidance on the [ICS Ethics and Privacy website](#) on what happens on submission.

Z0. Which is your main department?

- Information and Computing Science

Z1. Your full name:

Eleonora Simone Schulklopper

Z2. Your email address:

e.s.schulklopper@students.uu.nl

Z3. In what context will you conduct this research?

- As a student for my bachelor thesis, supervised by::
Jeroen Ooge

Z4. Bachelor programme for which you are doing the thesis

- Information Science (Informatiekunde)

Z6. Email of the course coordinator or supervisor (so that we can inform them that you filled this out and provide them with a summary):

j.ooge@uu.nl

Z7. Email of the moderator (if you are studying a programme from Information and Computing Sciences, please leave the value provided, otherwise change this to the moderator as provided by the coordinator of your thesis project):

ics-ethics@uu.nl

Z8. Title of the research project/study for which you filled out this Quick Scan:

Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner

Z9. Summary of what you intend to investigate and how you will investigate this (200 words max):

My research will identify and evaluate requirements and wishes for a digital (planning) system to support teachers in designing blended learning courses. First, I will conduct a literature review, which I will use as a base for the questions for the interviews with teachers. In these interviews I will ask them about their experience with blended learning, and use card sorting with blank cards for the system features they will come up with. If necessary, they will be given cards with some features already written on them. After these interviews I will try to implement these ideas, and evaluate them with a follow-up interview or user studies.

Z10. In case you encountered warnings in the survey, does supervisor already have ethical approval for a research line that fully covers your project?

- No

Scoring

- Privacy: 0
 - Ethics: 1
-

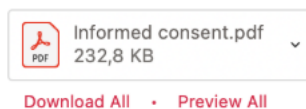
A2. Approval email

Dear Eleonora (CC Jeroen),

Thanks for filling the ethics and privacy Quicksan for your project “Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner”. The Quicksan identified a potential ethical issue—the existence of a power relationship between participants and researchers due to the participants being lecturers. Nonetheless and as I explained to one of your classmates in the paragraph that you copy-pasted in your Ethics and Privacy Quicksan, this potential power relationship does not constitute a challenge or obstacle to the scientific integrity of your project. Therefore you can proceed with it.

Kindest regards

A3. Invitation email



Beste allen,

Sinds de zomer ben ik begonnen met mijn onderzoeksproject voor mijn bachelor Informatiekunde begeleid door Jeroen Ooge. Mijn onderzoek heeft als doel om met een digitaal systeem de ervaring van docenten te verbeteren die een blended learning cursus plannen.

Om dit zo goed mogelijk te kunnen doen zou ik graag interviews willen afnemen met een aantal docenten, deze duren ongeveer 45 minuten. Deze interviews zullen o.a. gaan over ervaringen met het plannen van cursussen en wensen/ideeën voor het aanbevelingssysteem. Ook krijgt u de mogelijkheid om zelf door het systeem te lopen en hier uw mening over te geven. Tijdens de interviews zou ik graag audio willen opnemen.

Als u interesse heeft om deel te nemen aan het onderzoek, of verdere vragen heeft, hoor ik het graag!

Met vriendelijke groet,
Norah Schulenklopper

---English version---

Dear all,

Since the summer, I have been working on my thesis for my Bachelor's degree in Information Science, supervised by Jeroen Ooge. The aim of my research is to use a digital system to improve the experience of lecturers who plan blended learning courses.

In order to do this well, I would like to conduct interviews with a number of teachers, lasting approximately 45 minutes. These interviews will focus on your experience with planning courses and wishes/ideas for the recommendation system. You will also have the opportunity to try out the system yourself and give your opinion on it. I would like to record audio of the interviews.

If you are interested in participating in the study, or have any further questions, please let me know!

Kind regards,
Norah Schulenklopper

A4. Information letter and consent form

Research Participant Information Sheet

Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner

Version date: 29 September 2025

You are invited to participate in the research study “Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner” which will take part at Utrecht University. In this information letter you will find further information about the purpose of the study and the data that we will collect. If you have any questions after reading this letter, do not hesitate to ask; you can also find the contact information of the researcher below.

What is the background and purpose of this study?

This study will aim to discover how a digital system can support teachers while planning a blended learning course. Blended learning is an educational approach which uses both online and face-to-face learning and activities. Designing such a course can be overwhelming and intimidating. This study hopes to identify how to best support teachers, to hopefully improve the integration of blended learning in higher education.

Who will carry out the study?

This study is carried out by Norah Schulklopper (e.s.schulklopper@students.uu.nl) as part of my bachelor thesis under supervision of Jeroen Ooge (j.ooge@uu.nl).

How will the study be carried out?

In this study, you will be interviewed for approximately 50 minutes. During these interviews the researcher will start by asking some questions about your experience with blended learning and planning and designing courses. You will have the opportunity to walk through a mock-up of the system and think of new features and ideas to implement. You will rank and group these features with a method called card sorting.

What will we do with your data?

If you consent to this, an audio recording will be made. After the interview this recording will be transcribed and stored on secure university servers for at least 10 years. The original audio recording will be deleted after completion of this thesis (within six months after this interview). The transcribed text will be pseudonymised so that you will not be identifiable. The transcript will become part of my thesis. My thesis, any publications based on this research, and the data repository will not include your name or any other individual information by which you could be identified.

What are the possible risks and benefits?

This study does not carry any foreseeable risks. Potential benefits include improving your knowledge about blended learning and contributing to a higher level of integration of blended learning.

What are your rights?

Participation is voluntary. We are only allowed to collect your data for our study if you consent to this. If you decide not to participate, you do not have to take any further action. You do not need to sign anything. Nor are you required to explain why you do not want to participate. If you decide to participate, you can always change your mind and stop participating at any time, including during the study. You will even be able to withdraw your consent after you have participated by sending an email to e.s.schulklopper@students.uu.nl. However, if you choose to do so, we will not be required to undo the processing of your data that has taken place up until that time. The personal data we have obtained from you up until the time when you withdraw your consent will be erased (where personal data is any data that can be linked to you, so this excludes any already anonymized data).

Approval of this study and contact details

This study has been allowed to proceed by the Research Institute of Information and Computing Sciences on the basis of an Ethics and Privacy Quick Scan. If you have a complaint about the way this

study is carried out, please send an email to: ics-ethics@uu.nl. If you have any complaints or questions about the processing of personal data, please send an email to the Faculty of Sciences Privacy Officer: privacy-beta@uu.nl. The Privacy Officer will also be able to assist you in exercising the rights you have under the GDPR. For details of our legal basis for using personal data and the rights you have over your data please see the University's privacy information at www.uu.nl/en/organisation/privacy.

If you have any questions or concerns about this research, please contact Norah Schulklopper at e.s.schulklopper@students.uu.nl or my supervisor Jeroen Ooge at j.ooge@uu.nl.

Consent form for participation in the research project

Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner

Please complete the form below by ticking the relevant boxes and signing on the line below.
A copy of the completed form will be given to you for your own record.

I confirm that I am 18 years of age or over.	YES ☐	
I confirm that the research project " <i>Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner</i> " has been explained to me. I have had the opportunity to ask questions about the project and have had these answered satisfactorily. I had enough time to consider whether to participate.	YES ☐	
I consent to the material I contribute being used to generate insights for the research project " <i>Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner</i> ".	YES ☐	NO ☐
I consent to audio recordings being used in this study as explained in the information sheet. I understand that I can request to stop recordings at any time.	YES ☐	NO ☐
I understand that if I give permission, the audio recordings will be held confidentially so that only Norah Schulklopper has access to the recordings. The recordings will be held in a password protected device for up to six months, after which period they will be transcribed and securely destroyed. Any identifying details (e.g., names of courses, personal references) will be removed from the transcripts. In accordance with the General Data Protection Regulation (GDPR) I can have access to my recordings and can request them to be deleted at any time during this period.	YES ☐	
I understand that my participation in this research is voluntary and that I may withdraw from the study at any time without providing a reason, and that if I withdraw any personal data already collected from me will be erased.	YES ☐	
I consent to allow the <u>de-identified</u> data to be used in future publications and other scholarly means of disseminating the findings from the research project.	YES ☐	NO ☐
I consent to the appropriately de-identified data to be published in appropriate data repositories for verification purposes.	YES ☐	NO ☐
I consent to the appropriately de-identified data to be made accessible to researchers and other research users for research purposes in the future.	YES ☐	NO ☐

I agree to take part in the above research project on <i>"Plan It Visually: Designing Useful Visualisations for a Blended Learning Planner"</i> .	YES	NO
	☐	☐

Name of participant

Date

Signature

Name of researcher

Date

Signature

A5. Interview questions

We will start with some introductory questions regarding your previous planning experience and experience with blended learning.

1) How would you describe the term “blended learning”?

Just so we're on the same page for this interview, the definition Utrecht University uses is: *the integration of online and on-campus education. Each course arranges the relationship between online and on-campus elements differently, but it is important that the various elements are efficiently coordinated and that they reinforce one another.*

2) Do you have any experience in applying blended learning in current or previous courses?

If yes: Can you tell me about your experience with applying blended learning?

3) How do you currently plan/design courses?

4) Do you use an (online) system for planning/designing courses? Or do you prefer to do it on paper?

5) Do you plan the course alone or together with another teacher/team?

6) What supports you during the planning process? What obstacles do you encounter?

7) There are different types of blends, low, medium, and high-impact blends. In a low-impact blend you add extra activities to an existing course. In a medium-impact blend some activities are replaced in an existing course. In a high-impact blend you build the entire course from scratch, it is a complete redesign. The Centre for Academic Teaching and Learning developed a short checklist to test which impact blend is the best fit for you.

Hand over the checklist and let participant fill it in

The column where you ticked the most boxes is the blend that would fit you the best, does that resonate? (Explain that type of blend again)

Now you will have the opportunity to walk through a mock-up of the system. On the right side you can see different learning activities, and if you drag them to a box, you add it to that week and that category. You can link a learning activity to a learning goal by selecting the activity and then selecting a learning goal. You can filter each activity linked to a learning objective by selecting the learning objective at the right side of the screen.

8) Suppose you would integrate this dashboard into your current workflow, would that be possible or would you need to change your workflow?

Now we will move on to wishes for the system, so any ideas or features you think of you can write down on these sticky notes, which we will use later.

9) What do you need to actually start using this system?

10) What are functionalities or visualizations that are missing and you would like to add?

Now you can sort these features into three categories, must have, could have (nice to have), won't have.

11) Would the system with these functionalities help with transferring knowledge to next years' teachers?

12) Is there anything else you would like to add, or forgot to say during this interview?

Would you be open to some sort of follow-up after this interview? There's a possibility I'm going to implement these ideas so the follow-up would be to evaluate them.

That was my last question! Thank you so much for your time.

A6. Example highlighting and categorizing of data

Data

Highlights

Insights

current method45

Interview 14-10 10.00

one period before we start teaching, we meet me and all the teachers, and then we go through the organization and then we structure what needs to be done online, what needs to be done by students when they are at home.

current method45

E 7 Nov 2025

Interview 14-10 10.00

So we used pen and paper. We printed a very big piece of, I don't know, I think it's A2 sheet or something. And then we divided into the 10 weeks of the course. And then we divided between whatever needs to be done in class and whatever needs to be done by students at home. And week by week we went through it. So it was pen and paper, sticky notes, something like that. It comes from an exercise that I did during a teaching course. It was

Definition8

Interview 14-10 10.00

The way that I would describe blended learning is using mixed methods, as in like offline and online methods, to teach a course. So for example, having lectures in the class, but then having some assignments that students can complete at home. or other materials to read at home or videos and such

Definition8

E 11 Nov 2025

Interview 15-10 13.00 (1)

I think blended learning is where we both have efforts from me to the teacher where I'm trying to provide lectures and information, but then also students on their end also outside of the classroom are using resources that we supply with them, supply to them like knowledge clips or textbooks or things like that to also be learning. So like in the flipped

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E 27 Nov 2025

Interview 15-10 13.00 (1)

There we do a flipped classroom where there is a lot of online content, and then we also have on - campus content as well

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E 28 Nov 2025

Interview 15-10 13.00 (1)

Students hate it.

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E 28 Nov 2025

Interview 15-10 13.00 (1)

Students do not like it. But it does not affect their grades.

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E 28 Nov 2025

Interview 15-10 13.00 (1)

So I've in the last, so I've been