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From Blurred Learning to Optimal Blended Learning – Finding the Right Balance Between Structure and Flexibility in Mixed Designs

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Abstract: Following the exponential growth of online education during the recent pandemic, blended learning has become the standard at many institutions of Higher Education. At the University of Amsterdam, teachers are encouraged to strive for an optimal mix of on-site and online education. The focus on blended learning is motivated by the objectives of activating students, enhancing deeper learning, and introducing greater flexibility into the curriculum. This article examines whether the anticipated benefits of blended learning can be realized in practice within the bachelor Future Planet Studies. Recognizing the absence of a universal blueprint, it is explored which types of blends are most appropriate for various educational contexts. In addition, essential preconditions for a successful implementation of blended learning are identified, such as the need for efficient scaffolding and ensuring that students do not only make use of the offered flexibility, but of the provided structure as well.

Keywords: Digitalization; Blended learning; Mixed designs; Flexibility; Scaffolding; Student activation

1. Introduction

The decade prior to the COVID-19 pandemic showed a gradual increase in the use of digital tools within Higher Education. After the pandemic, when online education became the temporary default, the digitalization continued and blended learning became the new standard at many universities (Norberg et al. 2011), amongst which the University of Amsterdam. Following Bliuc, Goodyear, and Ellis (2007), the University of Amsterdam views blended learning as: learning activities that systematically combine physical face-to-face interactions and technology-enhanced interactions with students, teachers and learning materials. In its strategic plan 'Inspiring Generations' for 2021-2026 (University of Amsterdam 2021) and its Vision on Blended Education (Wildeman 2022), all programs are encouraged to aim for an optimal mix of online and face-to-face education.

The University of Amsterdam states that there is both momentum and urgency to further deploy digitalization and to appropriately integrate it into our campus education. It is assumed that students can be offered a richer learning experience by using digitalization responsibly than without it. Core elements of the

strategy are that blended learning is used to provide more activating education and to enhance deeper learning (Bruck et al. 2022; Wildeman 2022; Vermeulen et al. 2023). The idea is that students can process content information on lower learning levels outside the classroom, via online education, so that in class more time remains for interaction. The hope is that by optimally activating the students during the face-to-face contact hours, the chance to attain higher-level learning is increased (Abeysekera and Dawson 2015; Bergmann and Sams 2012; Braseby 2015).

Meta-reviews suggest that the activating potential of blended learning is not unambiguous (Akçayır and Akçayır 2018; O'Flaherty and Phillips 2015; Strelan, Osborn and Palmer 2020a; Strelan, Osborn and Palmer 2020b). But there is also strong empirical evidence that it increases students' performance. In line with expert's recommendations (Moskal et al. 2013; Porter and Graham 2016; Antwi-Boampong and Bokolo 2022), The University of Amsterdam acknowledges the importance of monitoring the effects of new educational designs and blended forms of education, particularly on the quality of the education, student's appraisal, achievements and engagement, and teacher's experiences (Wildeman 2022). Funds have been made available to support the experiments that have been initiated by the various programs and those involved have been encouraged to form a community where they can share their experiences.

Research has also been conducted into the results and experiences with blended learning in the bachelor Future Planet Studies offered by the Institute for Interdisciplinary Studies of the University of Amsterdam. Future Planet Studies is an interdisciplinary program focused on complex sustainable issues such as climate change, energy, food and water demand. It incorporates various disciplines from the whole scientific gamut, ranging from earth science, ecology and chemistry, to human geography, political science, spatial planning and economics. In the first year, all students follow the same interdisciplinary program. In the second year, they choose between one of the specialization tracks and either take courses in the natural scientifical track Future Earth or in the social scientifical track Future Society. In two joint courses, students of both tracks are participating and invited to combine their knowledge.

In terms of the Framework for Institutional Adoption and Implementation of Blended Learning (Graham et al. 2013) and the European Maturity Model for Blended Education (Van Valkenburg et al., 2020) the implementation of blended learning can be said to have reached the state of maturity at the University of Amsterdam. With the necessary structure and support for blended learning in place, now is the time to investigate whether the strategic ambitions can actually be realized. The research is particularly focused at the overall quality of blended education as it is perceived by the teachers, including their perceptions as regards its effects on students' involvement and their learning achievements. This choice is motivated by Bruggeman et al. (2021), who conclude that much research focuses on studying the design of blended learning or on the student perspective and context, but that addressing teachers' beliefs about technology and pedagogy is also crucial.

In the next section, the theoretical background of the research will be elaborated (section 2). Next, the methods that were used in this study will be explained (section 3) and the results will be presented (section 4). The article closes off with a discussion of the findings (section 5), the strengths and limitations of the research (section 6) and conclusions (section 7).

2. Theoretical Background

2.1 Backward design as basis for well-wrought didactical formats

Buhl-Wiggers et al. (2023) observe that, while the use of technology in teaching has now become the standard in higher education, in many cases it has become so without a clear pedagogical strategy. Understandable as this may be, as it happened during a state of emergency, they assert pedagogical strategy is an important topic for future research. In their view the focus should always be on the learning objectives and related activities before turning to the mode of delivery.

Earlier research on success factors for blended courses, both outside and inside our own university, also points out that a well-wrought design, a thoughtful integration of online and on campus activities with the learning goals in mind, is crucial (Moskal et al. 2013; Vermeulen, 2023). What works best, according to the teachers, is when online elements and on campus elements are integrated in such a way that

each is used for activities they are most suited for (ibid.). These findings align with the findings of the literature overview that the University of Amsterdam had carried out to reveal the characteristics of effective and meaningful blended education (Bruck et al. 2022). Hence the recommendation, taken up in its Vision on Blended Education (Wildeman 2022), that the use of digital tools should always be incorporated in a well-wrought didactical model.

Evidence-informed didactical design principles for effective blended learning can be found in Navigating the Landscape of Blended Higher Education: Didactical Design Principles for Students' Broad Development. In this article, Theelen et al. (2024) state that there is no fixed format for designing blended education, but do claim that every blended design should be purpose-driven rather than tool-driven. To ensure that, they recommend to design from back to front, and label this as backward design. First of all, the desired learning objectives need to be identified. Next, it can be determined how the learning process can best be given shape, and what types of assessment are most suited to monitor students' progress. After that, the course structure and sequence of the classes can be established, and suitable learning tasks can be selected, designed and planned. Only after all these steps have been taken can it be determined what is the most optimal combination of on campus and online learning activities, and what tools can best be used within this blend.

2.2 Scaffolding: offering tailor-made structures to support student's learning processes

Incorporating flexibility is viewed as another key challenge for designing blended learning (Moskal et al. 2013; Boelens et al. 2017). The Vision on Blended Education (Wildeman 2022) emphasizes the opportunities that digitalization and the inclusion of online components offer to make education more accessible and flexible. And the literature review on blended education (Bruck et al. 2022) points to several studies which found that students particularly value the flexibility that comes with being able to access and engage with online materials (e.g., recorded lectures, scaffolding exercises, etc.) at their own time (Birgili et al. 2021; Glogowska et al. 2011; Boelens et al. 2017; Calderón et al. 2021; Ustun & Tracey 2021).

Earlier research at our university has shown that students indeed like the flexibility that blended course designs offer, particularly when they can decide for themselves whether they want to study online or on campus (Tromp 2019, 2022, 2025, Vermeulen, 2023). Teachers may also see the benefits of flexibility, but emphasize that "providing structure for students and frequently communicating about this is an important task in blended courses" (ibid., p. 11). This aligns with the review by Bruck et al. (2022, p. 13) where it is stated: "As flexibility is one of the most notable affordances of blended education, teachers can greatly support the learning of their students in blended environments by finding a balance between providing autonomy and guiding or providing structure where needed."

An important concept with regard to offering structure, well-known from the theory of cognitive development and learning, is scaffolding (Vygotsky 1978). The term refers to the support a teacher offers students to guide them through their learning process. Support can be provided for content and learning strategies as well as for motivational processes. Scaffolding can fulfill instructional functions, such as simplification (breaking up complex tasks into sets of simpler operations), marking critical features (pointing out what factors are central to the task), and demonstration (showing an "idealized" expert version of what the learners need to learn). It can also fulfill motivational functions, such as recruitment (getting the learner interested in a task), direction maintenance (encouraging the learner to stay focused on the task) and frustration control (dampen the feeling of defeat or change specific activities before frustration becomes debilitating) (Wood, Bruner, and Ross 1976).

The scaffolding teachers provide for interaction, i.e. strategies to promote learner-instructor and learner-learner interaction, is said to play a critical role in increasing students' intellectual and behavioral engagement, and is positively associated with learners' perceived connectedness and self-regulated learning (Awidi and Paynter 2019; Cho and Cho 2014; Cho and Kim 2013). Initially, students need help to achieve what they cannot yet achieve on their own. Later on in the learning process, when they have new knowledge and have become more competent, the scaffolding can gradually be removed. In the European Maturity Model for Blended Education (Van Valkenburg et al., 2020) it is emphasized that reducing the amount of scaffolding

and feedback throughout the program is something which needs to be considered when incorporating self-regulated learning activities in programs.

This recommendation aligns with the claim, laid down in the Vision on Blended Education (Wildeman 2022), that the optimum of the blend and how it can best be implemented must be determined in the context of a specific program and specific student groups. And this is exactly what this study sets out to do. It can be viewed as a contribution to the action point that was formulated with regard to blended education: Innovation of the curriculum by analyzing and determining which combinations of teaching methods (on-campus, online) fit best with the proposed new education model.

3. Methods

After reviewing relevant research reports, vision papers and policy documents of the University of Amsterdam, an inventory was made of the teaching methods within the first semester of the second year of Future Planet Studies. The choice to focus the research on this semester is inspired by the fact that it forms a coherent program around the global food issue (it is also offered as a minor food for international exchange students), and includes a variety of both theoretical and more practically oriented courses.

Meanwhile, a literature study was conducted on the developments with regard to blended learning. Subsequently, a questionnaire was developed based on the literature study and the review of relevant reports and documents. This formed the basis of interviews that were conducted with the senior lecturers, who are simultaneously the coordinators of the courses of the food minor. In total, the food semester contains 11 courses. The interviews were conducted by the author of this article, who is also senior lecturer within the semester and coordinating teacher of the two joint courses in which both students of the Future Earth and Future Society track participate.

3.1 Semi-structured interviews

In the interviews, the lecturers were asked about the mix of on campus and online components within their courses. These were mapped out for each course prior to the interview as much as possible. After this overview had been presented to the lecturers for them to check it, they were asked to explain their motivation to focus (heavily) on blended learning, or not. Next, they were presented with a number of statements about the usefulness and use of the online materials and the contact moments on campus, respectively. These also included statements that related to the structure and flexibility offered by (the combination of) the different teaching methods and materials. There were three answer categories from which the lecturer could choose: “Yes, definitely”, “Sometimes” and “No not at all.” For each statement, the teachers were offered the opportunity to provide a further explanation of the chosen answer, and they were explicitly requested to do so in the interview.

The list also included the question of whether or not the introduction of blended learning had led to a reduction in contact hours, as well as a question about the policy the lecturer had followed regarding the recording and release of the (web)lectures.

Furthermore, a number of statements were taken up that informed about the perceived added value of blended learning. The lecturers were asked whether they thought blended learning encourages students to study actively during the course, whether it enables them to attain deeper learning levels, and whether they believe it leads to an improvement in the quality of the course. In addition, the lecturers were requested to supply a number of ‘Do’s’ and ‘Don’ts’ with regard to blended learning, and were asked if they had concrete improvement plans related to the blended education within their course.

Finally, the lecturers were requested to position their course in a scenario matrix. Following Graham et al. (2013), who propose a framework to determine to what extent blended learning is implemented, ‘On-site education’ and ‘Online Education’ were chosen as the opposite poles of the Y-axis. And following Tromp (2019, 2022, 2025) and Theelen et al. (2024), who recognized that striking a good balance between the necessary structure and desired flexibility is of utmost importance within blended designs, ‘Fixed Schedules’ and ‘Flexible Schedules’ were chosen as the opposite poles of the X-axis (see figure 1).

3.2 Reciprocal adequacy as principle to guarantee validity and reliability

After the interview, the additional explanations for the interviewees’ reactions to the various statements and the open answers were written out. In order to

exclude the possibility of incorrect categorization or misinterpretation of certain views, the report of the interview was e-mailed to the teacher in question with the request to check it. This way, justice is done to the principle of reciprocal adequacy, a methodological principle that helps to guarantee the validity and reliability of social scientific research. It implies that in subject-subject research, i.e. in a study in which the researched person interacts with the researcher, the researcher cannot unilaterally determine what is true and what knowledge has been acquired, but can only establish this in consultation with the researched persons involved.

The analysis presented below is primarily based on the results of the interviews with the coordinator teachers. In addition to the findings of these senior lecturers, it also contains findings from relevant related literature and lessons learned from a long-term educational study into the flipped classroom by the researcher (see Tromp 2019, 2022 and 2025). After the results of the interviews were summarized, related to relevant topics for discussion and integrated into an article, the respondents were asked for their permission to send in the article for publication. They were also offered the opportunity to receive the draft article and comment on it.

4. Results

In Figure 1, an indication is given of the positions of the courses of the minor food with regard to the question how much online education is involved and how much flexibility is offered.

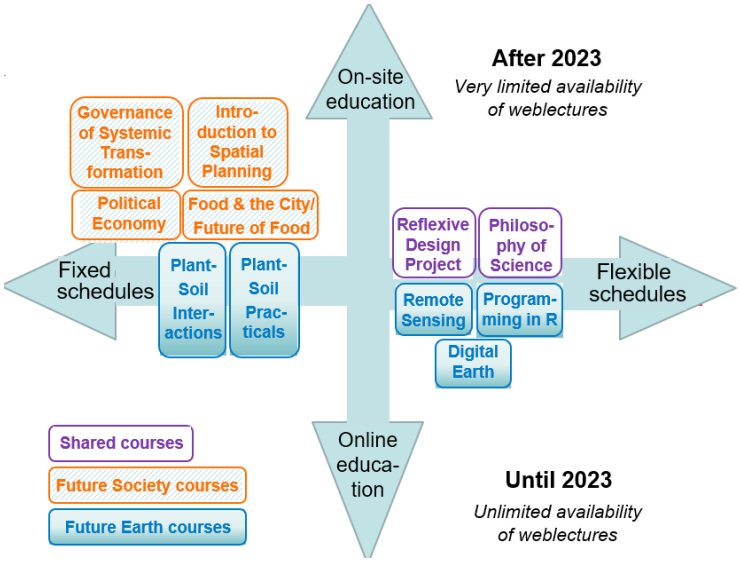

Figure 1: Scenario matrix indicating the courses' positions on the axis 'On-site education' versus 'Online Education' and the axis 'Fixed Schedules' versus 'Flexible Schedules', respectively

First of all, it should be noted that at the University of Amsterdam, the default is that in each course week there is first a voluntary class meeting, often in the form of a lecture, which is followed by compulsory small-scale workgroups or some form of practicals. Within the Future Earth track, these practicals take the form of computer practicals and, occasionally, fieldwork or an excursion. In the Future Society track, the workgroups are more conventional. The workgroups and practicals are offered on campus. Hence, the matrix doesn't show any courses that fall completely in the lowest quadrants of the matrix, as all courses contain forms of education that take place on-site.

A number of teachers additionally offer online knowledge clips within their course. In some courses MOOCS, digital workbooks, online quizzes or assignments that students have to complete through self-study are included as well. These are the courses that are placed around the middle of the axis 'On-site education' versus 'Online Education'. It needs to be said that the assignment of the courses to a particular position in the matrix is based on the intended design, i.e. on the structure of the course as it is premeditated by the coordinators. Since the lectures are non-

compulsory, they have no means to demand that students actually come to the campus or force them to participate in the class meetings though. Hence, the component 'on campus education' in the design is not a given, only a possibility.

Another thing that needs to be mentioned is that the flexibility of our program is relative – especially compared to, for example, courses of the Open University (which operates mainly online) or Massive Open Online Courses (MOOCS). In the semester under study, students have the choice between the Future Earth track and Future Society track but within these tracks the program is fixed; the courses are all set. Hence, the X-axis representing flexible versus fixed schedules in this study refers mainly to flexibility within a study period, and sometimes even within a single study week. The flexibility of a course can be said to depend on the availability of online materials. For instance, whereas students cannot decide when they want to participate in a workgroup on campus, as their schedules are set, they can decide for themselves when to work on their digital workbooks. But as the lectures are not compulsory, and students are allowed to miss a certain percentage (around fifteen percent) of the compulsory workgroups, it is too simple to claim that courses with more online in the blend are per definition more flexible than those without.

The teachers indicate that, in courses primarily focused on knowledge transfer and discussion of elaborated theories in workgroups, which most courses of the Future Society track are, a strong focus on online education is not desirable. Offering online materials, such as lecture recordings and knowledge clips, generally comes at the expense of on campus attendance, so they should be used sparingly. Slides can help students (better) absorb lecture material, and online knowledge clips can provide more depth and (additional) examples, but they should primarily serve as a supplement to on campus instruction. As a replacement, they must be categorically insufficient, to ensure they will not compete with the face-to-face education.

For more practically oriented courses, including methodological courses that primarily focus on hands-on skills training and computer labs, which mainly can be found within the Future Earth track, it is useful and wise to provide a wide range of supporting online materials. This is especially relevant for courses where classroom capacity is limited and varying starting levels must be taken into account. The teachers explain that their availability to give instructions is limited, so students should prepare as much as possible at home before coming to the practicals. Students with a lower entry level likely make more use of the preparatory lectures and online materials than those with a higher level, and that is perfectly fine.

For courses where students must collaborate to put learned theories and research skills into practice, such as the joint project-based course, the manner in which online education is implemented is very important. We see that, in the early stages of their studies, students often refrain from coming to the introductory lectures, make insufficient use of the online materials provided and fail to meet outside of contact hours to work on assignments. It is clear that in the beginning, students need more on campus guidance from their teachers to develop the necessary planning and problem-solving skills. Therefore, in an effort to offer better scaffolding, we combine the lectures with the workgroups, where possible in the form of masterclasses or Question & Answer sessions with guest speakers, and organize them in interactive learning spaces. Later on, they can be expected to work more independently, using accessible online materials whenever needed.

All teachers emphasize that in-person meetings offer valuable opportunities for interaction with students. They see the campus as a place where students can ask questions and engage in dialogue about the content of their course. They consider this contact essential for the quality of education. Only through this interaction with the teachers and with each other will students actively participate, learn to (dare to) ask questions, and together form a community of learners, according to the teachers. In earlier research, we established that on campus lectures cannot simply be replaced by online knowledge clips (see Tromp 2022 and 2025) and that face-to-face contact, mutual conversations and knowledge sharing remain essential for good education. In an online setting, it is much more difficult to achieve active participation, and the risk that a student becomes more of a consumer is considerably higher than in on-site education.

However, the teachers notice that in our bachelor Future Planet Studies, students tend to make less and

less use of the on campus education. In some courses, up to seventy percent of the students do not attend the lectures. This is why we're seeing a reverse trend in the blend of teaching methods: after a period of standard lecture recording, currently a differentiated policy regarding weblectures is discussed within Future Planet Studies. The standard procedure that lectures are recorded and released to students is reconsidered. The proposed policy is not to record any of the lectures anymore during the first year of the bachelor. And in the second year – the year of the research focus - , recordings are only released to a limited extent. For example, for individual students with special personal circumstances or only when attendance exceeds fifty percent or just shortly before the exam week.

The teachers agree that online education, such as knowledge clips and collaborative assignments, can be a valuable addition to face-to-face instruction. But particularly when complex theoretical reading or acquiring new skills like coding is involved, structured support is required, as students' capacities for self-regulation often fall short. The majority of bachelor students lack the discipline needed for self-directed learning, our teachers testify. The well-wrought, balanced formats they have designed for their courses do provide the necessary structure. This structure is for an important part provided in the face-to-face sessions. Students are getting prepared for the material during lectures, which they then have to partially master on their own before discussing it together in the workgroups. In the workgroups, the content is positioned — that is, it is indicated how it relates to other topics — and this, in turn, provides structure for continuing their study of the materials on their own.

In practice, we see that students embrace the flexibility of online components but neglect the overall educational structure. Thus, the flexibility of blended designs risks reducing on campus participation, while this is actually crucial for early-stage students who still need guidance in their learning process. Increased online components are anything but helpful for those disinclined to attend class. On the contrary, it can lead to reduced engagement and education quality, especially as attendance norms erode. In some cases, teachers feel a certain threshold of attendance is reached below which it is no longer possible to offer good education. A classroom with hardly any students to enter in interaction with, or a workgroup with mostly unprepared students, is leading nowhere.

The teachers also indicate that the use of the provided online materials often leaves much to be desired. Through well-chosen formative assignments, and using old exam questions that also serve to help students prepare (in a timely manner) for the exam, they try to offer our young students with the necessary support in self-study and help prevent procrastination. The assignments build up from relatively simple to increasingly complex. However, these assignments are often rushed, and the provided study guides, literature, and even simple practical instructions are frequently scanned only cursorily by most students.

Therefore, many teachers have opted for a structure where students are guided step-by-step through the assignments during class, sometimes also in the form of online quizzes. This ensures that students work through them carefully. One might wonder – as some of the teachers do – to what extent these instructions and materials can still be considered online education. Some of the teachers also see offering a wide range of online support materials as a potential pitfall of blended learning. They fear it does not encourage students to think for themselves, to experiment with finding solutions to problems they encounter, and to organize themselves independently to complete group assignments.

5. Strengths and Limitations

What is powerful about this study is that it is executed in a real-life setting, and that it includes firsthand information and insights of teachers themselves. The findings represent actual experiences of the participants (the teachers) from within the social context (the university) in which the phenomenon under study (blended learning) is taking place. The participants all have extensive experience, ranging from at least five years to more than twenty-five years, and can thus be regarded as experts in the educational field.

The interviews are held by the author of this article who at the time was coordinating teacher of the joint courses within the food minor, as well as curriculum developer for the Institute for Interdisciplinary Studies. This has the additional benefit that the researcher has insight both in the various courses of the food minor, and an overview of the broader context – the whole

program as well as the institutional context. The danger of bias in the interpretations of the interviews is covered by adhering to the principle of reciprocal adequacy, i.e. that the findings are not used before being double checked by the respondents.

Another strength is that the research is conducted within an interdisciplinary program and that the analysis implies a range of courses with a variety of both theoretical and more practical oriented designs. While divers, the courses are not just a random selection of courses but together form a coherent semester: the minor food.

The interviews remain limited to a small sample of respondents and pertain to a single case study, i.e. the bachelor Future Planet Studies. The resulting constrained possibilities for generalization are partly compensated by placing the findings in a broader context and relating it to general reviews and comparing it to other studies on blended learning.

6. Discussion

There is a rather large variety in the extent to which the courses within Future Planet Studies' semester on food make use of blended learning designs. In some research (see for example Bruggeman et al. 2021), the extent to which teachers are open to blended learning is considered to be dependent on whether there is a willingness to change, to leave the 'ex cathedra' type of teaching behind (by which they presumably refer to the so-called transmission model where the teacher is mainly "sending" knowledge to students, see Biggs and Tang 2015), and take a student-centered approach. These assumptions are not at all confirmed in this research, where the respondents were not external educational experts (as was the case in Bruggeman et al. 2021), but teachers who are all personally involved in blended education. If there is any hesitation to opt for course designs with a substantial online components, it is not because of a lack of willingness to change, but rather because their long-term experience has taught them that this will not work for their particular course.

Bruck et al. (2022, p. 6) suggest "combining the affordances of both the online and face-to-face component of a blended course in a way that makes use of their strengths and addresses the potential drawback of delivering instruction through one component alone." But the current research shows that instruction through more than one component can have detrimental consequences just as well, and that a well-thought implementation of blended learning can also imply that teachers consciously refrain from using online materials.

Recent meta-studies (Alten et al. 2019; Bredow et al. 2021) show that blended learning designs should never lead to less contact hours. And it hasn't, at least not so far, at the University of Amsterdam. But what we see is that students do not make optimal use of the opportunities for face-to-face education. Rather surprisingly and contrary to what was expected after the pandemic, low attendance and valuation of lectures by students is not an exception but a general trend (Massingham and Herrington 2006; Top Hat 2021). The teachers are concerned that students do not make optimal use of the offered structure, as they are convinced that interaction facilitates learning; an assumption that is supported by research (Bergmann and Sams 2012; Akçayır and Akçayır 2018). They see that only a small portion fully engages in the developed blended designs and participates in the voluntary classes (mostly lectures) on campus before entering the compulsory workgroups. This is congruent with other studies, which found that students often embrace the flexibility but regularly resist the offered scaffolding (Dulfer et al. 2023; Selkrig et al. 2023). Instead of optimal blended learning, this can result in shallow, bland learning.

Boelens et al. (2017) rightfully remark that the flexibility offered by blended education makes an appeal to students' self-regulation. Teachers are advised to be mindful of students' self-regulation skills, as well as their need for structure and guidance (ibid). However, the observation that "students need to understand how the blended format of the course is meant to work in order to be able to participate effectively" (Bruck et al. 2022, p. 12-13) is rather simple, as understanding something and acting accordingly are two different things. It is a well-known fact that students themselves are not and cannot expected to be experts about their own learning process (Marsh 2007; Kirschner and Van Merriënboer 2013; Benton and Cashin 2014; Bendermacher, Wolfhagen, and Dolmans 2017; Heffernan 2022). Hence, the assumption that student-centered learning will simultaneously lead to successful student-lead learning is untenable.

Previous research (see Karaoğlan Yilmaz et al. 2017; Buhl-Wiggers et al. 2023) has shown that structuring the blended learning format by setting mandatory deadlines and attendance positively affects academic achievement. However, at our university, it is not possible to impose mandatory lecture attendance. Not only are lectures not allowed to be mandatory; these days, we even have to justify, per workgroup, why students are required to attend them. Another solution, offered by Boelens et al. (2017) is that teachers can assist students in planning, monitoring, and adjusting learning through, among others, the use of formative assessments. As formative assessments are not much liked by students, this cannot be regarded a silver bullet either though.

7. Conclusion

As said in the Introduction, in the Vision on Blended Education (Wildeman 2022) it is stated that there is both momentum and urgency to further deploy digitalization and to properly integrate it into our campus education. As a starting point, it is assumed that students can be offered a richer learning experience by using digitalization responsibly than without it. At the same time, it is stated: "Digitalization is not a goal in itself, but a means to achieve (part of) the goals that we have elaborated in the Education Vision and the Institutional Plan more effectively and efficiently." This research gives reason to modify the assumption underlying the starting point, as there are reasons to doubt whether further digitalization or the addition of online teaching materials will per definition have added value. That being true for pre-ChatGPT education (the research was initiated at a time when Generative AI had not yet intruded into the very roots of our education), it is all the more plausible that in the current situation, a more nuanced view is needed.

What our experienced teachers attest to is that blended learning works particularly well in courses where practical and computer skills form an important part of the learning objectives. They make it clear that for primarily content-focused courses, it works much less effectively, or can even be counterproductive, particularly when it leads to students retreating from lectures. Moreover, they underline that for courses where learned theories must be put into practice, such as project-based courses, tailor-made scaffolding is crucial to ensure that students draw upon both the online and face-to-face education. This can be viewed as confirmation of the conclusions of earlier research on the experiences with blended learning: that integrating learning activities in a way that aligns with the intended learning goals is an important precondition for successful blended courses (Vermeulen, 2023). The same can be said about the conclusion that both online and on campus modalities are to be used for activities that they are most suited for – for example, contact moments for interaction and engagement; knowledge clips for knowledge transfer.

Hence, further digitalization and expanding on online activities are not a 'must', but an option that indeed needs to be carefully considered in the context of a particular course, and taking into account the level of the students. For what might work for master students, doesn't necessarily work for bachelor students. Following the European Maturity Model for Blended Education (Van Valkenburg et al., 2020) we propose to develop an appropriate distribution of online and face-to-face time throughout the program. But even more important than putting more on campus elements in the blend for first-year and second-year students than for third- or fourth-year students, is to find ways to ensure that they actually participate in the face-to-face activities.

Vermeulen (2023) reports that students' experiencing a blended course as successful also depends on the structure it offers. While our teachers may theoretically completely agree on this issue, in practice things are more complicated. In both earlier research (Tromp 2019, 2022, 2025) and the current study, the aspect of structure, and particularly the way in which students defy the provided structure, is found to be very problematic. So while we do agree that offering students flexibility is one of the attractive opportunities offered by blended education, we cannot unconditionally support the recommendation to offer students freedom of choice in whether they want to study online or on campus and in the way they want to participate. If it interferes with the educational design and undermines the structure, as in practice it does, measures need to be taken.

We agree with Antwi-Boampong and Bokolo (2022) that a poorly implemented blended learning process can result in a counterproductive outcome that will

disrupt the university's academic workflow processes in the long run. Leaving it all to the students to decide which elements of the well-wrought blended designs they are going to enjoy and which they will leave for what they are, will lead to blurred learning rather than to successful blended learning. Students may be very satisfied with set-ups that give them a lot of freedom to decide for themselves when and how they participate in the offered education (or not); teachers care to disagree that this is the best route to successful learning paths. This sensitivity for the dangers associated with further flexibilization of our education is missing in the universities' vision and strategic plan, as well as in many studies on blended education within and outside the University of Amsterdam. The same can be said about the issue of voluntary compared to mandatory education. It is a gap that urgently needs to be addressed.

One way to attain an optimal use of the educational potential of our blended designs and to benefit most from it could be making all classes compulsory, just like in high school. In view of the objective to attain flexibility with blended designs, this does not seem to be a desirable route though. Moreover, making classes compulsory can be expected to be just as counterproductive as leaving it all up to the students to decide whether to come to class or not. For attendance will be everything but functional when students are merely present but not actually paying attention. Another option is to include mandatory assignments that students have to take up in a portfolio, and assess these at the end of the course, e.g. in an oral or written exam on campus. As the wide-spread introduction of Generative AI tools forces teachers to reconsider the standard forms of assessment anyway, this seems a more recommendable route to attain an optimal balance between structure and flexibility. This could be combined with extending workgroups and practicals so that students can work on the assignments during these meetings — partly independently, partly under supervision. As increasing the number of contact hours can also perpetuate the problem and hinder the development of self-directed learning, this is an option that seems mainly suitable for students in the early phases of their educational career. Moreover, it will be challenging to do this in such a way that it doesn't subsequently lead to an increased workload for the teachers.

No less than a decade before the pandemic, Norberg et al. (2011, p. 18) foresaw that we would enter "a new normal period when we no longer think of digital tools as technology and when even blending becomes an irrelevant concept." They expected that, in the near future, traditional classrooms would no longer be juxtaposed to technology-enabled education, and that combining modern media, communication modes, and times/places would become more natural for both teachers and students. It could very well be that this time has come now. Let's make sure that 'blended' is not going to be substituted by 'blurred' and safeguard our teachers' well-wrought educational designs with a built-in balance between structure and flexibility.

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The author has no relevant financial or non-financial interests to disclose.

Data availability

The questionnaire for the interviews is available on request (in English), as well as the reports and a summary of the interviews (in Dutch).

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