Article

"It Ain't What You Use, It's the Way That You Use It": How Virtual Learning Environments May Impact Student Mental Wellbeing

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Abstract: Concerns about university students' mental wellbeing have been rising and various studies have attempted to unpick the factors that could impact their wellbeing. This focus group study explored the impact that virtual learning environments (VLEs) may have on undergraduate students' mental wellbeing. Forty-four undergraduate students from on-campus courses at three UK universities participated in 12 focus groups in 2020. Using reflexive thematic analysis with an inductive approach, three themes were generated: (1) lecturer VLE-use supports or undermines students' mental wellbeing; (2) access to the VLE affects students' productivity, academic performance, and mental wellbeing; and (3) students' mindset towards the VLE impacts their studies and mental wellbeing. The dominant pattern across the data set was that the way lecturers used the VLE impacted students' motivation, ability to think clearly about their studies, and could provoke strong emotions. We discuss how the mechanisms described in self-determination theory and the technology acceptance model might explain how the VLE could impact student mental wellbeing.

Keywords: focus group; well-being; learning management systems; basic psychological needs; teacher behavior; needs-support; learning technology

1. Introduction

Mental wellbeing is associated with a range of benefits for individuals and societies, including academic outcomes [1–3]. The term "mental wellbeing" encompasses two perspectives of wellbeing [4,5]. Hedonic wellbeing is an individual's positive and negative affective responses to experiences (e.g., happiness or sadness) and their cognitive appraisal about themselves (e.g., life satisfaction) [6]. Eudaimonic wellbeing is understood to be optimal psychological functioning, and so is comprised of personal growth, autonomy, purpose, mastery, and positive relationships [7]. Taken together, mental wellbeing involves positive feelings, such as peace and calm, positive relationships, and positive functioning, such as thinking clearly, agency, and striving [4,5,8]. Good mental wellbeing can mean positive mental health, but not necessarily the absence of mental distress (e.g., anxiety or depression) [8]. Consequently, for this study, we equate mental wellbeing with "feeling good and functioning well" [9] (p. 385).

The mental wellbeing of undergraduate students in UK higher education continues to be a cause for concern [10]. Over the past decade the prevalence of mental distress in university students, and other 17–24 year-olds, has increased [10,11]. A range of environmental factors can impact student wellbeing [12]. Studies have explored students' perceptions of their learning environment [13] and its relationship with their mental wellbeing [14]. Course-related environmental factors such as workload, assessment stress, lecturers' support for student autonomy, peer relationships, and feelings of belonging have been found

to have a greater association with student mental wellbeing compared to factors such as concern about finances, English language skills, or future employment [14]. The sudden shift to online learning because of the COVID-19 pandemic generated worldwide interest in the wellbeing of university students in online environments, where courses are delivered 80–100 percent online, e.g., in Canada, Malaysia, and India [15–17]. However, to our knowledge, little research has focused on the impact on students' mental wellbeing from online learning environments used for courses delivered in-person and on-campus [18].

The virtual learning environment (VLE) is a web-based environment commonly used to support teaching and learning. Its web-based design enables students and staff to access VLEs anytime and from anywhere [19]. VLEs can provide students with remote access to course-related content (e.g., lecture slides, reading lists, and assessment feedback) along with communication between teaching staff and peers [20]. Over recent years, VLEs have been used by higher education institutions (HEIs) to facilitate students to learn both face-to-face and online, and so in different contexts, such as on or off campus, and either synchronously or asynchronously, or in a combination of these modes, e.g., "blended learning", "hybrid learning" [19], and "flipped classroom" [21].

Even before the COVID-19 pandemic, VLE platforms were playing an important role for students. In 2019, undergraduate students considered the VLE to be the most useful of all the digital tools and apps for learning [22]. In this report, 85% of these students stated that their most common weekly digital activity was accessing lecture notes or recorded lectures, and 72% reported depending on their VLE to do their coursework. Consequently, it is important to understand the impact that this digital environment has on the mental wellbeing of students. This study examined this topic with students enrolled on on-campus courses before and in the first few weeks of moving their studies 100% online because of the COVID-19 pandemic, and so the findings perhaps provide an insight during a unique window.

This study adopted an inductive qualitative approach, using reflexive thematic analysis of focus groups, to understand how using VLEs in an on-campus course may affect undergraduate students' mental wellbeing. The research question for this study was to identify possible factors relating to the use of virtual learning environments (VLEs) that may impact, positively or negatively, on the mental wellbeing of undergraduate students.

2. Materials and Methods

2.1. Design and Setting

This study investigated the impact of the VLE on student mental wellbeing using an inductive qualitative approach with focus groups. To hear a range of perspectives, undergraduate students from different academic disciplines and year-groups were purposively recruited from three universities. These three universities, located in different parts of the UK, were chosen because they used different VLE platforms and were different types of institution (Table 1). These are the two main classifications of universities in the UK and therefore ensuring that both types were represented was important. To reduce the potential for power dynamics, first-year and upper-year students were invited to separate focus groups. Six in-person focus groups were conducted prior to changing to online data collection for a further six sessions due to COVID-19 forcing campus closures (Table 1). The principles of information power were used to determine when to stop collecting data [23].

Table 1. Focus group characteristics: university-type, VLE, mode of data collection, number of participants, and year group (N = 44).

University Type	VLE Platform	Focus Groups Face-to-Face (F2F)/Online	Focus Group Membership (First Year: Upper Year)
Research-intensive	Moodle	F2F	6 UY
		Online	3 UY
		Online	3 UY
		Online	2 FY
Research-intensive	Blackboard	F2F	6 FY, 1UY [1]
		F2F	5 UY
		F2F	3 FY
		F2F	5 FY
		F2F	3 UY
Post-1992 [2]	Blackboard	Online	3 FY
		Online	2 FY
		Online	2 UY

[1] This first-year group included one second-year student who had signed up as a "first year". [2] Post-1992 universities are former polytechnic colleges.

2.2. Participants

The participants were recruited via email invitations to student volunteer programmes at each university and via a university-wide recruitment circular. The 44 participants met the inclusion criteria. The participants were full-time undergraduate students enrolled on campus-based degree courses, in which a VLE was used alongside face-to-face teaching and learning. None of the participants were study abroad students, where their "home" university was outside the UK. None of the participants were known to the researcher. Research ethics approval was granted by an Institutional Research Ethics Panel. The participants gave informed consent and received a £10.00 e-voucher upon the study's completion.

2.3. Data Collection

The focus group topic guide was created and piloted with four students, which informed the revisions for the final version (Supplementary Materials). During each focus group, ranging from 63 to 90 min, the participants were prompted to describe their experience of using their VLE, including the pattern of this use. They were also asked to describe the positive and negative aspects of the VLE with regard to their studies and their mental wellbeing, including in relation to 24/7 access. To facilitate discussion, the participants were provided with words from the Positive and Negative Affect Schedule (PANAS-X) [24] and Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS) [5]. The students were invited to select and add any words that reflected thoughts or feelings the students associated with their VLE, and to discuss the reasons for these associations. The students were also asked about their comfort within the VLE, their sense of control about how and when they used it, and how they felt about interacting with others in the VLE. The in-person focus groups were recorded audio-only and the online focus groups were recorded audio-visually. The students were not asked to share their own personal experience of mental health difficulties. One researcher (Author 1) conducted all the focus groups. The researcher had experience of using Blackboard, Moodle, and Canvas VLEs as a student and/or educator, and so commenced each focus group curious to understand the students' individual and shared experiences of the VLE.

2.4. Data Analysis

The study was informed by a critical realist perspective, "a contextualized version of realism" [25] (p. 169). Critical realism combines ontological realism with epistemological relativism, assuming that an intransitive reality independent of the researcher exists *and* that our understanding of this reality is limited by contextual factors such as cultural norms

and values [26]. A critical realist orientation was adopted because the research question focused on understanding "participants' experiences as lived realities that are produced and exist within broader social contexts" [27] (p. 21). An inductive approach was adopted because the research was novel and so the students' experiences needed to be heard to facilitate this understanding of their realities [25]. Inductive reflexive thematic analysis with a critical realist orientation was conducted because this method enabled the researcher to interpret students' understanding of their experience and mental wellbeing within the context of using the virtual learning environment [25]. The five authors have each been actively using virtual learning environments for several years. Author 1 is a PhD student with over 15 years' experience working at UK universities in a range of professional services and teaching roles. Authors 2–5 all hold education-intensive academic posts and have conducted extensive educational research.

Reflexive thematic analysis was used to generate semantic and latent themes, "patterns of shared meaning" [28] (p. 593) with reference to the research question [29]. The theme generation involved following iterative phases: familiarization with the data using field notes, transcribing the focus groups verbatim and re-reading the transcripts (Author 1), coding (Authors 1 and 2), generating initial themes (Author 1), reviewing these themes (all authors), defining and naming the themes (Author 1), and writing the report [29]. The focus groups were transcribed and anonymized by Author 1. The Nvivo12 software and paper and pen were used to generate and revise the themes. Two authors coded, not to check for the coding reliability to agree on the codes, but to strengthen the coding by generating a "richer more nuanced" understanding of the data [28] (p. 594). Braun and Clarke's 20-point checklist for reflexive thematic analyses was followed [30]. In the results that follow, the first-year and upper-year participants are denoted as FY and UY, respectively.

3. Results

Three themes were generated (Table 2) with reference to the research question: What are the possible factors relating to the use of VLEs that may impact on the mental wellbeing of undergraduate students? Overall, lecturers' VLE behavior, the technological features of the VLE platform, and students' mindsets towards their VLE were the dominant factors associated with the students' mental wellbeing, directly or indirectly.

Table 2. Themes and sub-themes.

Themes	Sub-Themes
Theme 1: Lecturer VLE-use supports or undermines students' mental wellbeing	1.1 Well-organized VLE content impacts motivation, confidence, and concentration. 1.2 What and how lecturers communicate via the VLE affects students' connectedness, motivation, and progress. 1.3 Lecturer VLE skills impact on student VLE skills for learning
Theme 2: Access to the VLE affects students' productivity, academic performance, and mental wellbeing	2.1 Anytime access to the VLE provides an inclusive, stress-alleviating safety net 2.2 Anywhere VLE access impacts student productivity 2.3 Anytime, anywhere VLE access can be a "double-edged sword" 2.4 VLE technical difficulties frustrate control and provoke strong emotions
Theme 3: Student mindset towards the VLE impacts their studies and mental wellbeing	3.1 Learning to use the VLE is effortful but worthwhile 3.2 Student mindset towards the VLE impacts emotional response and productivity.

3.1. Theme 1: Lecturer VLE-Use Supports or Undermines Students' Mental Wellbeing

3.1.1. Well-Organized VLE Content Impacts Motivation, Confidence, and Concentration

The quantity and organization of course-related content in the VLE impacted the students' ability to function well. First, the amount of course-related content that lecturers provided on their VLE communicated the lecturers' expectations to students and so affected the students' emotions associated with their sense of control over their learning:

> if there's too much information, then you're overwhelmed by it. You're wondering "What do you need for now rather than for later?". But if there's too little information then you're like, "Well, do I actually have the information that I need? What do I need to do now?". It's like, especially, I understand that they can't be spoon feeding you, but at the same time you need some sort of hint on what you're actually doing (FY41).

Second, how the lecturers laid out or labelled the VLE content affected students' ability to study effectively, thereby impacting students' emotions. A "lot of misunderstandings" were attributed to lecturers' poor organization of materials (FY16), or inconsistent practice across the modules on the VLE. The absence of a "standardized way" (UY22) made it "hard to navigate sometimes" (UY21):

> my lecturers use it differently (...) cos there are different titles you can have on your side menus (...) some people will put their assessments in the module description or schedule and stuff like that. And then some will put them in the actual assessment box (UY22).

When students could not find the module content that they expected to be on the VLE, especially when related to an assessment, they panicked or felt frustrated, "I just keep looking and looking and looking and just can't find it and I get more and more frustrated" (FY37). Students could "spiral" and become "a bit stressed (...) about not having all the knowledge that the lecturers wanted to give you" (FY3). Therefore, imprecise naming and organization of course materials were associated with strong feelings because these factors created confusion, undermining student confidence and frustrating their ability to study effectively, particularly for assessments:

> That can get quite stressful, and I can remember for that [assignment] (...) trying to make sure you made notes on all the ones you wanted to when it was just a long list of documents that weren't even properly named some of the times. It was just like "PowerPoint Final" (FY5).

In contrast, well-structured and clearly labelled course content had positive consequences for students. Well-organized and centralized content communicated lecturers' expectations about what to learn and when. Some students taking essay-based subjects valued a clear delineation between essential, recommended, and further readings because this structure communicated lecturers' expectations (FY19, UY29), enabling students to prioritize:

> every single week we have like the name of what we're gonna be like focusing on, then all the readings that we have to do for that particular week with, err, like seminar questions. So I feel like we, err, ours is quite nicely structured (...) so I can like be strategic, do the work that I need to do and like everything's already there (UY29).

The study map created by well-organized VLE content supported students' autonomy. When lecturers uploaded well-structured content onto the VLE, it motivated some students, generating students' interest in "learning and new things", "or at least a new way to think about it. And Blackboard is the window to that" (FY38). Consequently, lecturers who used the VLE to provide students with "additional content" equipped students for not only "achieving the minimums or the amount of work that the lecturers want us to do", but also "actually to improve it and go in above and beyond" (UY34).

Centralized and well-organized module resources motivated students, aided their concentration, and engendered their sense of academic responsibility. Clearly labelled and organized materials equipped students with a study plan, enabling them to commence their work:

> for me, um, Moodle is more like a place of organization, so everything is compiled into one place. So, if I decide "today's the day that I want to work on one module", everything I need is there. The syllabus is there, you know, the slides, the lectures, the captures and everything are there. So, I think it's, it helps when say like my documents are all over the place or if I am doing a lot of things at once, just to go back and center it down and be like okay this is, um, step-by-step kind of thing (UY32).

After students had started studying, centralized, clearly labelled resources reduced distractions, facilitating their concentration and motivating them to keep studying: "When you literally have the information right in front of your face, you just want to keep motivation, keep snowballing it" (FY13). These factors also supported some students to think clearly about their studies, because the relevant information was "all methodically put down, like all my lectures are in order" (FY7). When it was "well laid out, it (. . .), clears my thought-process" (UY44). Because this VLE study map equipped students with the necessary information to study autonomously, it removed doubt and fear, thereby motivating students and enabling them to concentrate on their studies.

> You start, you're scared to do things that, um, you gotta do and then you get kind of a momentum that helps you do more things and complete more things due to that um kind of centralization of all the tasks (UY34).

Some students also valued that the centralization and organization of relevant resources equipped them to be "productive" (UY33) and have ownership over their academic pursuits:

> I think it helps guide my studies. It helps structure my learning for sure, um, because (. . .) I think that my lecturers do a really good job of setting out all the things that I could possibly need to help complete my assignments, um, on time. And it helps me take a certain degree of responsibility because you can't just be like, "Oh, I didn't know" because there was no excuse not to know because it's all there. So, it helps for accountability. It helps for me for feeling like I'm taking responsibility for my own learning (FY36).

3.1.2. What and How Lecturers Communicate via the VLE Affects Students' Connectedness, Motivation and Progress

What lecturers communicated via discussion boards (Blackboard) or forums (Moodle) and how they communicated could affect academic motivation, worry, or sense of connectedness, and enable students or frustrate their ability to seek and find appropriate academic support.

Lecturers' posts with academic advice via discussion boards/forums equipped the students to undertake their coursework, clarify their academic understanding, and so feel more in control of their learning. This included students who did not post on discussion boards/forums, "before I start any assignment I just read the discussion board (. . .) So, you get all these documents with like questions that you'd probably want to ask as well but they're already answered. And I found this pretty useful" (UY11). Moreover, the VLE's public space for academic advice created efficiency, "If I found the similar question has been answered on Moodle before and [sic] there will be no need for me to send a separate email" (UY25).

The content and timing of lecturers' messages via VLE notifications affected some students' motivation, mood, and sense of connectedness. These proactive communications prompted some students to organize their studies:

> I feel like it kind of indirectly motivates you to have some sort of a schedule. Cos that keeps on popping up the last thing you want to do is, you know, every half hour you get back to doing some more work. You can just say, right I have lectures between say 9 til 2. Then I'll have an hour break, then I'll do 3 til 6, and then I'll have my own time. And even if a notification pops up, you can just

flag it down, make sure it just stays there or something, so when it comes to the next day you have it up there ready for you. So weirdly [it] motivates you to get organized (FY13).

Notifications also supported students who were concerned about missing key information. One student reflected:

every time [lecturers] make an announcement on Moodle (. . .), I get an email (. . .) that sort of keeps me on my toes to make sure that I'm not really missing anything (. . .) So, um, that prompts me to go back on and check any of the work (UY30).

Paradoxically, notifications could motivate and facilitate the students' control over their studies, but also provoke negative emotions:

I think it can be a very good motivator to students, like if they see announcements coming up that kind of like keeps their mind going. Like "Oh, yes, that's coming up. I've got this lecture tomorrow. I've got to do the reading for that seminar next week." At the same time like that can be a source of anxiety. Like I've had times when I've been like bombarded by things and like had like loads of essays due all at once and it's been a bit overwhelming. So sometimes you do need to be able to take that step back from it. (. . .) Like, it's good for motivation but sometimes if you're not great with time management it can be overwhelming (UY10).

Also paradoxically, lecturers' notifications sometimes exacerbated students' sense of loneliness. Feelings of isolation arose from messages that were vague or without practical guidance equipping students to execute the task about which they were being notified. One student explained:

sometimes (. . .) when an announcement will come out, I'll read it and think "I dunno what that means" or an assessment will come out and I'll be reading through the guidelines and like "I've got no idea what any of this means" and where there isn't the chat or discussion board on Blackboard, I feel like sometimes I'm on my own (FY39).

For several students, the desire for academic support via the VLE created a dilemma. Students did not want to be exposed for their lack of understanding about aspects of their course. Students wanted reassurance that they were not the only student experiencing a challenge, "it's just knowing that maybe there are other people that are having the same difficulties with their coursework, that are in the same boat, with a similar question" (UY23). However, they sometimes feared a negative response from peers or lecturers:

But I have noticed that sometimes people are quite scared cos if it might be like a "silly" question or everyone might already know and you might get a sort of a "I did mention this in the lecture but this, this and this" (UY30).

However, one student thought that some lecturers were more likely to be "tactful" if the clarification was sought via the discussion board/forum, "because they understand it's a public setting" and so less likely to "berate" or "disgrace" you. That student concluded, "it could have a double-edged sword, but I feel like it just depends on who the lecturer is" (UY31).

Lecturers' use of discussion boards/forums also impacted the quality and type of academic support. Students who did not have courses with active discussion board/forum spaces sourced peer support about academic questions via WhatsApp, SnapChat, or Messenger groups (e.g., FY38 and FY40). Students valued the opportunity for peer support via these channels. However, they felt that the absence of online communication as a group with lecturer input meant that misinformation about course-related matters could derail students:

> And a lot of people were asking questions [on social media] and there was a lot
> of misinformation and I told this to my lecturer. Like it was so confusing trying
> to juggle my essay writing with every [sic] all the information that was coming
> into that Facebook group, so I do think that it would be a lot more helpful if the
> lecturers made the effort to like guide us towards (. . .) the discussion groups
> rather than the Facebook because in Facebook there is no lecturers (UY9).

Participants perceived and valued discussion boards/forums as professional spaces
for interacting with lecturers, but felt that these discussion boards/forums could create
barriers to receiving academic support. For some students, the discussion board/forum
was a reassuring source of lecturer guidance (UY30). However, others felt that academics
sometimes used the VLE as a "replacement for face-to-face interaction and (. . .) as a
cop-out for proper feedback" (UY23). Students did not want that to be the only route
to reaching lecturers for academic advice, particularly if they had a "personal question".
Students with essay-based subjects distinguished between "question[s] where loads of
other people want to ask the same question", such as, "when are the essays going to be
released, the marks going to be released?", with the "more personal ones", which were
"definitely more to do with your own work" (UY29).

Likewise, students in another focus group opined that "you can't really have like
a proper conversation on Blackboard" (UY10), although they thought VLE discussion
boards/forums were "quite good" for questions such as, ""How many references do you
expect?", that kind of thing, that's (. . .) mostly a straight answer" (UY10). There was
consensus that discussion board/forums were not appropriate environments to communi-
cate with lecturers for subjects that were not "fact-based" (UY10), but involved students
"writing [their] own original content", and considering "opinions and theories" or "ideolo-
gies" (UY10). Several students preferred emailing lecturers directly or meeting with their
lecturers in-person (UY23, UY25), including "in the break between the lectures" (UY11).
Another felt that online communication "distances you", and so weakens the impact of
feedback, "if we had face-to-face feedback or like handwritten feedback, it would kind of,
it sounds weird to say, like "hit home" (UY21). Students also valued meeting in-person
with lecturers outside of class to clarify their feedback or discuss their work.

One student's experience of their lecturers' use of the VLE seemed to address these
tensions, because the lecturers' pattern of use benefitted the student and their peers. This
hybrid model ensured that students communicated their questions to their lecturers only
via the VLE. However, the lecturers enabled the cohort to benefit collectively without the
individual student risking embarrassment:

> Well, there are a few lecturers (. . .) which ask you specifically not to email them
> and just to use Blackboard to, because they have different tabs on Blackboard
> for each module where everyone in that module is in this big group chat or you
> can have this private chat with the lecturer and then they ask you to just post a
> question on that (FY14).

3.1.3. Lecturer VLE Skills Impact on Student VLE Skills for Learning

Lecturers' skills in introducing students to using the VLE for their subject gave the
students confidence and equipped students to work autonomously. Many students taught
themselves to use the VLE, but some lecturers introduced students to where the course
materials were specifically located. One first-year student shared that, "I didn't know
how to [access things] until like a seminar tutor told me, "oh, this is where you find this.
This is where you find that."" (FY15). This student could not absorb this information
until after induction week, so the type and timing of the guidance lecturers provided was
important for it to be effective, "Like it took me a while because in the introduction in the
induction week they just throw loads of information at you and (. . .) your head is just
scrambled" (FY15). Precise directions from lecturers evidently facilitated this process for
another first-year student:

navigating through all of those [sub-links] is really confusing unless you're told otherwise, like told specifically where to go by the lecturers. Like, if you wanted to find like a really specific reading link, you have to go through about, I dunno, like seven or eight different sub-tabs to get to that specific link that you have to read and (. . .) it can be quite confusing at the start (FY14).

By the second academic term, they reflected "but now after some experience it's not that hard as it used to be" (FY14). One student thought that being taught a course-specific introductory skills module that included "how to use Blackboard" had enabled them to meet their first academic deadline. The module contextualized how to use the system for a specific piece of coursework when they were in the midst of adjusting to living and studying with new people:

You've got like so much just like coming at you that you just need someone to sit down and go, "Right, you've got this essay coming up. Here's where the title is. I'd recommend downloading this. Get it started. Here's the library search. Here's your timetable." Like it's quite basic stuff and you can figure it out but sometimes like I needed that push to, to get me on with my essays, otherwise I genuinely wouldn't have submitted them on time (UY10).

Lecturers' skills in uploading and organizing the materials on the VLE impacted students' ability to function well, because the VLE was "core to all the learning", "the center of everything I do that relates to the course" (UY34). Lecturers' poor VLE skills could disrupt student learning, potentially impact academic outcomes, and so induce student stress. A first-year student shared how "quite close to exam time (. . .) for one our modules, the only lecture you could access was the *one* and they had erased the other 20". This student reflected "I don't know how well they are able to use it to be honest, cos that just completely made me lose faith. And then they tried to restore the problem and it was all jumbled". Then the student explained, "the handouts section was like completely all over the place. You couldn't find anything" (FY6).

Both lecturers *and* students needed to have skills in using the VLE to make it effective for learning and reducing frustration. However, there was an asymmetrical relationship, such that students' ability to work outside of class was dependent upon a lecturer's skills and use of the VLE:

I think so long as we know how to use it and the lecturers know how to put the information on there properly, it can be used, like, as quite a good tool. But if they don't, then it can lead to like just making things harder or making things a little bit more frustrating (FY17).

Overall, lecturers who used appropriate VLE skills supported their students. One student believed that "lecturer dedication (. . .) to actually using [the VLE] properly is quite important" (FY16). Likewise, another student reflected "I think the problem is more on the human side of things, getting people to actually use it, not students, getting lecturers to use it" (UY4).

3.2. Theme 2: Access to the VLE Affects Students' Productivity, Academic Performance, and Mental Wellbeing

Four sub-themes were generated from the data regarding the impact of 24/7 access to all course materials via the VLE. First, the anytime access provided by the VLE provided an inclusive safety net, because it enabled students to catch up, keep up, and control the pace of their learning. Second, the anywhere access provided by the VLE enabled students to control their learning environment. Third, the flexibility afforded by 24/7 VLE access could be a "double-edged sword". Fourth, VLE technical difficulties could undermine students' sense of control over their academic performance, provoking strong negative emotions.

3.2.1. Anytime Access to the VLE Provides an Inclusive Stress-Alleviating Safety Net

The constant online access to the VLE facilitated agency over learning, enabling the students to catch up, keep up, or consolidate their understanding. The VLE alleviated stress when students felt that they lacked control over their physical or mental health, thereby providing a "safety net" (FY2, FY3, FY6), making learning inclusive. Knowing that they could access the relevant materials even if they missed timetabled classes "take[s] an amount of stress away from you" (FY6) and meant that "further stress" was not added when they were unwell (FY5). The VLE had enabled two students who had missed several weeks of term because of mental health difficulties to "catch up (. . .) and just do fine" (FY5), or "claw (. . .) back" (UY23) what they had missed. One of these students reflected that they "managed to (. . .) do alright (. . .) [but] without Blackboard that wouldn't have been a possibility", "with my experience last semester, I'd be lost without Blackboard" (UY23). Students highlighted the negative impact of not having access to the full suite of materials when they missed lectures due to illness. One had felt "downhearted" and "irritable" when they had "got quite ill", because recorded lectures were not automatically uploaded and "release[d]" for student access (FY3). The student had found it "not embarrassing but (. . .) awkward" because "I had to email [the lecturer], [and] wait for [the lecturer] to send me a code" (FY3).

Off-campus access to course materials also alleviated stress for commuting students because it enabled them to revise for classes in the evenings, and "go through lectures or tutorial preparation" on Moodle via their phone during a long university commute (UY31). Stress was further alleviated because they did not have to remember to take papers home, "if I leave anything at uni, that's like the stress gone because I know that I can access it from anywhere because it's online rather than physical sheets of paper." (UY30).

Additionally, students with learning differences or disabilities associated their constant access to the VLE with a sense of control over their learning and academic progress. Students with dyslexia shared that it took them "a lot longer to like learn stuff and read stuff" (FY19) and that they "tend[ed] to read (. . .) or write a bit slowly" (FY42). These students felt that, without access to the VLE in the evenings, they would "be screwed" (FY19) and a "be a bit more stressed" (FY42), particularly around assessment deadlines, because to "lose a night, that's, that's a lot of time lost" (FY42). It was also "reassuring" for a student who had a hearing impairment "to know that I'm getting the most out of [their lecture]", rather than "constantly thinking, "what if I've missed (. . .)?"" (UY21). A student who was "scared of people" explained that students "dealing with like mental health problems, (. . .) like (. . .) anxiety or (. . .) on the autistic spectrum" could find lectures of "200 (. . .) or 300 people" "overwhelming", because "it's just a lot of people looking at you (. . .) the lights are just blinding, the noise is just, it can be really hard to deal with" (UY8). They found that the VLE could be "helpful for like students' mental health (. . .) because it gives them like opportunity to take a step back from physically going [to lectures] while they're still able to continue with their course" (UY8). The VLE's accessibility benefited their mood and frame of mind. For one student, the VLE was:

> like support, cos (. . .) I know that everything I need to help me is there. So it will put me (. . .) in the right mindset when I'm doing work, even if the tab is just there and I haven't clicked on it for an hour (. . .) and that kind of does keep me in the right mindset when doing coursework (FY39).

3.2.2. Anywhere VLE Access Impacts Student Concentration and Productivity

Some students used the flexibility that the VLE afforded to control environmental factors and to reduce distractions impacting their productivity. For one student "accessing [the VLE] from home" was "really important", because they "get some of [their] best work done when (. . .) at home in silence" (UY30). In contrast, other students found studying in the library more effective academically and personally. One student said, emphatically, "I hate studying at home. I (. . .) just can't concentrate" (UY10). A fellow participant agreed, "I'm probably the same. If I want to work properly, I work in the library. It takes

me twice as long at home" (UY12). Another student who lived with their family was "not motivated at home like ever" and "so definitely the library, that's where I'm always on [the VLE]" (UY29). The VLE also enabled the students to study in the environment they found more conducive for a task. For instance, one student elected to read at home, but "go to the library when I actually need to write" (UY9). In contrast, another chose to read and "study for the content for the exam, (. . .) in the library. But when I need to write something down, I'm at home, in my bed" (UY8). It also enabled one student who preferred studying with both the VLE and their textbooks because "I cannot carry the textbooks together with me to school (. . .) and if I stay at home, I can like easily access all the textbooks and I want to take some notes on them" (UY25).

3.2.3. Anytime, Anywhere VLE Access Can Be a "Double-Edged Sword"

The anytime anywhere access afforded by the VLE could result in blurred boundaries between students' academic study and other aspects of their life. This functionality enabled the students to stay constantly logged onto the VLE, and most students rarely or "never" (UY32), "actively" (UY30), or "intentionally" (UY35, UY43) logged off. If students were not logged onto a computer, they were logged onto it via their phone, "so it's not even that I've stopped using Moodle. It's just that I've changed locations (UY31).

For a few students, this ability to have the VLE "always there in the background" (UY31) was a "double-edged sword" (UY22); "Because it's constantly sort of available, anytime you might set aside for yourself, there might be a little niggle in your brain saying, "you should be working"" (UY22). Being permanently connected via the VLE meant that students were "always like kept in the loop", alleviating concerns about "missing out" on key information, but it also could create "worry about a pop-up coming up and you have that in your head" (FY14). Some students felt that the digital nature of the VLE made it more challenging to switch off mentally, because the blurred boundaries could alleviate fears associated with missing key information:

> But if say it was purely just like analogue rather than digital, um, it would be like "Oh, I can just shut the book". And I feel like without having the notifications coming through saying "This lecturer has uploaded this slide" and like "You've got an email from this person" it's like finding the boundary between it. And like there are ways that you can obviously turn off the notifications and things but then if you do that you might feel like oh "what if I miss out on something that's really important" cos quite often like lecturers will upload really important information and if you don't like keep like looking up like on the VLE then you'll miss out and then like it's the fear of like missing out and like not being the best that you can be (UY21).

Being constantly logged onto the VLE alleviated stress in the short-term for one student, thereby feeling better but possibly not functioning well:

> it just makes me feel better that it's always open (. . .) Even if I'm like on YouTube it's just I'm not technically doing work but I might do any minute because Blackboard is open right now, so I'm not really that lazy [giggle]. It's just I got side-tracked. Even if it's not true, I just lie to myself about it and it makes me feel better about myself again (. . .) it's the illusion of productivity (UY8).

One tension was that 24/7 access enabled students to work whenever they felt motivated to do so, but this meant that they could feel guilty for not studying, including on the weekends:

> I think it goes both ways, really. Like having the 24-h access is like very good, cos if you want to get on with something, (. . .), a quick thought, (. . .) to get on with something, inspiration, it's very good in that sense. But obviously the bad sense, and I'm a bit like this really, I mean I always feel a little bit bad if I'm not being productive, even if it's on like weekends (UY44).

One student found that having their VLE open was helpful for their mental wellbeing "if assignments are going well" (FY38). However, when their assignments were not going well, being logged onto the VLE created a tension, because "possibly the tab's a little bit oppressive but it's an inspiration for me to get back on track with things, so it's just like that little presence" (FY38).

A related tension was that permanent access to the VLE could make it difficult to switch off mentally from studies. For instance, one student could see their bookmarked VLE tab while using social media. They explained that 24/7 access:

> means that we can sort of be connected and (...) have (...) the majority of our resources are around us at all times. But also, (...) because it is online, um, there is that sort of potential to struggle to switch off because (...) even when you're doing something like (...) scrolling through Facebook and you see your Bookmark bar that you've got Moodle and you think "Oh maybe I should be working right now" but you may be actually having a legitimate break (UY31).

Because the VLE was always accessible, it could both motivate students to be productive with their time, but also undermine their ability to log off and switch off mentally:

> there's that element of not being able to switch off completely which sometimes can be helpful cos it can refocus you but can also maybe play on your wellbeing a little bit, because (...) you know that it's the portal for work [it] can stop you from switching off effectively (...) it can (...) be in the background all the time in your thoughts so it stops you from being able to switch off university and that can sort of effect your, um, your mental health in a sense (UY31).

However, participants thought that university study would be more stressful if they could not decide when to study, even if "switching off" might have been challenging sometimes:

> It's a very (...) positive experience. It gives me flexibility on where and when I can do my work. Um, and yeah, the, shutting off is a difficulty with it being so accessible but I think that's a, it's a fair trade-off when overall it does help with (...) your degree experience (UY32).

Anytime, anyplace VLE access could undermine or improve students' productivity. Some students with fewer contact hours felt that 24/7 access meant that they were tempted to "procrastinate during the day and then work during the night" (FY2). The flexibility "would encourage me to work like probably deep into the night. It probably gives me more time to procrastinate" (UY33). Therefore, 24/7 access sometimes resulted in students delaying starting their work and working at times that were not conducive to healthy sleeping and impacted negatively on their emotions (FY2, UY22, UY23, UY33). However, on balance, they decided that "it's helpful even if I've had like a busy day and I get back late and I need to do my work, it's really good that it's already there and it's already working, yeah" (UY33). Another student thought that the knowledge that:

> Moodle is there available for me at any time, I know I can do revision at any time, and I can access all the information I need and I want at any time. So, it kind of helps me, um, to kind of delete that kind of stage of "(...) I don't know where to start, (...) I don't know what to do" um, and that kind of helps me to fight my procrastination (FY37).

Paradoxically, the connectivity provided by their VLE could result in some students feeling disconnected from their peers and lecturers. The students thought that the VLE's flexibility contributed to the "isolation that you can feel" (FY2) because "university's quite an isolated thing (...) most of your work is done by yourself, submitted by yourself" (UY4). Instead, because of the VLE's functionality and study being a solitary occupation, "people can use [the VLE] as a way to self-isolate (...) because unless you go and actively work with your friends, it's so easy to spend the whole day in your room just working (...) which was probably not a positive thing" (FY2). Another student reflected, "I could

go without seeing people for like a week easily and that's obviously not very healthy and does take a toll on your mental health" (FY6). One student posited that the VLE could be "taking away part of that human element", contributing to a "less of a kind of wellbeing loss and more of a kind of mental loss", because "you don't have that connection to (. . .) the academic, (. . .) all those interesting resources and people around you (. . .) and lose out on (. . .) the active part of university" (UY12). For these students, good mental wellbeing was associated with the richness that comes from learning in person with peers and academics. One student argued that the VLE's flexibility was "positive" and that it would be incorrect to say that it "negatively affects your mental health because it makes everything digital". Although "learn[ing] together" with others is good for mental health, this might be "impossible" if "you're ill or whatever" (UY11). Instead, it was "our choice" whether the flexible connectivity provided by the VLE isolated students from their peers or other academics, "We let it negatively affect our mental health" by choosing to "only use [the VLE] and not see people" (UY11).

3.2.4. VLE Technical Difficulties Frustrate Control and Provoke Strong Emotions

Students associated negative emotions with VLE technical difficulties that impacted their assessments, feedback, and ability to access information easily. For instance, one student associated "a feeling of paranoia" with the VLE, finding it "very stressful" when the VLE was not working two hours before the submission deadline and not knowing "when it's coming back up". For this student, this was the "only negativity" with the VLE (UY30). Similarly, another student felt that it was "quite annoying" when their browser crashed when they had "19 min remaining" while completing a multiple-choice test "worth 10 per cent of my module", because "If you exit the test then you can't get it back" (FY17). Another found it "really frustrating", because the VLE would sometimes "conk out and then just won't work" while completing mandatory online tests (FY40). Similarly, another student felt "hostile" towards or "really annoyed" with the VLE when it was "down temporarily" and they could not "access it" or it was "slow (. . .) I really do need to have it open like right now sort of thing" (UY35).

Not knowing how they were progressing in terms of their overall grades generated feelings of frustration, confusion, and annoyance among upper- and first-year students using different VLEs. This uncertainty seemed to undermine their sense of control over attaining their academic and career goals. Being able to view only individual grades rather than their overall grade, or being able to view grades for some modules but not others together contributed to one student:

> Feeling a little bit clueless as to how I'm doing (. . .) what I'm actually achieving. And that again makes me feel anxious, it makes me feel nervous cos I want to do well. I want to get a good job at the end of this and (. . .) a good grade overall. So, yeah, it just makes me feel a little bit, yeah anxious a bit annoyed, um, yeah, I think the lack of clarity isn't, it just isn't good" (UY33).

In contrast, being able to view their academic progress gave another student control over their use of time and effort across their course, "and it's nice to see how I'm progressing throughout the coursework so I know how much work I need to put in in the exam and any other pieces of coursework" (FY1).

The time between receiving a notification that grades had been published and being able to view them affected emotions as well, and this seemed to be linked with whether the marks were published on the VLE. One student went from "feeling okay about it (. . .) but as it took me longer to find it that gave me time to actually get stressed about the results, whereas if I could just find it immediately, I wouldn't have worked myself up at all" (FY5). In contrast, students valued the immediate feedback they could receive on multiple-choice tests on the VLE, "you're literally like sat there and "okay, I've passed. Brilliant. I can go home"" (FY2). Students found delays in receiving feedback frustrating, and sometimes attributed these delays to the VLE itself, rather than to their lecturers (UY25, FY36). A lecturer had informed a student they had to wait for them "to upload [feedback] first"

(UY22). One student explained: "The shorter the gap between (. . .) [feedback on one piece of coursework and the next], the more stressed out I get about it, so I guess that it is when it affects mental health and wellbeing" (FY36).

3.3. Theme 3: Student Mindset towards the VLE Impacts Their Studies and Mental Wellbeing

Students' attitude toward the VLE system and its content moderated their use of it and how they functioned and felt. Two related sub-themes were generated. First, students who recognized that learning to use the VLE was an effortful but worthwhile endeavour seemed to feel a greater sense of control over their learning and were less anxious about their studies. Second, the mindset with which students engaged with the VLE's content seemed to impact their mental wellbeing.

3.3.1. Learning to Use the VLE Is Effortful but Worthwhile

Deciding to invest time and effort in learning the VLE system was considered to be crucial for productivity, academic outcomes, and alleviating stress. Students valued having the knowledge and skills to use the VLE successfully. "Using [the VLE] effectively (. . .) properly" was equated with "accessing information", "navigat[ing] it fast enough" (FY14), and knowing "how to maximize" the tools (UY12). Prior to learning to use it "effectively", the students reflected that:

> it was slow at the start because I would miss out on things. Like I just gave up on trying to find it because I just assumed it wasn't there and [sic] because I couldn't find it in this massive pool of information (. . .) And I just gave up. But now I don't because I've learnt how to use it (FY14).

Students who had recognized that they needed to learn to use the VLE "properly" or "effectively" themselves, and who persisted with "learning how to use it in the first few weeks" (FY15) through "trial and error" (FY14), seemed to feel in control of their studies. It took a few students "three weeks" (FY15, FY37) "just to learn how to use it" (FY15). One of these students described how "at the start, like you have to really like put some hours into learning how it works in order to get the most out of it" (FY14). Another student detailed how they taught themselves:

> not only how the platform worked, but what to expect, like you had a better understanding of the materials that the course would use, so you had just a better understanding of where to look and where things would naturally be (. . .) for example, (. . .) once you realize for a typical week you have a lecture and, in the lecture, you would have like reading materials to do before, PowerPoint slides, maybe further reading and like a learning objective overview. If you knew that that would be covered on Moodle and if you knew that for the lecture you would expect a lecture PowerPoint and you would have to read, you would kind of know those things go together (FY36).

A few students had realized that they needed to decide to learn to use the VLE, despite the fact that this required initiative, effort, and time. For two first-year students from different universities using different VLE platforms, the main catalyst was becoming aware that they would not progress on their course without knowing how to use their VLE. Initially, the fact that neither student was able to locate their course materials easily had led them to feel "frustrated" with their VLE or that the VLE was "quite intimidating", such that one of them "did avoid it more" (FY39). Similarly, the other student "(. . .) got to a point that I wasn't even interested in using it. I was like "(. . .) I can't do this. (. . .) I don't know how to find things." It's just, the website itself seemed so boring to me (. . . .) "No Moodle go away"" (FY37). For one of these students, the turning point was realizing that they "had to" and "wanted to find" and "look back on" their course resources, "like all the lectures and stuff", and "save all the documents". It was a "couple of weeks in" and they "still couldn't get onto the lecture slides and things, so I was like, "okay, I need to sort this out cos otherwise I'm gonna get behind"" (FY39). Likewise, the other student thought the

impetus to start using it more "eventually" was recognizing that "I was either gonna use it and pass or not use it and not pass" (FY37).

Some students who had prior experience of using a VLE found adjusting to a new platform relatively easy. Their experience seemed to make them aware that they needed to invest time and effort, "working through it, making sure that I knew where everything was" (UY30). These students who "always had a VLE to work on" were cognizant of the steps they needed to take to familiarize themselves with the VLE (UY30, UY32). The skills and confidence to do this seemed to be associated with knowing what content to look for when exploring the system. However, some younger first-year students described struggling through an iterative and effortful process to learn how to use the VLE and find their materials. Many of these students benefited from teaching staff showing them how to use the VLE, as reported in Theme 1.3.

3.3.2. Student Mindset towards the VLE Impacts Emotional Response and Productivity

How some students experienced and were impacted by the VLE seemed to be moderated by their attitude towards the system and also the content on the system, "I feel like Moodle can be useful depending on your mindset" (UY26). Students from a range of universities, year groups, and platforms associated words such as "productive" (FY19), "determined" (FY19), "motivated" (FY6), "attentive" (UY4), and "concentrating" (FY7) with the VLE. These students logged on with a particular mindset, as two students explained: "For me, the general thing is "productive" because any time when I open [the VLE] I'm like "I'm doing work" (UY11); "you don't really need to go on Blackboard and scroll through things. You're going on there to get something" (UY10). By being on the VLE, "you are quite proactive, and it can make you focused on what you need to do" (UY28), "like when you get into the right frame of mind or state of mind, then you can go into your deep work or deep focus-mode and start concentrating instead of having some Facebook tabs open" (UY24). Therefore, several students perceived that they benefited from having a positive mindset when they logged onto the VLE, although they could and did log on when it felt difficult to do so:

> There's two versions of how you open up Blackboard. It's either (. . .) an active way where you're (. . .) ready to do stuff, you're being active, you're learning stuff. And there's the slightly more disappointed, depressed person who's opening it cos you have to get through some work. It's kind of a slog. A chore. You're trying to get through stuff. You're even more or possibly it's kind of heavy because you've got behind on some work. And you're like "Oh, no I have to go" so it's kind of you have that positive and negative side (UY12).

For others, the course content on the VLE impacted their mental wellbeing and this fluctuated depending on the time of the year:

> Actually, if you think about what Blackboard is, it's got such positive features and such good benefits, I think it's just, [pause] I think it's more the actual function of like going to do work and going to do essays. It's probably not something you associate with positively. Um, so it's actually more of a reflection of the work we're doing rather than Blackboard itself (FY2).

Similarly, because of the course content, another student felt "nervous" and "tentative" when they logged on, "So when I'm logging on (. . .) it just feels like a chore really, um, which then just puts me in a bit of a bad mood and then doesn't make me as productive as I'd like to be" (UY33).

Some students thought that being willing to accept the way the VLE was set up or the way it changed throughout their studies was more conducive to studying effectively and feeling positive. Two upper students agreed that "to use [the VLE] successfully, you've gotta basically accept the way it is" (UY26, UY24) and "just got to try and work with it" (UY26). Two other students reflected that they needed to be willing to "get used to it all over again" after the VLE interface was changed "quite drastically" between their first

and second year (UY28). One student described their experience as being "starting first year and then learning something, having had it and forming like ways that you do things and then coming back in second year" to discover that it had "all changed" (UY28). They had become "comfortable with it in first year" and after re-learning the system "It's okay" (UY29), and "fine, once you get used to it" (UY28).

4. Discussion

This focus group study used reflexive thematic analysis with an inductive approach to investigate the impact that VLEs may have on undergraduate students' mental wellbeing. Three themes were prominent: lecturer use of VLEs, the technological features of VLEs, and students' mindset towards using VLEs. The dominant pattern across the data set was that the way lecturers used the VLE impacted students' ability to think clearly about their studies and could provoke strong emotions.

In line with other studies, having course content centralized on the VLE, the amount of information, and its organisation and labelling mattered [20,31–33]. Findings from Henderson et al. are similar to ours, in that students experience efficiency, peace of mind, and a sense of order from the centralized access to university resources afforded by the VLE [20]. The current study demonstrates that there is much more to the VLE than simply being a centralized repository. Lecturers' expectations are communicated by what they place on the VLE and how they organize and label the content. This fits with Vansteenkiste et al., who found that, when high school students perceive that their teachers communicate clear expectations, it equips students to make choices about their learning and concentrate, motivating them to persist with their studies [34]. When lecturers centralized, clearly labelled, and organized course materials or information, students were able to think clearly, decide what to prioritize, and so take responsibility for their learning. Conversely, when too little or too much course content was available on the VLE or it was disorganized, students were frustrated, overwhelmed, confused, stressed, or anxious. This aligns with Selwyn's findings that university students found VLEs difficult to navigate and use productively when lecturers uploaded either too little or too much content, without a clear structure [32].

What and how lecturers communicated via the VLE impacted on student mental wellbeing. Receiving instructive communications from lecturers via the VLE guided and motivated students and reassured them. Conversely, if lecturers used the discussion boards/forums in a way where students felt their questions were open to public ridicule by their peers or lecturers, then students associated the VLE with feeling anxious, confused, and isolated. We also found that students experienced these negative emotions if they perceived that their lecturers were using discussion boards/forums to create a barrier between themselves and their students. This variability in experience of discussion boards/forums described by our focus group students is reflected in previous research [35,36].

Studies during the COVID-19 pandemic reported students feeling lonely and not being able to communicate with teaching staff and their peers as frequently as they would like [16]. However, our study found that students enrolled on courses delivered predominantly in-person could also experience loneliness, because the VLE's flexibility could create, or even be used to create, barriers between students, teaching staff, and peers. Aligned with other studies, students in the current study highly valued interacting with their lecturers face-to-face [33], or via routes outside of the VLE, in order to clarify course-related questions [36,37].

In line with the technology acceptance model, the VLE's perceived ease of use and its usefulness influenced students' mindsets towards using it [38]. This was evidenced by comments about students' willingness to invest time and effort into learning to use the system (Theme 3). That said, the VLE's technological functionality seemed to contribute less to the students' perception of its ease of use and usefulness than *how* the VLE was used. Their lecturers' VLE-use moderated the ease with which the system could be learnt, used, and its usefulness. These features, ease of use and usefulness, could sometimes be seen to

impact directly on their mental wellbeing. However, importantly, the way the VLE was used seemed to impact the students' motivation.

The students in the present study were not asked explicitly about motivation. However, they linked their lecturers' VLE use with their academic motivation, ability to study effectively, their sense of connectedness with lecturers and peers, and, ultimately, with their mental wellbeing. These findings align with self-determination theory (SDT), a well-established theory of motivation [39]. According to SDT, the satisfaction of three basic psychological needs (autonomy, competence, and relatedness) affects motivation and wellbeing. When these are frustrated or thwarted, students can become de-motivated and experience ill-being such as loneliness or anxiety.

According to SDT, teacher behavior can support or frustrate the satisfaction of these three basic psychological needs. Here, students described features of the VLE or its use that could support or frustrate each of these basic psychological needs. Within SDT, support for competence is provided by structure, which helps to communicate clear expectations [34]. Lecturers' organization and labelling of their materials, which created structure or chaos, was a prominent experience for the focus group students, because it impacted the students' competence, agency, motivation, and mental wellbeing (Theme 1). Support for relatedness is associated with warmth, rather than neglect [40]. Lecturers' use of forums/discussion boards and notifications impacted students' sense of connectedness and mood (Themes 1 and 2). Autonomy-supportive learning environments are those in which lecturers take their students' perspectives [41]. Autonomy is not equivalent to independence. Autonomy support is "providing students with the desired amount of choice, by giving a meaningful rationale when choice is constrained, (. . .) and by using inviting language (. . .) rather than controlling language" [34] (p.432). The anytime anywhere, access afforded by the VLE arguably also supported students with autonomy over their pace of learning and productivity (Theme 2). Conversely, when these technological features did not function well, this autonomy was thwarted. In turn, student mental wellbeing seemed to be indirectly impacted.

Limitations and Future Directions

One limitation was that the data collection was disrupted by the onset of the COVID-19 pandemic. This meant that a 1992 Group university using Moodle decided not to participate as initially planned, and several focus groups were conducted at a point when the students may have been changing their approach to the VLE and learning online more than previously. However, it is noteworthy that there was no distinction in the themes or subthemes identified across the focus groups. This suggests that, if the students' use and experience of the VLE was changing, it did not impact the research question at this point. This study's qualitative methodology enabled us to generate propositions about cause and effect and contribute to addressing the gap identified in a recent systematic review [18]. However, the methodology cannot test or generalize from these relationships.

We were not able to fully characterize the sample demographics. This may limit the transferability of the research. However, important for qualitative research, we have consistently sought to identify the contexts or settings [25] in which the students were using the VLE and the impact of these on their experience is described in detail through the results.

Because these students' experiences were context-dependent, further investigation needs to be conducted to understand whether these findings align with students at other universities and those using other VLEs. A way to achieve this would be to investigate which lecturer behaviors and VLE features support the satisfaction of students' basic psychological needs, thereby promoting their motivation and mental wellbeing. For instance, whether there are types of content organization, labelling, and particular communications via the VLE that are more supportive of these outcomes. Such studies could be quantitative or qualitative. These findings could have implications for systems training to better equip and support lecturers.

5. Conclusions

This study demonstrated that experience of the VLE can impact on student mental wellbeing. Using an inductive approach enabled us to gain deeper and more nuanced insights into how the VLE might contribute to students' mental wellbeing. This study suggests that the VLE itself may have some impact on students' mental wellbeing. However, lecturers' *use* of the VLE seemed to play a more significant role in terms of students' motivation, as well as their mental wellbeing. SDT may help to explain this relationship between lecturers' VLE-use and students' motivation and mental wellbeing. To quote one of our student participants, "the problem is more on the human side of things, getting people to actually use it, not students, getting lecturers to use it".

References

1. Huppert, F.A. Psychological Well-being: Evidence Regarding its Causes and Consequences. *Appl. Psychol. Health Well-Being* **2009**, *1*, 137–164. [CrossRef]
2. Duffy, A.; Keown-Stoneman, C.; Goodday, S.; Horrocks, J.; Lowe, M.; King, N.; Pickett, W.; McNevin, S.H.; Cunningham, S.; Rivera, D.; et al. Predictors of mental health and academic outcomes in first-year university students: Identifying prevention and early-intervention targets. *BJPsych Open* **2020**, *6*, e46. [CrossRef] [PubMed]
3. Cobo-Rendon, R.; Perez-Villalobos, M.V.; Paez-Rovira, D.; Gracia-Leiva, M. A longitudinal study: Affective wellbeing, psychological wellbeing, self-efficacy and academic performance among first-year undergraduate students. *Scand. J. Psychol.* **2020**, *61*, 518–526. [CrossRef] [PubMed]
4. Dodd, A.L.; Priestley, M.; Tyrrell, K.; Cygan, S.; Newell, C.; Byrom, N.C. University student well-being in the United Kingdom: A scoping review of its conceptualisation and measurement. *J. Ment. Health* **2021**, *30*, 375–387. [CrossRef] [PubMed]
5. Tennant, R.; Hiller, L.; Fishwick, R.; Platt, S.; Joseph, S.; Weich, S.; Parkinson, J.; Secker, J.; Stewart-Brown, S. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK validation. *Health Qual. Life Outcomes* **2007**, *5*, 63. [CrossRef]
6. Diener, E.; Oishi, S.; Tay, L. Advances in subjective well-being research. *Nat. Hum. Behav.* **2018**, *2*, 253–260. [CrossRef]
7. Ryff, C.D. Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychother. Psychosom.* **2014**, *83*, 10–28. [CrossRef]
8. Weich, S.; Brugha, T.; King, M.; McManus, S.; Bebbington, P.; Jenkins, R.; Cooper, C.; McBride, O.; Stewart-Brown, S. Mental well-being and mental illness: Findings from the Adult Psychiatric Morbidity Survey for England 2007. *Br. J. Psychiatry* **2011**, *199*, 23–28. [CrossRef] [PubMed]

9. Stewart-Brown, S. Measuring wellbeing: What does the Warwick-Edinburgh Mental Well-being Scale have to offer integrated care? *Eur. J. Integr. Med.* **2015**, *7*, 384–388. [CrossRef]

10. Lewis, J.; Bolton, P. Research Briefing. In *Student Mental Health in England: Statistics, Policy, and Guidance*; Report No. 8593; House of Commons Library: London, UK, 2023; Available online: https://commonslibrary.parliament.uk/research-briefings/cbp-8593/ (accessed on 18 May 2023).

11. Tabor, E.; Patalay, P.; Bann, D. Mental health in higher education students and non-students: Evidence from a nationally representative panel study. *Soc. Psychiatry Psychiatr. Epidemiol.* **2021**, *56*, 879–882. [CrossRef]

12. Hughes, G.; Spanner, L. *The University Mental Health Charter*; Student Minds: Leeds, UK, 2019.

13. Stormon, N.; Ford, P.J.; Eley, D.S. DREEM-ing of dentistry: Students' perception of the academic learning environment in Australia. *Eur. J. Dent. Educ.* **2019**, *23*, 35–41. [CrossRef] [PubMed]

14. Larcombe, W.; Baik, C.; Finch, S. Exploring course experiences that predict psychological distress and mental wellbeing in Australian undergraduate and graduate coursework students. *High. Educ. Res. Dev.* **2021**, *41*, 420–435. [CrossRef]

15. Audet, E.C.; Levine, S.L.; Metin, E.; Koestner, S.; Barcan, S. Zooming their way through university: Which Big 5 traits facilitated students' adjustment to online courses during the COVID-19 pandemic. *Pers. Individ. Dif.* **2021**, *180*, 110969. [CrossRef] [PubMed]

16. Cockburn, J.G.; Tan, C.Y.; Poh, D.; Tan, D.J.; Foong, C.C.; Hong, W.H. Mental health and self-determination profiles of the diverse population of medical students in Malaysia during the COVID-19 pandemic. *BMC Psychol.* **2022**, *10*, 49. [CrossRef]

17. Mishra, L.; Kumar, N.P. Higher education students' behaviour and mental health during COVID-19 lockdown: A pilot study. *Z. Gesundh.* **2023**, *31*, 747–753. [CrossRef] [PubMed]

18. Rasheed, R.A.; Kamsin, A.; Abdullah, N.A. Challenges in the online component of blended learning: A systematic review. *Comput. Educ.* **2020**, *144*, 103701. [CrossRef]

19. Maguire, D.; Dale, L.; Pauli, M. *Learning and Teaching Reimagined: A New Dawn for Higher Education?* JISC: Bristol, UK, 2020.

20. Henderson, M.; Selwyn, N.; Aston, R. What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Stud. High. Educ.* **2017**, *42*, 1567–1579. [CrossRef]

21. Velde, R.v.d.; Blignaut-van Westrhenen, N.; Labrie, N.H.M.; Zweekhorst, M.B.M. 'The idea is nice . . . but not for me': First-year students' readiness for large-scale 'flipped lectures'—What (de)motivates them? *High. Educ.* **2020**, *81*, 1157–1175. [CrossRef]

22. Langer-Crame, M.; Newman, T.; Beetham, H.; Killen, C.; Knight, S. *Digital Experience Insights Survey 2019: Findings from Students in UK Further and Higher Education*; JISC: Bristol, UK, 2019; pp. 1–41.

23. Malterud, K.; Siersma, V.D.; Guassora, A.D. Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qual. Health Res.* **2016**, *26*, 1753–1760. [CrossRef]

24. Watson, D.; Clark, L.A. *The PANAS-X: Manual for the Positive and Negative Affect Schedule—Expanded Form*; University of Iowa: Iowa City, IA, USA, 1994. [CrossRef]

25. Braun, V.; Clarke, V. *Thematic Analysis: A Practical Guide*, 1st ed.; SAGE: Thousand Oaks, CA, USA, 2022.

26. Pilgrim, D. *Critical Realism for Psychologists*, 1st ed.; Routledge: London, UK, 2019.

27. Terry, G.; Hayfield, N.; Clarke, V.; Braun, V. Thematic Analysis. In *The SAGE Handbook of Qualitative Research in Psychology*; SAGE: Thousand Oaks, CA, USA, 2017; pp. 17–36.

28. Braun, V.; Clarke, V. Reflecting on reflexive thematic analysis. *Qual. Res. Sport Exerc. Health* **2019**, *11*, 589–597. [CrossRef]

29. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]

30. Braun, V.; Clarke, V. Is thematic analysis used well in health psychology? A critical review of published research, with recommendations for quality practice and reporting. *Health Psychol. Rev.* **2023**, 1–24. [CrossRef]

31. Habib, L.; Berget, G.; Sandnes, F.E.; Sanderson, N.; Kahn, P.; Fagernes, S.; Olcay, A. Dyslexic students in higher education and virtual learning environments: An exploratory study. *J. Comput. Assist. Learn.* **2012**, *28*, 574–584. [CrossRef]

32. Selwyn, N. Digital downsides: Exploring university students' negative engagements with digital technology. *Teach. High. Educ.* **2016**, *21*, 1006–1021. [CrossRef]

33. Saunders, F.C.; Gale, A.W. Digital or didactic: Using learning technology to confront the challenge of large cohort teaching. *Br. J. Educ. Technol.* **2012**, *43*, 847–858. [CrossRef]

34. Vansteenkiste, M.; Sierens, E.; Goossens, L.; Soenens, B.; Dochy, F.; Mouratidis, A.; Aelterman, N.; Haerens, L.; Beyers, W. Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learn. Instr.* **2012**, *22*, 431–439. [CrossRef]

35. Limniou, M.; Smith, M. Teachers' and students' perspectives on teaching and learning through virtual learning environments. *Eur. J. Eng. Educ.* **2010**, *35*, 645–653. [CrossRef]

36. Demian, P.; Morrice, J. The use of virtual learning environments and their impact on academic performance. *Eng. Educ.* **2012**, *7*, 11–19. [CrossRef]

37. Leese, M. Out of class-out of mind? The use of a virtual learning environment to encourage student engagement in out of class activities. *Br. J. Educ. Technol.* **2009**, *40*, 70–77. [CrossRef]

38. Davis, F.D. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Q.* **1989**, *13*, 319–340. [CrossRef]

39. Ryan, R.M.; Deci, E.L. *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*; The Guilford Press: New York, NY, USA, 2017.

40. Vansteenkiste, M.; Ryan, R.M.; Soenens, B. Basic psychological need theory: Advancements, critical themes, and future directions. *Motiv. Emot.* **2020**, *44*, 1–31. [CrossRef]
41. Cheon, S.H.; Reeve, J.; Vansteenkiste, M. When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teach. Teach. Educ.* **2020**, *90*, 103004. [CrossRef]