education sciences

MDPI

Article

Teacher, Think Twice: About the Importance and Pedagogical Value of Blended Learning Design in VET

Danijela Makovec Radovan * and Marko Radovan

Department of Educational Sciences, Faculty of Arts, University of Ljubljana, 1000 Ljubljana, Slovenia; marko.radovan@ff.uni-lj.si
* Correspondence: danijela.makovec@ff.uni-lj.si

Abstract: The integration of technology into educational institutions is transforming education and fostering innovative approaches to learning. Blended learning, an increasingly popular approach, integrates technology with traditional teaching approaches. Blended learning can overcome the limitations associated with using technology purely as a tool, facilitating its full integration into the educational process. The present study involved 106 students enrolled in a vocational education program (VET) in Slovenia. The students were subjected to a pilot implementation of blended learning, and their experiences were subsequently analyzed and evaluated. The results showed that the use of different teaching approaches led to different outcomes in terms of student workload, learning outcomes, and motivation. The different teaching approaches were found to present different levels of difficulty for students. For example, live sessions and the integration of virtual reality/augmented reality (VR /AR) technology presented greater challenges. Conversely, collaborative group work and online courses focused on developing professional skills were found to be beneficial. The study also highlighted the importance of feedback and instructor support in online learning environments. In general, the results of our study suggest that the adoption of blended learning in education can lead to positive outcomes. However, it is important to emphasize the importance of careful planning and thoughtful consideration of optimal pedagogical strategies.

Keywords: technology integration; blended learning; vocational education and training; learning design; teaching approaches

Citation: Makovec Radovan, D.; Radovan, M. Teacher, Think Twice: About the Importance and Pedagogical Value of Blended Learning Design in VET. *Educ. Sci.* **2023**, *13*, 882. https://doi.org/10.3390/educsci13090882

Academic Editors: Lourdes Villalustre and Marisol Cueli

Received: 13 July 2023
Revised: 16 August 2023
Accepted: 29 August 2023
Published: 30 August 2023

1. Introduction

Vocational education and training (VET) is an important part of the Slovenian education system. The Statistical Office of the Republic of Slovenia [1] reports that 64.5% of students enrolled in secondary schools in the 2022/2023 academic year pursue VET programs. The VET program provides several options, such as lower vocational education lasting two years, secondary vocational education lasting three years, secondary technical education lasting four years, and vocational technical education designed for those who already have secondary vocational education equivalent to at least two years or higher vocational education.

During the COVID-19 pandemic, an unexpected shift toward distance learning methods was observed not only in Slovenia but in many countries around the world. Once the pandemic subsided, a significant question emerged: how to identify exemplary practices in the use of distance education and technology and incorporate them into enduring teaching methods? A particular challenge was to find suitable solutions for vocational education and training (VET). Vocational education and training (VET) differs from traditional general educational programs in that it emphasizes hands-on practical experience in specialized fields. This approach means that VET cannot be conducted solely through an online format. Nonetheless, general and occupational knowledge can still be conveyed remotely

using information and communication technology (ICT). This blended model allows students to prepare for future careers by developing skill sets that will be essential in their chosen professions.

2. Blended Learning as a Disruptive Teaching Approach

Blended learning (BL), as a form of disruptive teaching, draws on Christensen and Raynor's insights into how innovative technologies can revolutionize education. This concept can be disruptive because it replaces traditional methods and marks a transformative shift toward a student-centered approach that uses technology to enable collaborative learning [2]. BL has become very well-established, and its value has been particularly evident in the post-pandemic era [3–5].

Today there are many definitions of this educational approach, but here are four of the most cited in BL literature: Graham [6] defines BL as a system that integrates face-to-face teaching and ICT-enhanced teaching, while Garrison and [7] define it as the deliberate integration of learning experiences in a face-to-face classroom with online learning experiences. Based on a more recent definition, BL is an instructional method that utilizes multiple teaching techniques working together to promote student engagement and knowledge retention through applied learning [8]. Of particular significance for our context is the fourth definition, in which Horn and Staker [9] point out that BL involves three basic elements. The first is that BL is any formal program where students complete at least part of the program through learning in online learning environments where they control the time and pace of learning (second element). The third element of the definition is that the forms and modes of learning should be integrated for students and provide an integrated learning experience. It is this latter element that is the most important part of the definition of BL. The work in the school and in the online learning environment must be connected in such a way that together they form a well-rounded whole that could not function without one or the other [10].

2.1. Blended Learning Impact on Students' Learning

The introduction of BL in vocational education can have multiple impacts. Research shows that this teaching approach can improve learning outcomes and engagement [11–13] while enabling students to acquire a range of skills and competences that are now considered crucial for success in the labor market [14] and for functioning in society [15]. When properly planned, BL can also offer students autonomy [16] and flexibility [17]. When students can learn at their own pace and then when it suits them, they are more likely to develop a degree of independence. They may also develop greater intrinsic motivation and become engaged in their learning. Working online, where they have access to a wide range of up-to-date resources, gives them more time, flexibility, and freedom to shape their learning according to their individual needs. A study by Kong [18] confirmed that appropriately designed digital environments with teacher support can enhance students' information literacy and critical thinking skills. Research also shows that this approach improves student achievement and reduces dropout rates, which is particularly important for vocational education [19,20]. Finally, we emphasize student participation. The quality of learning outcomes can depend to a large extent on student engagement in the learning process and in practical work with the material. Various studies and meta-analyses have shown in the past that learning outcomes are better and more sustainable when students are not just passive listeners or observers, but actively participate in the learning process [21,22]. This can be achieved by encouraging individual and group learning activities that allow students to try out their own ideas, integrate the ideas of others and develop a deeper understanding of what they are learning.

2.2. Blended Learning Impact on Students' Motivation

Numerous research studies have looked at the impact of blended learning on student motivation, and the results generally show good results. According to a study by López Pérez et al. [23], students were more motivated in a blended learning environment than

in a traditional classroom. In addition, Means et al.'s [24] analysis found that student satisfaction and attitudes toward learning increased when blended learning approaches were used. The personalized, flexible, and interactive nature of blended learning appears to create a learning experience that is responsive to diverse learning preferences and ultimately leads to the positive outcomes mentioned earlier [25,26].

2.3. Blended Learning Impact on Students' Workload

Just as proper planning can improve learning success and motivation, inadequate planning, e.g., too many activities or an inappropriate choice of approach, can have negative effects. Therefore, teachers must ensure that the workload for students does not surpass that of a traditional classroom lesson, as excessive workload can impact the quality of the schoolwork, leading to absenteeism or poor performance. Ibrahim and Ismail [27] and El Sadik and Al Abdulmonem [28] point out that workload, which is an often-overlooked aspect of BL implementation, requires special attention when considering BL implementation issues. Teachers often wonder how much time should be devoted to face-to-face teaching and online activities when transitioning to BL. The question is, of course, very relevant because the time component entails a double loop: on the one hand, the teacher must be careful not to overwhelm the students; on the other hand, the transition also entails a greater time burden for teachers. The latter is often the reason why BL programs are not successful [29]. Napier et al. [30] find that as workload increases, the chances of success with BL decrease.

Numerous studies have addressed BL, although they have focused primarily on samples of primary, general secondary and higher education. However, there is limited evidence on how BL affects the learning, motivation, and workload of vocational students. In particular, the relationship between teaching approaches and perceived workload in (vocational) education is poorly researched. Therefore, our study aims to contribute to the existing body of knowledge in this area by focusing specifically on and providing more detail about how different instructional approaches in vocational education contribute to these dimensions.

The purpose of our research was to examine how the introduction of BL and different teaching approaches were correlated to perceived student workload, types of learning and motivation. Students included in the study sample participated in the pilot implementation of blended learning and were asked to participate in an online survey. We tried to answer the following research questions:

1. How are different teaching approaches related to student perceptions of workload?
2. How are different teaching approaches related to student approaches to learning?
3. How are different teaching approaches related to student motivation?

3. Materials and Methods

3.1. Participants

In our study, we used convenience sampling [31]. Teachers from seven VET programs participating in the pilots were given a link to the survey and asked to share it with their students. A total of 106 students agreed to take part in the survey, including 98 males and 7 females (one student did not want to disclose his/her gender). The average age of the students was 17.1 years. Male students were expected to dominate the sample since the surveyed programs were more male-oriented, such as Computer Technician, Auto Technician, Electrical Engineering Technician, and Mechanical Engineering Technician. All students were enrolled in a four- or five-year upper secondary technical education course. At the time of our study, 56 students were in their third year, 36 in their second year, 11 in their first year, and three in their fourth year.

3.2. Measures

We used a two-part questionnaire for the survey. The first part focused on collecting demographic information, including gender, age, school, educational program, and year of

study. In the second part, we explored students' experiences regarding various aspects of BL: teaching approaches, perceived workload, types of learning and motivation.

3.2.1. Teaching Approaches

The scale used to identify the commonly employed teaching methods comprised 10 items. Students were requested to evaluate, on a 5-point scale, how frequently a particular teaching approach was utilized in the subject they were taught (ranging from "0—Never" to "4—Almost Always"). Table 1 presents descriptive statistics for the question 'During the blended learning pilot, how often did your course(s) include the following?'. The items are ranked according to means.

Table 1. Descriptive statistics for the scale of teaching approaches.

Teaching Approaches	N	M	SD
Live online sessions	101	2.50	1.18
Instructional videos	100	2.17	1.21
Live presentations or talks by experts	102	2.08	1.21
Group projects or presentations online	101	2.05	1.13
Students working in small groups	100	2.03	1.23
Frequent quizzes or assignments	100	1.98	1.23
Activities including VR or AR technology	100	1.83	1.22
Activities including interactive video	102	1.62	1.24
Online materials that enhance professional skills	100	1.44	1.25
Online feedback or guidance from the teacher	100	1.21	1.31

Note: Min. = 0; Max. = 4.

During the implementation of BL, students identified live online meetings (such as those on Zoom) and instructional videos created by the teacher as the most commonly used teaching approaches, while receiving online feedback from the teacher was the least frequently used teaching approach.

3.2.2. Perceived Workload

We assessed the workload of students using a "Task Load Index (TLX)" developed by NASA [32]. The NASA Task Load Index (NASA TLX) is a tool used to conduct a subjective assessment of mental workload. It helps in evaluating an individual's workload while executing a task by assessing performance across six dimensions to calculate an overall workload score. In our study, we used four out of six original dimensions: (1) Mental Demand (the level of thinking, deciding, or calculating needed for the task); (2) Temporal Demand (the time pressure associated with completing the task); (3) Effort (the intensity of work required to sustain performance); and (4) Frustration Level (the feelings of uncertainty, discouragement, or satisfaction the participant experiences during the task). The students expressed their agreement with the given statements by marking a 5-point scale that ranged from "0—strongly disagree" to "4—strongly agree". Descriptive statistics are presented in the table below.

Results in Table 2 show that students found completing the assignments on time (TD) to be the most challenging, and they put significant effort into it (EFF). However, the implementation of BL was not too mentally demanding (MD) for them.

3.2.3. Types of Learning

The items used to measure student learning were constructed on a five-point scale, with each item indicating the types of learning according to a revised taxonomy of Bloom's learning objectives [33]: remembering, applying, analyzing, evaluating, and creating. The students provided ratings on a five-point scale ranging from "0—Very little" to "4—Very much". The frequencies, mean values, and standard deviations are presented in the table below.

According to Table 3, the learning areas that received the highest ratings were creating something new (CRE) and engaging with life situations (APP). On the other hand, reflecting on what they had learned (EVA) received the lowest rating.

Table 2. Descriptive statistics for the perceived workload scale.

Perceived Workload	N	M	SD
I found it difficult to complete my tasks on time in the online activity (TD)	95	2.19	1.19
I had to work hard to do as well as I did in the online activity (EFF)	96	2.06	1.01
I felt unmotivated, annoyed, stressed, or irritated during the online activity (FRU)	96	1.79	1.30
The online activity was a challenge for me (MD)	96	1.51	0.98

Note: TD = Temporal Demand; EFF = Effort; FRU = Frustration; MD = Mental Demand. Min. = 0; Max. = 4.

Table 3. Descriptive statistics for the scale of types of learning.

Approaches to Learning	N	M	SD
Making something new from what you learned (CRE)	92	2.61	0.91
Using what you learned in real-world problems (APP)	91	2.55	0.93
Deciding if something is good or not (ANA)	92	2.53	0.86
Remembering things we learned in the course (MEM)	91	2.46	0.87
Thinking about things I learned in school more deeply (EVA)	91	2.36	0.85

Note: CRE = Creating; APP = Applying; ANA = Analyzing; MEM = Memorizing; EVA = Evaluating. Min. = 0; Max. = 4.

3.2.4. Student Motivation

We assessed the impact of teaching approaches on student motivation using selected items from the Intrinsic Motivation Inventory (IMI) [34], which has been subjected to several rounds of testing and validation in the past. For our research, we applied and adapted four of the seven subscales of the original IMI questionnaire. The subscale "Interest/Enjoyment" (IMI-I) is a self-reported measure consisting of four items. For example, one such item is "I would describe BL as very interesting". The "Effort/Importance" subscale (IMI-E) is a measure of the relevance of an activity with respect to motivation. It consists of four items, such as "I put a lot of effort into this BL course". "Perceived competence" (IMI-C) is positively linked to both self-reported and behavioral measures of intrinsic motivation. It consists of four items, such as "After participating in BL for a while, I felt pretty competent". The "Value/Usefulness" subscale (IMI-V) is a measure of the positive influence on intrinsic motivation when a person perceives activities as useful or valuable. This subscale consists of four items, such as "I believe activities in BL could be of some value". Each of the subscales included four items, and the students expressed their agreement using a 5-point Likert scale, which spanned from "1—strongly disagree" to "5—strongly agree".

According to the students' evaluations, the implementation of BL, presented in Table 4, activities was interesting and helped them feel competent. The means are slightly lower (but still above average), indicating the level of effort students put into these activities.

Table 4. Descriptive statistics for the student's motivation scale.

Perceived Motivation (Scales)	N	M	SD
Interest/Enjoyment	93	3.66	0.99
Perceived competence	93	3.66	1.02
Value/Usefulness	93	3.60	1.03
Effort/Importance	94	3.41	1.02

Note: Min. = 1; Max. = 5.

3.3. Procedure and Data Analysis

The research we present in this article was conducted as part of a project that introduced BL in eight VET schools in Slovenia that were selected through a public tender. Two or three teachers from each school received training in the BL format, which equipped them with the skills and knowledge to plan and implement BL in their courses. During a training session, teachers also created a BL design that was implemented in their courses from April to June 2023. In June, all students who had participated in the BL pilots were invited to complete a 10 min anonymous online survey distributed by the teachers. Data analysis was performed using the SPSS 27 software package.

4. Results

4.1. Teaching Approaches and Perceived Workload

The correlation analysis in Table 5 provides a comprehensive overview of how different teaching methods relate to different aspects of students' perceived workload during BL.

Table 5. Correlation of teaching approaches with students' perceived workload.

Teaching Approaches	MD	TD	EFF	FRU
Live online sessions	0.28 **	0.19	0.22 *	0.25 *
Instructional videos	0.05	−0.07	0.21 *	0.24 *
Live presentations or talks by experts	0.33 ***	0.24 *	0.22 *	0.24 *
Group projects or presentations online	0.06	0.07	0.08	0.10
Students working in small groups	0.04	0.22 *	0.05	0.00
Frequent quizzes or assignments	0.18	0.30 ***	0.13	−0.03
Activities including VR or AR technology	0.33 ***	0.22 *	0.21 *	0.11
Activities including interactive video	0.11	0.00	0.16	0.07
Online materials that enhance professional skills	0.19	0.29 **	0.09	−0.03
Online feedback or guidance from the teacher	0.06	0.17	−0.03	−0.07

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; MD = Mental Demand, TD = Temporal Demand, EFF = Effort, FRU = Frustration.

According to Table 5, the online live sessions displayed moderate positive correlations with mental demand ($r = 0.28$, $p < 0.01$), effort ($r = 0.22$, $p < 0.05$), and frustration ($r = 0.25$, $p < 0.05$). This indicates that engaging in live sessions may potentially be related to increasing students' cognitive load, effort, and resulting frustration during teaching and learning activities. On the other hand, prerecorded presentations or instructional videos exhibited a noteworthy positive correlation with effort ($r = 0.21$, $p < 0.05$) and frustration ($r = 0.24$, $p < 0.05$), thus demonstrating that this method can be connected to more effort required to complete the task, but also the frustration experienced.

When it comes to presentations by the teacher or field experts, there was a moderately strong correlation with "mental demand" ($r = 0.33$, $p < 0.001$) and moderate correlation with "temporal demand" ($r = 0.24$, $p < 0.05$) and "frustration" ($r = 0.24$, $p < 0.05$). A similar trend emerged when examining activities utilizing virtual reality (VR) or augmented reality (AR) technology—akin to expert talks. These activities exhibited a noteworthy correlation with mental demand ($r = 0.33$, $p < 0.001$). The correlations associated with alternative teaching approaches were comparatively weaker and generally inconsequential.

4.2. Teaching Approaches and Student Learning

Results in Table 6 illustrates the correlation between the different teaching approaches and their correlations with various facets of student learning in VET.

Several trends emerged from these data. Live online sessions had no significant correlation with modes of learning. Pre-recorded instructional videos showed a statistically significant moderate correlation with applying ($r = 0.23$, $p < 0.05$) and creating ($r = 0.21$, $p < 0.05$). Presentations by external experts had weak positive correlations in all learning domains, with the strongest correlation found with creating ($r = 0.22$). Group projects or online presentations conducted by students were significantly correlated with all learning

domains, with a particularly strong positive correlation with applying students' knowledge ($r = 0.37$, $p < 0.001$) and a moderate correlation with memorizing ($r = 0.26$, $p < 0.05$), analyzing ($r = 0.26$, $p < 0.05$), and evaluating ($r = 0.23$, $p < 0.05$).

Table 6. Correlation of teaching approaches with types of student learning.

Teaching Approaches	Memorizing	Applying	Analyzing	Evaluating	Creating
Live online sessions	0.10	−0.03	0.00	0.19	−0.05
Instructional videos	00.09	0.23 *	0.04	0.11	0.21 *
Presentations or talks by experts	0.09	0.08	0.16	0.18	0.22
Group projects or presentations online	0.26 *	0.37 ***	0.26 *	0.23 *	0.16
Students working in small groups	0.19	0.17	0.19	0.29 **	0.16
Frequent quizzes or assignments	0.31 ***	0.24 **	0.22 *	0.35 ***	0.35 ***
Activities including VR or AR technology	0.02	0.14	0.12	0.11	0.13
Activities including interactive video	0.27 **	0.27 **	0.15	0.22 *	0.29 **
Online materials to develop skills	0.28 **	0.22 *	0.16	0.20	0.32 ***
Teacher's online feedback or guidance	0.33 ***	0.29 **	0.07	0.24 *	0.28 **

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Formative assessments in the form of quizzes or assignments also had a significant positive correlation with all learning domains and were particularly strong in applying ($r = 0.24$, $p < 0.01$), evaluating ($r = 0.35$, $p < 0.001$), and creating ($r = 0.35$, $p < 0.001$). In contrast, activities involving VR or AR technology yielded only weak positive correlations across all learning domains. Interactive videos showed moderate and significant correlations with memorizing ($r = 0.27$, $p < 0.01$), applying ($r = 0.27$, $p < 0.01$), and creating ($r = 0.29$, $p < 0.01$). Use of online materials for professional skill development correlated significantly with memorizing ($r = 0.28$, $p < 0.01$), applying ($r = 0.22$, $p < 0.05$), and creating ($r = 0.32$, $p < 0.001$). Teacher's feedback and guidance seemed important since they showed a strong correlation with memorizing ($r = 0.33$, $p < 0.001$), applying ($r = 0.29$, $p < 0.01$), creating ($r = 0.28$, $p < 0.01$), and evaluating ($r = 0.24$, $p < 0.05$).

Creating interactive videos showed moderate and significant correlations with memorizing ($r = 0.27$, $p < 0.01$), applying what was learned ($r = 0.27$, $p < 0.01$), and creating ($r = 0.29$, $p < 0.01$). The use of online materials for professional skill development correlated significantly with memorizing ($r = 0.28$, $p < 0.01$), applying ($r = 0.22$, $p < 0.05$), and creating ($r = 0.32$, $p < 0.001$). The approach with online feedback or teacher guidance had the greatest correlation and showed a strong correlation with memorizing ($r = 0.33$, $p < 0.001$), applying ($r = 0.29$, $p < 0.01$), creating ($r = 0.28$, $p < 0.01$), and evaluating ($r = 0.24$, $p < 0.05$).

4.3. Teaching Approaches and Student Motivation

Table 7 illustrates the correlations between different teaching approaches and four dimensions of student motivation: interest/enjoyment, effort/importance, perceived competence, and value/usefulness.

Amongst the teaching approaches "online feedback or guidance from the teacher" consistently showed a strong correlation across all four dimensions. The correlation between this approach and interest ($r = 0.38$, $p < 0.001$), effort ($r = 0.24$, $p < 0.01$), perceived competence ($r = 0.39$, $p < 0.001$) and value ($r = 0.41$, $p < 0.001$) were all statistically significant and strong. Activities such as "interactive video" and "online materials for developing professional skills" also displayed a relatively consistent and moderate to strong correlation with motivation. For "interactive video activities", the correlation coefficients were as follows: interest ($r = 0.33$, $p < 0.001$), effort ($r = 0.23$, $p < 0.01$), perceived competence ($r = 0.27$, $p < 0.001$), and value ($r = 0.24$, $p < 0.01$). Similarly, for "online materials for professional skills development", the coefficients were: interest ($r = 0.27$, $p < 0.001$), effort ($r = 0.20$, $p < 0.05$), perceived competence ($r = 0.22$, $p < 0.01$), and value ($r = 0.33$, $p < 0.001$). Moreover, "group projects or presentations online" and "students working in small groups" had strong positive correlations with perceived competence (both $r = 0.28$, $p < 0.001$).

Table 7. Correlation of teaching approaches with motivation.

Teaching Approaches	IMI-I	IMI-E	IMI-C	IMI-V
Live online sessions	0.16	0.23 **	0.17	0.08
Instructional videos	0.20 *	0.00	0.10	0.23 **
Presentations or talks by experts	0.08	0.10	0.09	0.17
Group projects or presentations online	0.23 **	0.26 **	0.28 ***	0.12
Students working in small groups	0.24 **	0.17	0.28 ***	0.17
Frequent quizzes or assignments	0.15	0.21 *	0.31 ***	0.24 **
Activities including VR or AR technology	0.21 *	0.23 **	0.24 **	0.23 **
Activities including interactive video	0.33 ***	0.23 **	0.27 ***	0.24 **
Online materials to develop professional skills	0.27 ***	0.20 *	0.22 **	0.33 ***
Online feedback or guidance from the teacher	0.38 ***	0.24 **	0.39 ***	0.41 ***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; IMI-I = "Interest/Enjoyment", IMI-E = "Effort/Importance", IMI-C = "Perceived Competence", IMI-V = "Value/Usefulness".

"Group projects or presentations online" also had a moderate correlation with effort ($r = 0.26$, $p < 0.01$) and interest ($r = 0.23$, $p < 0.01$), indicating that this teaching approach encourages students to put in more effort. The three teaching methods "live sessions online", "instructional videos", and "presentations or talks by experts" showed minimal to limited correlation with the four dimensions of motivation. The correlation between "instructional videos" and effort was nonexistent; however, there was a moderate correlation between "instructional videos" and value ($r = 0.23$, $p < 0.01$), implying that students perceive value in this approach even if it does not necessarily generate effort or interest.

5. Discussion

Blended learning (BL) is an approach that exhibits strong applicability to vocational and technical education. Similarly to its implementation at various other educational levels, BL requires a fundamental shift in perspective toward students, who must be placed at the center of educational planning in conjunction with the intended learning objectives. Teaching approaches should be carefully selected, considering students' prior knowledge, individual interests, and the particular characteristics of the classroom. As part of our study, teachers received systematic guidance on planning and implementing BL, coupled with extensive pedagogical support. Despite the focus on teaching approaches, the focus of our study was on the students' perspectives to determine their experiences with the BL principles used. We wanted to find out if there were any correlations between the teaching approaches used, perceived student workload, different types of learning, and their motivation in the BL environment.

Our research shows that the way vocational students perceive their workload in a BL environment is influenced by various teaching approaches in distinct ways. We found that approaches such as live sessions, expert discussions, and the use of VR/AR technology appeared to be associated with significant cognitive load (mental demand), effort, and potential frustration, whereas other approaches, such as group work, frequent quizzes, and online professional skills courses were more likely to be related to time burden. Although time is of the essence [35], when planning, the teacher must be aware that the student's perception of workload is not synonymous with, but can be influenced to a small degree by, the amount of time spent studying. In addition to the time component, another important realization was that some activities are more strenuous for students, and this must be considered when planning learning activities [36–38]. Further research is needed to better understand these relationships and identify strategies to optimize teaching practices to reduce perceived workload while maintaining or improving educational outcomes.

We also examined the relationship between the chosen teaching approaches and the corresponding type of learning. We did this by utilizing Bloom's classification of learning objectives. The extent to which the learning objective is achieved can be influenced by teachers through the right choice of teaching approaches. Our research shows that active teaching methods such as online group projects, frequent quizzes or assignments, activities

with interactive videos, online materials to improve professional skills, and feedback from teachers through online channels are more strongly associated with higher forms of student learning (e.g., applying, analyzing, and evaluating) than other approaches. This finding is supported by previous studies [39–41]. Despite the appeal that the use of augmented reality (AR) and virtual reality (VR) can have in education, captivating both educators and students, it is important not to disregard the notable observation from the study that no statistically significant relationship was found between the use of AR and VR and student learning at higher levels.

Finally, we examined the relationship between teaching approaches and student motivation. Earlier research has emphasized the significance of teachers in determining the effectiveness of blended learning, such as the study conducted by Min and Yu [42] through their systematic review, wherein they found that instructor attributes like attitude, technology skills, and teaching style have considerable effects on students' achievement and motivation. The latter construct was analyzed in the context of self-determination theory using four different dimensions: interest, effort, perceived competence, and value [43]. The statistical analysis revealed various significant correlations, with one in particular being the significance of teacher feedback—all four motivational dimensions were strongly correlated with the frequency of feedback and teacher support during BL. The results suggest that feedback and instructor presence significantly influence both student engagement and learning during BL in online academic environments. This finding is consistent with similar studies examining the nature and frequency of feedback provided by instructors [44–46] and is particularly significant in our case because, as the descriptive statistics in Table 1 indicate, this activity was least present during the implementation of BL. Group projects, small group work, and ongoing assessments were significantly related to motivation, mainly through perceived competence. Interactive videos as learning materials were associated with more significant interest in the subject and a heightened sense of competence. Materials aimed at vocational skill acquisition were related to interest and perceived usefulness of the subject matter. Collaborative work has been shown to be an effective tool for increasing student motivation and perceived competence [47]. In addition, interactive multimedia content such as videos has been shown to increase student interest and engagement, supporting the idea that multimedia resources can promote feelings of increased competence [48]. Learning professional skills through hands-on materials is also consistent with the theoretical approach to adult learning that emphasizes the importance and application of learning in real-world situations [49]. The combination of collaboration, multimedia use, and professional development appears to reinforce observed patterns in motivation and perceived competence, despite possible differences in delivery methods and educational environments.

The overall results from our study confirm observations of many authors that teachers need to prepare the pedagogical design carefully enough before the actual implementation [50–53]. Hence, the planning phase for implementing BL holds significant importance. Therefore, when integrating BL, it is crucial to allocate ample time for teacher preparation and training. It would be a misstep to anticipate that teachers will adapt to the changes autonomously.

6. Conclusions

We conclude by pointing out some limitations of our study. The survey was conducted with a relatively small sample (106 students) selected in schools where BL was implemented. Considering that schools were selected to participate in the pilot project according to specific criteria, this may have had a crucial impact on both teachers' attitudes toward the work and students' attitudes toward the introduction of BL itself, which may have been higher in both groups than would have been the case if the survey had been conducted with a larger sample of students and had included students from schools where there may be different (lower) attitudes toward BL itself as well as different conditions for the introduction of this type of approach.

Although the study has weaknesses, it contributes to understanding the implementation of BL in vocational education. Once BL is fully integrated into the everyday teaching practices of all vocational education programs (VET), there will be a great opportunity to further explore its effectiveness and impact. In the future, it would be particularly beneficial to conduct research with a larger and more diverse group of participants. Including control groups in the study would allow for a more detailed investigation comparing different learning environments and approaches. Validating the results with different approaches, especially qualitative ones, would further deepen our understanding of the impact of BL. This comprehensive research can contribute to a deeper understanding of the issues surrounding BL and enable educators and policy makers to make well-informed decisions that improve the quality and effectiveness of VET education.

When discussing BL, it is important to understand that simply integrating technology into education does not automatically improve learning or foster innovation. The notion that BL is simply about adding more technology or moving live instruction to an online platform demonstrates a superficial understanding that fails to capture the potential for change. Rather, the true essence of BL lies in appropriately planning and integrating appropriate teaching approaches tailored to the content, context, and learners. Only when technological tools are aligned with innovative teaching strategies can BL truly transform education. This requires a profound rethinking of the way we teach and learn. We need to move away from traditional approaches and develop learning experiences that make the most of both traditional and digital resources. It is this combination of different elements, rather than technology alone, that will enable BL to bring about meaningful change and open new possibilities in the ever-evolving field of education.

So, teacher, when thinking and planning blended learning, think twice.

Author Contributions: Conceptualization, D.M.R. and M.R.; methodology, D.M.R. and M.R.; validation, D.M.R. and M.R.; formal analysis, M.R.; investigation, D.M.R. and M.R.; resources, D.M.R. and M.R.; data curation, M.R.; writing—original draft preparation, D.M.R.; writing—review and editing, D.M.R. and M.R.; visualization, D.M.R. and M.R.; supervision, D.M.R.; project administration, D.M.R. and M.R.; funding acquisition, D.M.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by EEA Grants, grant number ATP213.

Institutional Review Board Statement: In Slovenia, educational research that uses opinion polls is not subject to the approval of an ethics committee. However, as researchers, we are committed to upholding the highest ethical standards in our work. The data for this study was collected through an anonymous online survey, which was completed voluntarily and kept confidential.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data will be made available upon request.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

References

1. Statistical Office of the Republic of Slovenia. Upper Secondary Education 2023. Available online: https://www.stat.si/StatWeb/en/Field/Index/9/101 (accessed on 12 August 2023).
2. Christensen, C.M.; Raynor, M.E. *The Innovator's Solution: Creating and Sustaining Successful Growth*; Harvard Business Review Press: Boston, MA, USA, 2003; ISBN 978-1-4221-9657-1.
3. Cobo-Rendón, R.; Bruna Jofre, C.; Lobos, K.; Cisternas San Martin, N.; Guzman, E. Return to University Classrooms with Blended Learning: A Possible Post-Pandemic COVID-19 Scenario. *Front. Educ.* **2022**, 7. [CrossRef]
4. Sharma, L.; Shree, S. Exploring the Online and Blended Modes of Learning for Post-COVID-19: A Study of Higher Education Institutions. *Educ. Sci.* **2023**, *13*, 142. [CrossRef]
5. Singh, J.; Steele, K.; Singh, L. Combining the Best of Online and Face-to-Face Learning: Hybrid and Blended Learning Approach for COVID-19, Post Vaccine, & Post-Pandemic World. *J. Educ. Technol. Syst.* **2021**, *50*, 140–171. [CrossRef]

6. Graham, C.R. Blended Learning Systems: Definition, Current Trends, and Future Directions. In *The Handbook of Blended Learning: Global Perspectives, Local Designs*; Bonk, C.J., Graham, C.R., Eds.; Pfeiffer Publishing: San Francisco, CA, USA, 2006; pp. 3–21. ISBN 978-0-7879-7758-0.
7. Garrison, D.R.; Kanuka, H. Blended Learning: Uncovering Its Transformative Potential in Higher Education. *Internet High. Educ.* **2004**, *7*, 95–105. [CrossRef]
8. Bruggeman, B.; Tondeur, J.; Struyven, K.; Pynoo, B.; Garone, A.; Vanslambrouck, S. Experts Speaking: Crucial Teacher Attributes for Implementing Blended Learning in Higher Education. *Internet High. Educ.* **2021**, *48*, 100772. [CrossRef]
9. Horn, M.B.; Staker, H. *Blended: Using Disruptive Innovation to Improve Schools*; Jossey-Bass: San Francisco, CA, USA, 2015; ISBN 978-1-118-95515-4.
10. Rodríguez, J.M.M.; Rojo, A.S. On Blended Learning Flexibility: An Educational Approach. In *Blended Learning: Convergence between Technology and Pedagogy*; Martín-García, A.V., Ed.; Springer: Cham, Switzerland, 2020; pp. 21–44.
11. Deschacht, N.; Goeman, K. The Effect of Blended Learning on Course Persistence and Performance of Adult Learners: A Difference-in-Differences Analysis. *Comput. Educ.* **2015**, *87*, 83–89. [CrossRef]
12. Harris, C.W.; Tan, H. You Can Teach Old Dogs New Clicks–The Importance of Teacher Use of Online Content in a Blended Higher Education Course in Singapore. *J. Appl. Learn. Teach.* **2020**, *3*, 59–70. [CrossRef]
13. Sahni, J. Does Blended Learning Enhance Student Engagement? Evidence from Higher Education. *J. E-Learn. High. Educ.* **2019**, *2019*, 121518. [CrossRef]
14. Latchem, C. *Using ICTs and Blended Learning in Transforming TVET*; UNESCO: Paris, France, 2017; ISBN 978-92-3-100212-0.
15. Agusta, A.R.; Pratiwi, D.A. Developing Blended Learning Model MARTAPURA to Improve Soft and Social Skills. In Proceedings of the 4th Sriwijaya University Learning and Education International Conference (SULE-IC 2020), Palembang, South Africa, 24–26 October 2020; Atlantis Press: Amsterdam, The Netherlands, 2021; pp. 294–302.
16. Pouzergues, P. Multilevel Courses and Blended Learning–Tools for Pedagogical Differentiation and Promoting Student Automony. *Eur. J. Appl. Linguist.* **2022**, *10*, 272–283. [CrossRef]
17. Simons, J.; Beaumont, K.; Holland, L. What Factors Promote Student Resilience on a Level 1 Distance Learning Module? *Open Learn. J. Open Distance E-Learn.* **2018**, *33*, 4–17. [CrossRef]
18. Kong, S.C. Developing Information Literacy and Critical Thinking Skills through Domain Knowledge Learning in Digital Classrooms: An Experience of Practicing Flipped Classroom Strategy. *Comput. Educ.* **2014**, *78*, 160–173. [CrossRef]
19. Kuo, Y.C.; Kuo, Y.T. Online Learning and Dropout Prevention in K-12 Education. In *Proceedings of the SITE 2015—Society for Information Technology & Teacher Education International Conference*; Association for the Advancement of Computing in Education (AACE): Waynesville, NC, USA, 2015; pp. 364–373.
20. Roman, I.; Vac, C.; Roman, A.R. The Role of the Life Sciences Learning Center of USAMV Cluj-Napoca in Dropout Prevention. *J. Educ. Sci. Psychol.* **2019**, *9*, 81–89.
21. Alfieri, L.; Brooks, P.J.; Aldrich, N.J.; Tenenbaum, H.R. Does Discovery-Based Instruction Enhance Learning? *J. Educ. Psychol.* **2011**, *103*, 1–18. [CrossRef]
22. Cornelius-White, J. Learner-Centered Teacher-Student Relationships Are Effective: A Meta-Analysis. *Rev. Educ. Res.* **2007**, *77*, 113–143. [CrossRef]
23. López-Pérez, M.V.; Pérez-López, M.C.; Rodríguez-Ariza, L. Blended Learning in Higher Education: Students' Perceptions and Their Relation to Outcomes. *Comput. Educ.* **2011**, *56*, 818–826. [CrossRef]
24. Means, B.; Toyama, Y.; Murphy, R.; Bakia, M.; Jones, K. *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*; US Department of Education; Office of Planning, Evaluation, and Policy Development Policy and Program Studies Service: Washington, DC, USA, 2009. Available online: https://files.eric.ed.gov/fulltext/ED505824.pdf (accessed on 17 August 2023).
25. Graham, C.R. Emerging Practice and Research in Blended Learning. In *Handbook of Distance Education*; Moore, M.G., Ed.; Routledge: New York, NY, USA, 2013; pp. 333–350. ISBN 978-0-415-89764-8.
26. Halverson, L.R.; Graham, C.R.; Spring, K.J.; Drysdale, J.S.; Henrie, C.R. A Thematic Analysis of the Most Highly Cited Scholarship in the First Decade of Blended Learning Research. *Internet High. Educ.* **2014**, *20*, 20–34. [CrossRef]
27. Ibrahim, S.; Ismail, F. University ESL Instructors' Reflections on the Use of Blended Learning in Their Classrooms. *TESOL Technol. Stud.* **2021**, *2*, 25–35. [CrossRef]
28. El Sadik, A.; Al Abdulmonem, W. Improvement in Student Performance and Perceptions through a Flipped Anatomy Classroom: Shifting from Passive Traditional to Active Blended Learning. *Anat. Sci. Educ.* **2021**, *14*, 482–490. [CrossRef]
29. Drent, M.; Meelissen, M. Which Factors Obstruct or Stimulate Teacher Educators to Use ICT Innovatively? *Comput. Educ.* **2008**, *51*, 187–199. [CrossRef]
30. Napier, N.P.; Dekhane, S.; Smith, S. Transitioning to Blended Learning: Understanding Student and Faculty Perceptions. *Online Learn.* **2011**, *15*, 20–32. [CrossRef]
31. Dorofeev, S.; Grant, P. *Statistics for Real-Life Sample Surveys: Non-Simple-Random Samples and Weighted Data*; Cambridge University Press: Cambridge, UK; New York, NY, USA, 2006; ISBN 978-0-521-85803-8.
32. Hart, S.G. Nasa-Task Load Index (NASA-TLX); 20 Years Later. *Hum. Fac. Erg. Soc. P.* **2006**, *50*, 904–908. [CrossRef]
33. Anderson, L.W.; Krathwohl, D.R. (Eds.) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*; Longman: New York, NY, USA, 2001; ISBN 978-0-321-08405-7.

34. McAuley, E.; Duncan, T.; Tammen, V.V. Psychometric Properties of the Intrinsic Motivation Inventory in a Competitive Sport Setting: A Confirmatory Factor Analysis. *Res. Q. Exerc. Sport* **1989**, *60*, 48–58. [CrossRef] [PubMed]
35. Kyndt, E.; Berghmans, I.; Dochy, F.; Bulckens, L. 'Time Is Not Enough.' Workload in Higher Education: A Student Perspective. *High. Educ. Res. Dev.* **2014**, *33*, 684–698. [CrossRef]
36. Baba, K.; Cheimanoff, N.; El Faddouli, N. A Comparative Study of Active and Passive Learning Approaches in Hybrid Learning, Undergraduate, Educational Programs. In *Intelligent Computing*; Arai, K., Kapoor, S., Bhatia, R., Eds.; Advances in Intelligent Systems and Computing; Springer International Publishing: Cham, Switzerland, 2020; pp. 715–725, ISBN 978-3-030-52248-3.
37. Kyndt, E.; Dochy, F.; Struyven, K.; Cascallar, E. The Direct and Indirect Effect of Motivation for Learning on Students' Approaches to Learning through the Perceptions of Workload and Task Complexity. *High. Educ. Res. Dev.* **2011**, *30*, 135–150. [CrossRef]
38. Kember, D. Interpreting Student Workload and the Factors Which Shape Students' Perceptions of Their Workload. *Stud. High. Educ.* **2004**, *29*, 165–184. [CrossRef]
39. Abrami, P.C.; Bernard, R.M.; Borokhovski, E.; Waddington, D.I.; Wade, C.A.; Persson, T. Strategies for Teaching Students to Think Critically: A Meta-Analysis. *Rev. Educ. Res.* **2015**, *85*, 275–314. [CrossRef]
40. Kearns, L.R. The Experience of Teaching Online and Its Impact on Faculty Innovation across Delivery Methods. *Internet High. Educ.* **2016**, *31*, 71–78. [CrossRef]
41. Khan, A.A.; Egbue, O.; Palkie, B.; Madden, J. Active Learning: Engaging Students to Maximize Learning in an Online Course. *Electron. J. E-Learn.* **2017**, *15*, 107–115.
42. Min, W.; Yu, Z. A Systematic Review of Critical Success Factors in Blended Learning. *Educ. Sci.* **2023**, *13*, 469. [CrossRef]
43. Deci, E.L.; Ryan, R.M. Self-Determination Theory. In *International Encyclopedia of the Social & Behavioral Sciences*, 2nd ed.; Wright, J.D., Ed.; Elsevier: Oxford, UK, 2015; pp. 486–491, ISBN 978-0-08-097087-5.
44. Erbilgin, E.; Robinson, J.M.; Jarrah, A.M.; Johnson, J.D.; Gningue, S.M. Exploring the Type and Quality of Peer Feedback in a Graduate-Level Blended Course. *Educ. Sci.* **2023**, *13*, 548. [CrossRef]
45. Jensen, L.X.; Bearman, M.; Boud, D. Understanding Feedback in Online Learning–A Critical Review and Metaphor Analysis. *Comput. Educ.* **2021**, *173*, 104271. [CrossRef]
46. Tanis, C.J. The Seven Principles of Online Learning: Feedback from Faculty and Alumni on Its Importance for Teaching and Learning. *Res. Learn. Technol.* **2020**, *28*. [CrossRef]
47. Johnson, D.W.; Johnson, R.T. Making Cooperative Learning Work. *Theory Pract.* **1999**, *38*, 67–73. [CrossRef]
48. Mayer, R. *Multimedia Learning*, 3rd ed.; Cambridge University Press: Cambridge, UK, 2020.
49. Roberts, L.W. Research in the Real World: Improving Adult Learners Web Search and Evaluation Skills through Motivational Design and Problem-Based Learning. *Coll. Res. Lib.* **2017**, *78*, 527–551. [CrossRef]
50. Bazelais, P.; Doleck, T. Blended Learning and Traditional Learning: A Comparative Study of College Mechanics Courses. *Educ. Inf. Technol.* **2018**, *23*, 2889–2900. [CrossRef]
51. Inal, M.; Korkmaz, Ö. The Effect of Web Based Blended Learning on Students' Academic Achievement and Attitudes towards English Course. *Educ. Inf. Technol.* **2019**, *24*, 2603–2619. [CrossRef]
52. Spanjers, I.A.E.; Könings, K.D.; Leppink, J.; Verstegen, D.M.L.; de Jong, N.; Czabanowska, K.; van Merriënboer, J.J.G. The Promised Land of Blended Learning: Quizzes as a Moderator. *Educ. Res. Rev.* **2015**, *15*, 59–74. [CrossRef]
53. Ustun, A.B.; Tracey, M.W. An Effective Way of Designing Blended Learning: A Three Phase Design-Based Research Approach. *Educ. Inf. Technol.* **2019**, *25*, 1529–1552. [CrossRef]