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## Article

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# Students' Thriving and Well-Being in Online Learning Environments in Vocational Education and Training

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## Abstract

**Context:** Recent research on students' experiences with the quality of online learning during the COVID-19 pandemic has increased the challenge to the development of online learning. During the pandemic, anxiety, depression, and fatigue occurred in online studies, which also weakened students' well-being. In this quantitative study, we examined how students thrive in synchronous and asynchronous online implementations. The goal of the research was to support students' well-being in online studies; therefore, the study uses the PERMA well-being theory.

**Approach:** Finnish vocational education and training students (N = 363) participated in the study and answered the questions on positive emotions, engagement, relationships, meaning, and accomplishment from both asynchronous and synchronous online delivery perspectives using a questionnaire.

**Findings:** This study highlighted the importance of the teacher's online learning facilitation skills and task design skills, and the emotions generated in an online course. Based on the results, the respondents were divided into three student profiles: (1) Students thriving in online courses in general; (2) Students thriving, especially in asynchronous online courses; and (3) Students not thriving in online courses in general.

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**Conclusions:** According to the findings, students need different options for completing online courses. The role of the teacher in creating a positive and supportive atmosphere, fostering relationships, and creating clear work-related and versatile tasks is of great importance in the generation of emotions, whether it is an asynchronous or synchronous online implementation.

**Keywords:** PERMA, Synchronous, Asynchronous, Online Learning, Well-Being, VET, Vocational Education and Training

## 1 Introduction

During the COVID-19 pandemic, vocational education and training (VET) students studied online, and most of the courses moved to distance learning. In vocational education, during the pandemic, VET students experienced stress, anxiety, depression, and fatigue in online learning, which are related to VET students' weakened online learning motivation (Dinc, 2022; Dirzyte et al., 2021; Jojoa et al., 2021). Research shows that online learning among VET students did not increase their efficiency in studies, but they believed that it could motivate and facilitate learning (Belaya, 2018; Syauqi et al., 2020). According to Belaya's (2018) research, online learning in VET is perceived as an opportunity to reduce study time and school travel, but studying online also requires self-discipline and media literacy skills, and can even reduce the development of social skills.

The aim of this study was to investigate how students perceive synchronous and asynchronous online implementations in VET. This study did not focus on any specific pedagogical online implementations but was interested in students' experiences in general about both synchronous and asynchronous courses during their education. In this study, asynchronous online course implementation refers to online courses located on the Internet where students have been able to complete their studies regardless of time and place. Synchronous online course implementation has offered live lectures and real-time social interaction between teachers and students (Poláková & Klímová, 2021). This research is to support students' well-being in online studies. In this way, we can improve the quality of online teaching in VET but also increase the renewal of continuous learning and the development of different learning models, which is one of the priorities of the Finnish Government Program (Finnish Government, 2019).

In Finland, the compulsory education covers basic education and secondary education. After basic education, a student can choose whether to complete general upper secondary education or VET, or a combination of both. Both upper secondary level education forms are free and provided mainly by municipalities in Finland. After graduation, the student is eligible to apply for university studies (Ministry of Education and Culture, 2017). In VET,

the student population is heterogeneous; it consists of young people who have completed basic education and those without a vocation-oriented degree, as well as adults who are already working and need qualifications. In Finnish VET education, a personal competence development plan (PCDP) is drawn up for the student in which the identification of already acquired competences and a personalized path to graduation play an important role (Ministry of Education and Culture, 2019). In Finland, private individuals can acquire basic VET as well as professional and specialized vocational qualifications (Organisation for Economic Co-operation and Development [OECD], 2020). VET studies are organized in different learning environments, such as at school, in workplaces, and as online studies.

The goal of VET is to produce experts for working life. Today, most new jobs require high generic skills, including metacognitive and digital skills. It is not enough to develop online teaching in the school environment, but the skills development system must adapt to a rapidly changing labor market. Skills shortages in the Finnish labor market are increasing, and concerns about the supply of higher-level skills are growing due to demographic changes (OECD, 2020).

## 2 Theoretical Background

This study is based on the positive psychological well-being theory (PERMA) structured by Martin Seligman (2011). The word PERMA comes from the elements of Positive emotions, Engagement, Relationships, Meaning, and Accomplishment. Among the well-being theories, PERMA has been used in several recent studies of teaching and learning integrated in the education environment and has been found to be a reliable theory (Hoare et al., 2017; Morgan & Simmons, 2021). Theoretical and empirical research has continued to support the use of PERMA in educational settings (Norrish et al., 2013; Oades et al., 2011; Turner & Thielking, 2019). For example, in Finland, Leskisenoja and Uusiautti (2017) have used the theory in studying school happiness. PERMA has also been used in studies in which students' well-being in the online environments has been investigated (Lou & Xu, 2022; Magare et al., 2022).

In VET, studying has traditionally been very practice oriented. However, the use of online environments in learning is the direction of the future (Belaya, 2018; Vilppola et al., 2022). Since PERMA is not tied to any particular environment but provides a framework for analyzing the elements of well-being in various settings, it was considered a suitable theory for this research. In addition, there are many theories about teaching and learning, but they focus on certain aspects of well-being, such as pedagogical well-being or emotions in teaching (Pyhälä et al., 2010; Zembylas, 2007) or student motivation and self-efficacy (Cents-Boonstra et al., 2018). The experience of online education is a very wholistic to students (Kim et al., 2021),

which led us to choose a theoretical framework that would allow us to analyze the student experience as widely as possible to gain a deep understanding of the phenomenon.

The PERMA theory of well-being is built on five elements (Seligman, 2011): *Positive emotions* are the cornerstone of well-being and have a positive impact on our lives, especially on our ability to function. The positive feelings experienced by students affect the students' positive behavior and increase interpersonal relationships and school success. Creating a positive atmosphere is important, as it also increases students' well-being, gratitude, and fun at school (Norrish et al., 2013; Seligman, 2011).

*Engagement* refers to deep interest and immersion. When students are engaged in completing tasks, it increases their well-being and learning and motivates them to achieve important goals (Norrish et al., 2013). In the context of engagement, we talk about Csikszentmihályi's Flow Theory. In the flow state, students often lose their sense of time and place and are not aware of their feelings (Jackson & Csikszentmihályi, 2000; Seligman, 2011).

Social support and *relationships* are seen as prerequisites for well-being. Happy people are good at managing their relationships (Leskisenoja, 2017; Seligman, 2011). In an online environment, there can be a variety of relationships between student and teacher and/or student and student. Students' well-being can be increased by motivating them to find their own *meaning* in life. When people feel that life is worth living, they can cope with stressful situations and adversity (Leskisenoja, 2017; Seligman, 2011).

Seligman (2011) also mentions *accomplishment*, which is the last element. The student achieves meaningful results and can work toward valued goals. The student has the motivation to persevere despite challenges and accumulates skills and success in achieving goals in important areas of life (Norrish et al., 2013). According to Seligman (2011), accomplishment is a meaningful and independent component of well-being. Students could overcome themselves and achieve the optimistic goals they set, as well as gain the perseverance to overcome future adversity.

### 3 Method

The purpose of this study was to investigate Finnish VET students' perceptions of various synchronous and asynchronous online courses in which they have participated during their education. The findings will help improve the quality of online teaching arrangements in VET and strengthen student learning and well-being in various online environments through better knowledge of their online study experiences.

The research questions set for this research were as follows:

1. How do VET students perceive synchronous and asynchronous online courses?
2. What kinds of student profiles can be found based on their thriving in synchronous and asynchronous online courses?

This was a survey study conducted among vocational education students in Finland (Check & Schutt, 2012). For the study, students were recruited through their education providers widely across Finland as follows: Finland was divided into five regions: Western Finland (42 education providers), Southern Finland (42 education providers), Eastern Finland (16 education providers), Kainuu and North Ostrobothnia (12 education providers), and Lapland (five education providers). Each region was drawn using an electronic lottery wheel by one education provider who participated in the study. The education provider shared an electronic link with the students through which they had the opportunity to answer the survey anonymously. In Finland, it is difficult to accurately determine the total number of vocational education students because the number varies. According to Finland's official database, Vipunen (2021), there were approximately 98,000 students in 2020.

The survey participants consisted of 363 VET students from 31 fields. The largest number of students were from the social and health care, ICT, electrical and automation, restaurant and catering, media, computing, and mechanical and production engineering sectors. Of the students, there were women (54.5%), men (36.4%), people of the opposite sex (3.6%), and 20 (5.5%) of the respondents did not want to tell their gender (Table 1). As the number of respondents of other genders and those who did not wish to disclose their gender is so small, we will not include their responses in this survey.

Most respondents were 15–18 years old and the least 26–30 years old (Table 1). Of the basic education respondents, most respondents had completed primary school, and few had completed a higher university degree. The highest number of students had completed less than one academic year, and the lowest number of students had completed more than three academic years.

Table 1: Respondents' Gender, Age Group, Undergraduate Education, and Years of Study Completed

	N	%
<b>Gender</b>		
Woman	198	54.5
Man	132	36.4
Other gender	13	3.6
I don't want to say	20	5.5
<b>Respondent age</b>		
15–18 years	174	47.9
19–25 years	52	14.3
26–30 years	24	6.6
31–40 years	43	11.8
41–64 years	70	19.3
<b>Basic education</b>		
Primary school	158	43.5
High school	34	9.4
Vocational degree	131	36.1
University of applied sciences degree	21	5.8
Higher university degree	10	2.8
Someone else	9	2.5
<b>Study period</b>		
Less than 1 academic year	159	43.8
Less than 2 academic years	132	36.4
Less than 3 academic years	53	14.6
More than 3 academic years	19	5.2
Total	363	100

The data were collected between November and December 2021 using the electronic questionnaire. The electronic questionnaire was pre-tested with three young test subjects, and the findings from the testing were used to finalize the form. The questions on the form were simplified, and it was decided that the form could also be used on mobile devices. Despite these changes, it should be remembered that respondents may misunderstand the answers or questions (Ball, 2019).

The survey included 52 questions in total. In the first phase of the analysis, the questions were categorized according to PERMA theory into questions about positive emotions in the online course (positive emotions), engagement in the online course (engagement), relationships in the online course (relationships), meaning in the online course (meaning), and accomplishment in the online course (accomplishment), ensuring that the questions would provide information about the target phenomenon and measure what they are intended to measure (Story & Tait, 2019). The questions were then formed into two similar

entities, both containing orienting text and 26 questions. In the synchronous online course entity, the respondent was asked to imagine a situation in which a student would have studied an online course at the same time as others. In the questions of the asynchronous online course set, the respondent was asked to imagine a situation in which a student would have completed an online course alone. Only Question 13 was different and directed toward either synchronous or asynchronous online implementation. The third section of the survey consisted of background variable questions.

We chose a Likert scale of 1–4 for the questions (1 = Describes me very poorly... 4 = Describes me very well) because we wanted the students to choose whether the questions describe them or not and not to choose the so-called neutral option. It is a known fact that respondents avoid the extreme response categories (Taherdoost, 2019). On the other hand, the more categories there are, the more accurate the measuring is (Taherdoost, 2019). However, the target group in this research were likely to answer via mobile phones, and the scale of four categories appeared thus a functional solution.

The sum variables were formed from the survey questions according to the five dimensions of the PERMA theory (positive emotions, engagement, relationships, meaning, and accomplishment). In total, there were five sum variables for asynchronous and five for synchronous questions.

When it came to the quality criteria, the sum variables based on the original PERMA dimensions were tested for reliability for both asynchronous and synchronous sum variables. The sum variables based on PERMA elements varied between .772 and .811, and the Cronbach's alpha value for all variables being .806 was considered good (Taherdoost, 2019).

The answers were entered into the SPSS program. All results were observed from the perspective of one variable by dividing the variable into frequency and percentage distributions (Frequencies). This provided the means and numbers of respondents. The data were also tested using an analysis of variance (ANOVA) test. The ANOVA test measured whether there was a statistically significant difference between the answers. For each question, a significance value (p-value) and F-test were obtained (Allen et al., 2008). The results of the F-test show whether the averages of the group are significantly different, and especially which averages differ significantly from each other. If the F-test is significant, the p-value is  $< .05$  (Allen et al., 2008; Smithson, 2000).

The two variables were also examined in relation to each other using cross-tabulation (crosstabs), which also allowed the number and mean of the results to be examined. A crosstabs test was done between the questions and the background variables to reveal the effects of different background variables on different questions. In the crosstabs test, the Chi-square test was also used, which was used to reveal the asymptotic significance (2-sided; i.e., the mutual p-value of the questions). Chi-square was used to analyze relationships between two categorical variables (Allen et al., 2008).



In the second phase of the analysis, the K-Means Cluster analysis was used, aiming to identify groups, in other words, student profiles whose members are similar to each other in certain characteristics and at the same time differ from the members of other groups. Grouping analysis does not tell us whether a particular grouping is "correct". The aim is to open up new research directions (Xu & Wunsch, 2009).

The questions were combined according to PERMA theory. The co-variables were not included when forming the groups. Each construct had five questions, which were combined into a single variable, for both asynchronous and synchronous course implementation. This gave 10 different variables. For this analysis, the scale was changed from 1 to 3 based on which three different groups emerged: a group with means above 2.5; above 2.0; and below 2.0 (Table 2):

Group 1: Students thriving in online courses in general (N = 171)

Group 2: Students thriving especially in asynchronous online courses (N = 159)

Group 3: Students not thriving in online courses in general (N = 33)

*Table 2: Student Profiles in Online Courses*

Question variables	Group 1 (N = 171)	Group 2 (N = 159)	Group 3 (N = 33)
Positive emotions synchronous	2.82	2.25	1.76
Positive emotions asynchronous	2.89	2.25	1.70
Engagement synchronous	2.43	2.25	2.21
Engagement asynchronous	2.48	2.28	2.15
Relationships synchronous	2.17	1.93	1.39
Relationships asynchronous	2.44	2.14	1.82
Meaning synchronous	2.82	2.19	1.64
Meaning asynchronous	2.82	2.26	1.76
Accomplishment synchronous	2.85	2.22	1.73
Accomplishment asynchronous	2.87	2.23	1.82
Mean	2.66	2.20	1.80

Next, we included the background factors of age, gender, basic education, and study period in the analysis. Combined with the aforementioned three groups, the student profiles appeared as follows (see Table 3):

Table 3: Background Variables of Student Profiles

Respondent age p. 0.068	15–18 years	19–25 years	26–30 years	31–40 years	41–65 years		Total
Group 1.	39.70% 69	46.20% 24	37.50% 9	60.50% 26	61.40% 43		47.1% 171
Group 2.	49.40% 86	42.30% 22	54.20% 13	34.90% 15	32.90% 23		43.8% 159
Group 3.	10.90% 19	11.50% 6	8.30% 2	4.70% 2	5.70% 4		9.1% 33
Gender p. 0.015	Woman	Man	Other gender	I do not want to say			
Group 1.	52.00% 103	42.40% 56	38.50% 5	35.00% 7			47.1% 171
Group 2.	41.90% 83	47.70% 63	46.20% 6	35.00% 7			43.8% 159
Group 3.	6.10% 12	9.80% 13	15.40% 2	30.00% 6			9.1% 33
Basic education p. 0.029	Elementary school	Upper secondary school	Vocational degree	University of applied sciences degree	Higher university degree	Something else	
Group 1.	38.60% 61	50.00% 17	49.60% 65	71.40% 15	70.00% 7	66.70% 6	47.1% 171
Group 2.	49.40% 78	44.10% 15	45.00% 59	19.00% 4	10.00% 1	22.20% 2	43.8% 159
Group 3.	12.00% 19	5.90% 2	5.30% 7	9.50% 2	20.00% 2	11.10% 1	9.1% 33
Study period p. 0.635	Less than 1 academic year	Less than 2 academic years	Less than 3 academic years	More than 3 academic years			
Group 1.	50.90% 81	45.50% 60	43.40% 23	36.80% 7			47.1% 171
Group 2.	42.10% 67	43.20% 57	49.10% 26	47.40% 9			43.8% 159
Group 3.	6.90% 11	11.40% 15	7.50% 4	15.80% 3			9.1% 33

## 4 Results

The results are introduced here by reporting the findings regarding each element of PERMA and comparing their significance in synchronous and asynchronous online course implementations. We subsequently introduced three student profiles that could be distinguished from the survey data.

#### 4.1 Positive Emotions

Based on the data, students perceived that it is very important that the teacher has a positive attitude toward them in the online course. Younger students ( $p = 0.002$ ) did not consider the teacher's positive attitude as important as older students did (Table 4). For women ( $p = 0.000$ ), the positive attitude of the teacher was more important than for men.

Table 4: Positive Emotions

Positive emotions		Means max- 4.00	Describes me very poorly	Describes me poorly	Describes me well	Describes me very well	F	Sig.
I like the online course where I can get feedback from the teacher	P1 synchronous	2.96	4.70 %	16.50 %	56.50 %	22.30 %	2.710	.030*
	PY1 asynchronous	3.22	2.20 %	8.80 %	53.40 %	35.50 %	4.665	.011*
I get the experience of success when studying in an online environment	P2 synchronous	2.70	8.80%	26.20%	51.00%	14.00%	.858	.490
	PY2 asynchronous	2.95	7.20 %	16.50 %	50.40 %	25.90 %	3.030	.018*
I want to receive feed- back about my success from other students	P3 synchronous	2.08	27.30 %	41.00 %	28.10 %	3.60 %	1.658	.159
	PY3 asynchronous	1.98	33.10 %	39.90 %	22.60 %	4.40 %	2.047	.087
The teacher's positive attitude toward the students in an online course is important	P4 synchronous	3.45	0.80 %	5.00 %	43.00 %	51.20 %	5.180	.000*
	PY4 asynchronous	3.35	1.90 %	5.50 %	48.50 %	44.10 %	3.095	.016*
I like the online course where I get feedback quickly	P5 synchronous	3.15	1.90 %	13.20 %	53.20 %	31.70 %	1.782	.132
	PY5 asynchronous	3.18	1.90 %	11.60 %	53.20 %	33.30 %	.349	.845

\*The mean difference is significant at the 0.05 level.

Students also found it significant that they can get feedback from the teacher (Table 4). Students also hoped to receive feedback quickly. In an asynchronous online course, 35.50% of students wanted to receive feedback, while in a synchronous course, the percentage is slightly lower at 22.30%. Those who had completed primary school in an online course ( $p = 0.000$ ) did not want feedback from the teacher as much as others. Respondents with a lower university degree (BA) wanted feedback the most. In addition, those who had studied in an asynchronous course for less than one academic year wanted

feedback from the teacher more than those who had studied for more than one academic year ( $p = 0.006$ ), and students over 31 years of age wanted feedback more than 15–18-year-olds ( $p = 0.014$ ).

## 4.2 Engagement

The results indicate that students wished that the online course would have different and versatile tasks. In a synchronous online course, 15- to 18-year-olds ( $p = 0.018$ ) did not consider versatile tasks as important as older students (Table 5).

Table 5: Engagement

Engagement		Means max- 4.00	Describes me very poorly	Describes me poorly	Describes me well	Describes me very well	F	Sig.
I like an online course with different and varied tasks	E6 synchronous	3.10	4.70 %	12.70 %	50.40 %	32.20 %	1.524	.195
	Ey6 asynchronous	3.17	2.20 %	10.70 %	54.50 %	32.50 %	3.997	.003*
I rarely get motivated to complete written assignments	E7 synchronous	2.58	11.60 %	35.80 %	35.80 %	16.80 %	4.101	.003*
	EY7 asynchronous	2.56	10.70 %	36.60 %	38.80 %	13.80 %	3.200	.013*
If the tasks given are too challenging, I get anxious easily	E8 synchronous	2.76	11.60 %	27.50 %	34.20 %	26.70 %	3.565	.007*
	EY8 asynchronous	2.79	9.40 %	28.10 %	36.60 %	25.90 %	2.669	.032*
If the tasks given are too easy, I get frustrated easily	E9 synchronous	2.17	22.00 %	46.60 %	23.40 %	8.00 %	3.925	.004*
	EY9 asynchronous	2.20	22.90 %	42.40 %	27.00 %	7.70 %	1.730	.143
I like an online course where I can choose tasks according to my own skills and strengths	E10 synchronous	3.13	3.30 %	11.60 %	54.00 %	31.10 %	2.816	.025*
	EY10 asynchronous	3.10	2.50 %	14.60 %	53.40 %	29.50 %	2.324	.056

\*The mean difference is significant at the 0.05 level.

Students also liked online courses where you can choose assignments according to your own skills and strengths (Table 5). If the assigned tasks were too challenging, the student became anxious quickly, and women ( $p = 0.000$ ) were anxious more easily than men. Students liked easier tasks more because they did not get frustrated so easily.

It was noteworthy in the research that students were rarely motivated to complete written tasks (Table 5). In a synchronous online course, primary school and university of applied sciences degree school graduates (p. 0.008) were less motivated to complete written assignments as high school or higher university school graduates. In addition, 15–18-year-olds (p. 0.017) were less motivated to complete written assignments as much as older students.

### 4.3 Relationships

Less than half of the students responded to the survey that they liked the online course, where you can do the assignments alone (Table 6). Women (p. 0.000) wanted to take online courses alone more than men. In an asynchronous online course, the students did not want to complete tasks together with other students. In asynchronous online courses (p. 0.000), students aged between 15–25 found it important to do tasks together with others. Men (p. 0.000) preferred doing tasks with others more than women. In a synchronous (p. 0.003) online course, 15–18-year-olds and 41–65-year-olds felt that it was important to be able to do tasks together with other students.

Table 6: Relationships

Positive emotions		Means max- 4.00	Describes me very poorly	Describes me poorly	Describes me well	Describes me very well	F	Sig.
I like an online course where I can work on tasks with other students	R11 synchronous	2.32	22.60 %	35.30 %	29.80 %	12.40 %	5.341	.000*
	RY11 asynchronous	2.18	28.90 %	34.20 %	27.30 %	9.60 %	3.922	.004*
It is important for me that the other students in the online course are familiar to me	R12 synchronous	2.57	14.60 %	30.60 %	38.00 %	16.80 %	14.623	.000*
	RY12 asynchronous	2.42	21.80 %	28.70 %	35.00 %	14.60 %	11.137	.000*
I think it is important that the cameras are open in class and that I can see the other participants	R13 synchronous	1.58	60.90 %	23.10 %	12.90 %	3.00 %	2.459	.045*
I like online courses where I can do the tasks on my own	RY13 asynchronous	3.30	1.40 %	11.80 %	42.40 %	44.40 %	2.959	.020*
I like online courses where you can discuss with other students	R14 synchronous	2.30	23.40 %	32.50 %	34.70 %	9.40 %	1.778	.133
	RY14 asynchronous	2.21	26.40 %	34.20 %	31.10 %	8.30 %	.553	.697

I like online courses where help is easily available	R15 synchronous	3.21	1.70 %	7.70 %	58.70 %	32.00 %	.508	.730
	RY15 asynchronous	3.21	1.40 %	9.10 %	56.70 %	32.80 %	.708	.587

\*The mean difference is significant at the 0.05 level.

Some of the students also hoped that the other students in the online course were already familiar to them (Table 6); 15–18-year-olds (p. 0.000) and primary school leavers (p. 0.006) wanted to study online with other students they already knew. For older students and those with a high school or university degree, this matter was less important.

#### 4.4 Meaning

The findings indicated that students wanted the tasks in the online course to be ones that would benefit them in their future work (Table 7). Students aged 15–18 (p. 0.002) did not perceive it as important as older students. Students wanted what they learned in the online course to be relevant to them. Younger students (p. 0.006), 15–18-year-olds did not consider it as important as older students. Similarly, women (p. 0.001) perceived the relevance of what they learned as more important than men did.

Table 7: Meaning

Meaning		Means max- 4.00	Describes me very poorly	Describes me poorly	Describes me well	Describes me very well	F	Sig.
I like online courses that are challenging, and I have to work hard to get good results	M16 synchronous	2.22	22.30 %	39.40 %	32.00 %	6.30 %	4.118	.003*
	MY16 asynchronous	2.37	16.80 %	36.90 %	39.10 %	7.20 %	6.790	.000*
I want the things learned in online courses to be meaningful to me	M17 synchronous	3.28	1.90 %	8.50 %	48.80 %	40.80 %	4.028	.003*
	ME7 asynchronous	3.29	1.70 %	7.20 %	51.20 %	39.90 %	5.930	.000*
I want the tasks in an online course to be useful for my future work	M18 synchronous	3.40	1.40 %	5.50 %	44.40 %	48.80 %	7.581	.000*
	MY18 asynchronous	3.34	0.80 %	8.80 %	46.30 %	44.10 %	5.707	.000*
I want to do something important with other students in an online course	M19 synchronous	2.51	14.30 %	32.80 %	40.20 %	12.70 %	1.315	.264
	MY19 asynchronous	2.47	17.60 %	28.70 %	42.40 %	11.30 %	1.478	.208

I want the online course to have tasks that I can do in different environments, such as in the workplace	M20 synchronous	2.83	9.90 %	21.80 %	44.10 %	24.20 %	3.512	.008*
	MY20 asynchronous	2.86	9.10 %	21.20 %	44.10 %	25.60 %	2.985	.019*

\*The mean difference is significant at the 0.05 level.

Students also wished that the online course had tasks that could be carried out in different environments, such as in the workplace (Table 7). Students aged 41–65 years (p. 0.050) in the asynchronous course wanted to do more course tasks in the workplace than students aged 15–18 years.

Less than 10% of students liked online courses that were challenging and required effort to achieve good results (Table 7). Students aged 15–18 years (p. 0.001) and students with primary and high school (p. 0.009) did not want to put effort into online courses to achieve good results. Students aged 41–65 years and students with a lower university of applied sciences degree prefer challenging tasks.

#### 4.5 Accomplishment

Students felt a sense of joy after completing a challenging task (Table 8). Students also liked online courses where there were clear goals, and the student knew what to do. For women (p. 0.000), clear goals were more important than for men. Some students were willing to set a clear schedule and deadlines for returning assignments. 31–40-year-olds (p. 0.003) liked to set themselves clear timetables and deadlines, while 15–30-year-olds did not find it so important. Some students were also very persistent in completing online assignments. Students aged 15–18 (p. 0.001) did not report being persistent in completing online assignments, while those aged 31–40 were the most persistent.

Table 8: Accomplishment

Accomplishment		Means max- 4.00	Describes me very poorly	Describes me poorly	Describes me well	Describes me very well	F	Sig.
I like an online course with clear objectives, and I know what I have to do	A21 synchronous	3.49	0.60 %	3.60 %	42.10 %	53.70 %	1.467	.212
	AY21 asynchronous	3.41	1.10 %	5.00 %	46.00 %	47.90 %	5.064	.001*
I want to be asked at the beginning of the online course what I already know about the subject being studied	A22 synchronous	2.68	6.30 %	34.20 %	44.40 %	15.20 %	1.865	.116
	AY22 asynchronous	2.76	8.00 %	25.90 %	47.90 %	18.20 %	3.342	.011*

I feel it is important to be able to evaluate my own performance	A23 synchronous	2.72	6.90 %	30.00 %	47.40 %	15.70 %	4.088	.003*
	AY23 asynchronous	2.75	7.20 %	28.40 %	46.80 %	17.60 %	1.963	.100
When I have completed a challenging task for myself. I feel a sense of joy	A24 synchronous	3.26	2.80 %	11.00 %	43.50 %	42.70 %	4.115	.003*
	AY24 asynchronous	3.19	3.30 %	12.10 %	46.80 %	37.70 %	4.265	.002*
I am persistent in completing online tasks	A25 synchronous	2.68	11.30 %	25.90 %	46.60 %	16.30 %	3.547	.007*
	AY25 asynchronous	2.73	10.20 %	24.20 %	48.20 %	17.40 %	2.612	.035*
I want to set myself a clear schedule and deadlines for returning tasks	A26 synchronous	2.65	11.00 %	32.00 %	38.30 %	18.70 %	3.330	.011*
	AY26 asynchronous	2.71	8.50 %	30.90 %	41.60 %	19.00 %	4.069	.003*

\*The mean difference is significant at the 0.05 level.

#### 4.6 Student Profiles

In this section, we present findings from the cluster analysis that resulted in three student groups according to their thriving in online courses (see Figure 1 and 2).

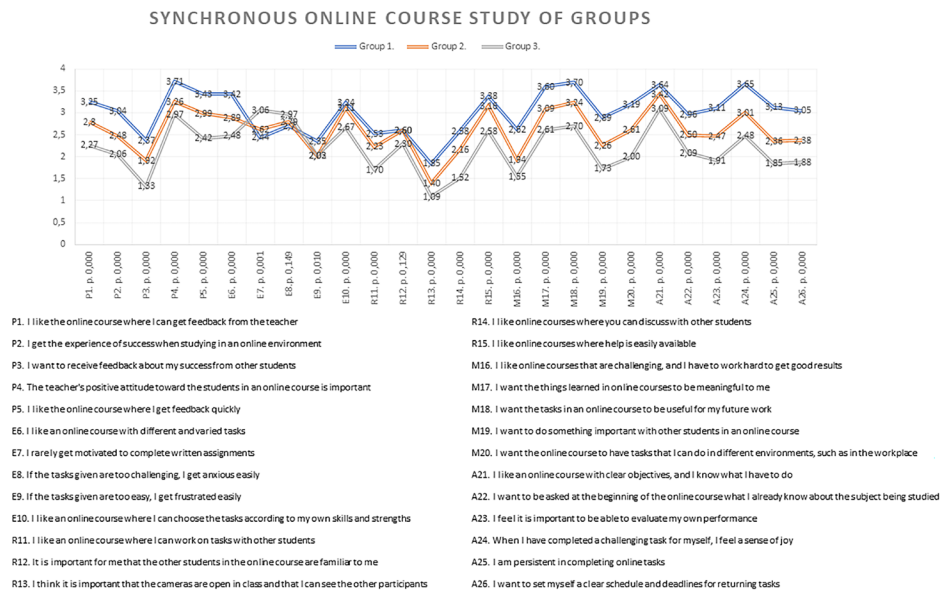


Figure 1: Synchronous Online Course Study of Groups



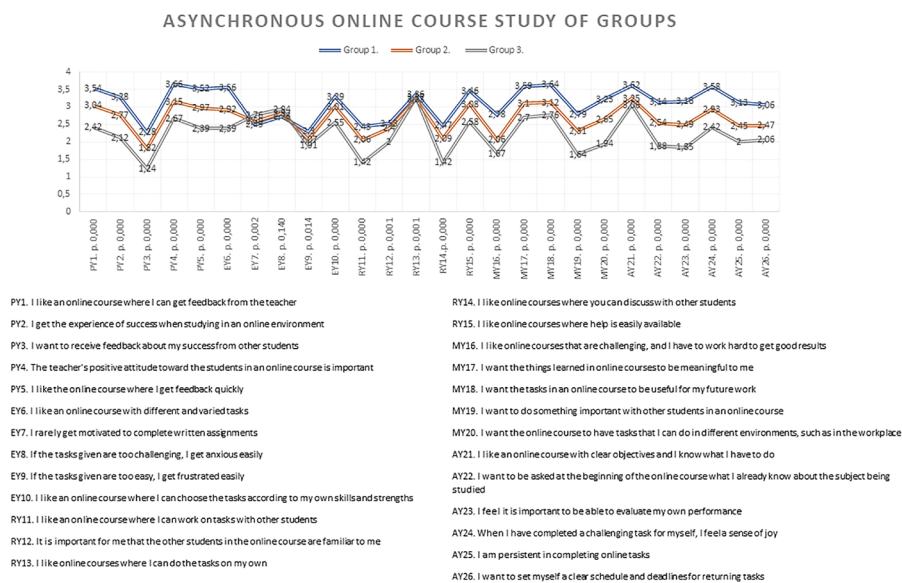


Figure 2: Asynchronous Online Course Study of Groups

#### 4.6.1 Students Thriving in Online Courses in General

Students thriving in online courses in general (Group 1) was the largest group of students ( $N = 171$ ). These students were optimistic about online courses, answering the questions with the highest mean score of 2.66/4, but they estimated the meaning of relationships and engagement to be lower than average responses. In the other three items, the answers were above average. When looking at synchronous and asynchronous course implementation, these students' responses differed slightly only in the relationships section, where synchronous was 2.17 and asynchronous 2.44.

In this profile, students were more likely to be over 30. There were slightly more women than men. This group included the fewest primary school graduates and the most university graduates, as well as the highest number of students with less than one year of academic study and the lowest number of students with more than three years of academic study.

Group 1 students felt that the teacher's positive attitude toward the students was vital. They reported that they succeeded better in asynchronous (43.30%) online courses than in synchronous (25.10%; Figure 1 and 2). Group 1 students also liked online courses where it was possible to get feedback from the teacher. This was more pronounced in asynchronous (56.70%) than in synchronous (36.30%) online courses.

Students in the first group liked an online course with clear goals (Figure 1 and 2). They also wanted to set a clear timetable and deadlines for returning the assignment. They found it important to be able to evaluate their own performance and also wanted to do assignments, talk with, and get feedback from other students.

These Group 1 students liked online courses with varied tasks more in the asynchronous (57.90%) than in the synchronous courses (49.70%; Figure 1 and 2). They liked courses where they could choose the tasks according to their own skills and strengths. Students were also more motivated to do writing tasks than students in the other profiles. Group 1 students were also significantly more persistent in completing online tasks and putting in more effort for challenging learning outcomes than students in other profiles.

Group 1 students wanted the tasks in the online course to be ones that will benefit them in their future work, that are relevant to what they are learning, and that can be completed in different environments. Students felt a sense of joy when they completed challenging tasks in synchronous (66.10%) slightly more than in asynchronous (59.10%; Figure 1 and 2) settings.

#### 4.6.2 Students Thriving, Especially in Asynchronous Online Courses

Students thriving especially in asynchronous online courses (Group 2) was the second largest group (N = 159). These students answered with an average of 2.20/4. The importance of relationships was clearly below average: 1.93 in synchronous and 2.14 in asynchronous course implementation. Otherwise, their answers were close to average. Group 2 comprised mostly 26–30-year-old students, slightly more men than women. In this student profile, elementary, high school, and vocational school graduates were the most numerous, and higher education graduates the least.

The students of Group 2 considered the teacher's positive attitude towards the students to be important, slightly more in the synchronous (35.20%) online course than in the asynchronous course (25.20%; Figure 1 and 2). Students also wanted feedback from the teacher in synchronous (35.50%) more than asynchronous (19.50%) course implementation, and they liked online courses with easy access to help.

The students in this profile did not experience success when studying online but liked asynchronous online courses slightly more (11.90%) than synchronous ones (4.40%; Figure 1 and 2). The desire to study asynchronously was also supported by the fact that Group 2 students wanted to do assignments independently. They did not like online courses where tasks were done and discussed with other students or feedback was received from other students and something important was done together.

Group 2 students were motivated to complete written assignments to the same extent as Group 1 students. They also liked different and varied tasks in synchronous (18.20%) courses more than in asynchronous (11.30%; Figure 1 and 2). They liked courses where you can

choose tasks according to your own skills and strengths. However, unlike students in Group 1, Group 2 students were not ready to put in the effort for challenging tasks to get good learning results, and they were not persistent in completing online assignments.

Similarly with Group 1 students, Group 2 students liked an online course that had clear goals and found it important that the tasks of the online course were ones that the students would benefit from in their future work (Figure 1 and 2). They also wanted the things learned in the online course to be relevant to them, and they enjoyed challenging tasks. Some of them also wanted to set clear timetables and deadlines for returning assignments.

### **4.6.3 Students Not Thriving in Online Courses in General**

The profile of students not thriving in online courses in general (Group 3), was the smallest group of students ( $N = 33$ ), and their average in this group was the lowest 1.80/4. These students were not motivated to complete online studies but were more committed to their studies than average. The students in the Group 3 were the youngest (15–25-year-olds), and in this group there were slightly more men than women. The highest number of students in this group had just left basic education, but also those having studied for more than three academic years compared to other groups.

Group 3 students did not report that they had the experience of success when studying in an online environment (Figure 1 and 2). They did not want to get feedback from the teacher or other students, but they liked an online course where help was easily available. For these students, the teacher's positive attitude was also more important in the synchronous online course (27.30%) than in the asynchronous one (18.20%).

Group 3 students did not like an online course where they discussed or did tasks with other students (Figure 1 and 2). Neither did these students like versatile tasks. Group 3 students were rarely motivated by writing tasks. If the given tasks were too challenging, students got anxious easily. Group 3 students were not ready to put in the effort for challenging tasks to achieve good learning results, nor were they persistent in completing online tasks.

Students also liked an online course that has clear goals and instructions (Figure 1 and 2). However, they did not want to set clear timetables and deadlines for returning tasks. These students liked tasks that were useful in their future work, and the things learned in the online course were important to students. They felt a sense of joy when they completed a challenging task.

## 5 Discussion

In this study, it was discovered that the VET students' answers regarding asynchronous and synchronous online courses did not differ significantly from each other.

*The first result was that the teacher's instructional skills* and the use of these skills formed an important part of the design and implementation of the online course. VET students considered it important that the teacher's attitude toward them was positive. For young students, positive feedback was less important than for older students. However, creating a positive atmosphere was important in both asynchronous and synchronous online courses. According to Seligman (2011), teachers should add positive emotional states to the learning experience because this combination can increase well-being. In a positive atmosphere, students become more interested and willing to explore new knowledge and become more engaged in their learning. The student's self-efficacy increases; the student is not afraid of failure, and thus studying motivates and produces pleasure (Fox Eades et al., 2014; Fredrickson, 2001; Zheing et al., 2020).

The teacher's positive attitude, enthusiasm, and dedication to the subject being taught is critical. Several studies report how helping students, the teacher's dedication and enthusiasm for studies, and high-quality communication with students increase student engagement, motivation to complete the course, and success in the course (Devlin & O'Shea, 2011; Jung & Lee, 2018). Palmer et al.'s (2009) study shows that the probability of staying in education was higher for those students who had a sense of belonging to school, because their satisfaction with their studies increased through teacher connections. The most important thing is to build a sense of belonging in the first academic year, as most decisions about dropping out are made during the first year (Christie et al., 2004).

The students also hoped to receive feedback from the teacher. In the asynchronous course, the importance of the feedback given by the teacher was even more emphasized, because students may do tasks without peer or teacher interaction. Older students also want feedback more than younger ones. The students also hoped for instant feedback. Previous research has found that teachers who answer students' questions and give feedback promptly have a positive effect on students' success and adjustment in education (Devlin & O'Shea, 2011). Those teachers who support students in the progress of their studies are also perceived as approachable. Thus, it is not only the quantity of interaction that is important, but also the quality (Hagenauer & Volet, 2014).

In terms of guidance, it is important that the teacher has set clear goals for the course and that the student knows what to do in the course. Older students were willing to set a clear timetable and deadlines for returning assignments. Clear objectives help students succeed and adapt to their studies (Devlin & O'Shea, 2011). A clear and coherent course structure also prevents students from experiencing distance (McBrien et al., 2009). Several studies

have shown that students respond more positively when they are given a clear direction in their studies, which forms the basis of a motivational factor (Hendry et al., 2006).

*The second result was that online assignments should be designed in a student-centered manner and use varied task designs.* This would allow the students to choose tasks according to their own skills and strengths, as this can increase their motivation and support their well-being (see also Lynch et al., 2011). When students experience a sense of choice, they get ownership of activities and greater autonomy, leading to increased intrinsic motivation (Ryan & Deci, 2020). Furthermore, the student could get into a flow state, becoming excited about doing the tasks (Seligman, 2011).

This study showed that older VET students especially wanted the tasks in the online course to benefit their future work. The online course would have tasks that could be completed in different environments, such as working life. Learning in working life is one of the most significant forms of learning outside of the education system (Finnish Government, 2020).

Young VET students did not want to do assignments alone. To flourish in education, especially the young students seemed to long for relationships and connections. Seligman (2011) stated that reciprocal relationships increase positive emotional states, commitment, meaning, and comfort, while lack of interaction with others can impair students' school experience and reduce motivation (McBrien et al., 2009; Ryan & Deci, 2020).

*The third result was the importance of emotions in learning.* Students also did not want tasks that are challenging, and the student had to work hard to achieve good results, and young students were not as persistent in completing online tasks as older students. Quesada-Pallares et al.'s (2019) study revealed that online students had more metacognitive self-regulation abilities than students who chose to study in the classroom.

Most of the students experienced positive feelings and joy when they completed challenging tasks. Positive success can improve students' perceptions of themselves as learners, which in turn can improve motivation and commitment to learning and overall satisfaction (Dinc, 2022). Women experience more emotions in online studies than men. The positive attitude of the teacher and clear course objectives are more important for women. However, challenging tasks cause more anxiety in women compared to men. Women prefer studying alone online, while men prefer group assignments. This supports previous studies showing that female students experience anxiety due to balancing study and family life. Women also seek clear goals in online courses. Online learning offers flexible options (Orr, 2021). Females may be more proactive in seeking help (Shen et al., 2013).

*Furthermore, three student profiles emerged in this study:* (1) Students thriving in online courses in general; (2) Students thriving especially in asynchronous online courses; and (3) Students not thriving in online courses in general. Based on the results of this study, students would benefit from online course structures.

As teachers, we must support and offer students who succeed in an online course as versatile online courses as possible, where the student himself influences the choice made from a diverse selection according to the student's own strengths. These students liked literature and were capable of independent work. The students in this group also liked working with other students and were ready to make an effort to achieve good learning results.

This study found that students generally prefer asynchronous learning, allowing them to take more responsibility for their own learning. However, some students, typically younger and with primary school backgrounds, struggled with online courses lasting over 3 years. It is important to enhance student engagement and guide their commitment in online courses. The level of student engagement serves as an indicator of their success in independent learning activities. Higher engagement levels are linked to greater chances of success in online learning (Rajabalee et al., 2020).

As a result of this study, students in all groups experienced the joy of success when they completed a challenging task. The teacher has an important role in online studies, where the teacher should be positive and supportive of students and act as a creator of a positive atmosphere. The teacher must also give feedback to the student promptly, set clear goals for the online course, take into account different students, and create versatile tasks that the students will benefit from in their future work. The goal should be that all students get experiences of success in online courses. For this reason, the teacher's support has a significant importance, too.

## 6 Limitations

The size of the sample in quantitative research is one subject of evaluation. In this case, the size was 363, which is a small sample of all VET students in Finland. The sample was, however, evaluated sufficient as it is slightly over the value of 200-300 that Heikkilä (2014) considers the limit for data when aiming to compare groups. But we still consider the number of respondents sufficient to draw conclusions that we can use to improve online learning. And as in all online surveys, in this one too, we cannot be certain how truthfully the students have answered or have they filled out the survey by themselves. Another question is the phenomenon of satisficing (Vannette & Krosnick, 2013). This study contained 52 questions which is abundantly. However, the respondents had answered all questions logically.

Although the sample for the study covered the students of VET of different ages, genders, and regions in Finland, it did not reveal how used the students were in studying synchronous or asynchronous online implementations. Teaching practices may vary considerably in different VET institutions in Finland and even across fields of education in VET. This would be interesting to research in prospective studies.

We used the PERMA theory as the basis of the survey, and inevitably this directs the attention to certain aspects of well-being. Another theoretical basis would probably give different results. On the other hand, we considered the novelty value for using the PERMA perspective to online studying relevant in this case.

## **7 Conclusion**

As the VET aims to a vocational degree and qualifications and vocational competence, there is more work-oriented practical studies than, for example, in basic education or general upper secondary education. This special feature of VET is universal and thus presents a special challenge to online learning as a part of VET, too. In online studies, assignments should be linked to work and teach skills that are needed at work. In addition, the students could also do tasks during their work practicum. Furthermore, similar well-being-related concerns are shared among VET systems (Quesada-Pallares et al., 2019; Syauqi et al., 2020), and the question of student retention in online education is topical across the world (Bawa, 2016).

The main contribution of this research was an increased understanding of the premises of students flourishing in online VET courses. During basic education, studying in class is often teacher-led, and thus students entering VET after basic education expect that online courses will also be teacher-led. For young students whose self-management skills are still emerging, online studies can appear challenging (Han et al., 2022). The interaction between teachers and students is crucial for students' satisfaction, perceived effectiveness, and preferences in online learning especially during basic education (Zheng, 2022). However, based on the student profiles found in our research, a great number of VET students were also motivated by online studies that can be done independently. While the student groups are somewhat heterogeneous in basic and general upper secondary education, in VET young and adult students participate in same groups with their different needs and study methods. Based on our findings, these differences should be noticed better when offering online courses.

Based on the student profiles, VET teachers can compare how their study groups and online course designs align the findings of this research: Are their students likely to thrive if they belong to one of the three profiles introduced here? Based on this research, we can improve the quality of online courses so that students do not experience anxiety but are comfortable and experience the joy of learning. The results can be used not only for Finnish education but also to support the design of online learning in VET across the world.

Online learning is a good way to learn if we know how to make the most of online learning opportunities. The teacher's professionalism as a creator of positive emotions, a motivator, a collaborator, and an encourager in both asynchronous and synchronous online course formats is relevant. Alongside creating training for VET teachers to update and increase their own digital pedagogical competence (Syauqi et al., 2020), it is also important to increase

teachers' knowledge of the premises of well-being. Enthusiasm and interest can be easily aroused, but maintaining them requires the experience of meaning. It is possible to create commitment and relevance to studies when we use information and communication technology to achieve learning goals (Poláková & Klímová, 2021).

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## Ethics Statement

In terms of ethical principles, we want to assure that we have implemented the requirements of IJRVET's ethical statement. We have particularly ensured the adherence to the principle of informed consent. This means that all participants in the research have given their consent being aware of the nature, objectives, and potential risks of the study.

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