Journal of Computer Education
Knowing is not enough, you must be able to do it.
Vol. 1(1), pp. 17-28, June, 2022
https://www.journalofcomputereducation.info/

Students' Perceptions in Hybrid Methods of Teaching and Assessment in Computer Literacy Courses

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Article history
Received:
01.06.2022

Received in revised form:
13.07.2022

Accepted:
15.07.2022

Key words:

Hybrid Learning, Blended Learning, Skype For Business, Moodle, Students' Perception, Covid-19

Everyday, technology in our life changes quickly. Every development made by humans in the field of technology affects the way of our life, and education is not an exception. We now have a variety of learning methods in addition to conventional, in-person instruction. This research was carried out in the "Computer for Low" (ITEC190) and " computer introductory" (ITEC115) courses of Eastern Mediterranean University in the 2019-2020 Spring semester. In these courses, hybrid learning was applied and students' perceptions of the effectiveness of this method was investigated. The results showed that the students had positive opinions about this method in the classrooms with hybrid learning. Furthermore, students' perceptions on the learning environment can be defined favorably. Learners could only physically join courses for 4 weeks because of the covid-19 outbreak. The remaining classes has been taken online. Some learners said they experienced loneliness as a result. Moreover, there is a statistically significant difference in the participants' perceptions by gender. However, the findings showed that there was no significant difference in the perceptions of the participants depending on how many hybrid courses they had taken before.

Introduction

When the internet became widely available, it had an impact on distance education as well. Computers are practically limitless in what they can do thanks to the internet. The internet is beneficial to education in terms of communication and interaction. Internet is an excellent tool for education because of these factors. Thanks to the Internet, we can access education anytime and anywhere. The development of the computer and the internet made a significant contribution to education. Due to the use of the Internet, distance education has become widespread and has developed rapidly. Now anyone can access education anytime and anywhere. No restrictions apply anymore. The role of electronics technology in education has existed since the late 1960s. The debate has changed from whether technology is beneficial to education to how it may be used most effectively (Crawford, 2009).

After the development of Web 2.0 features, interactive collaborative websites began. Web 2.0

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tools completely revolutionized the internet. Web 2.0 emphasizes communication, teamwork, and sharing. Consequently, it provided the internet with additional platforms. Microblogs, content-sharing websites, instructional platforms (like Moodle), and social media networks are a few examples of these systems (Argın, 2013).

With the advancement of information technology and the ease of access to the internet, online learning has become a vital component of education. When face-to-face instruction is combined with online learning, a whole new teaching approach known as "hybrid learning" emerges. Hybrid Learning (HL) is concerned with three things: (1) increasing accessibility and flexibility, (2) enhancing existing learning and teaching techniques, and (3) transforming people's learning (Bonk & Graham, 2012).

The goal of this research article is to examine at students' perceptions of the hybrid learning environments utilized at EMU. The context of the various settings that have been applied in EMU courses will be used to explore this perception. The potential benefits and drawbacks of Hybrid Learning will be investigated using student perspectives. The following are the specific research questions for this study:

- RQ1: What are the students' perceptions of hybrid learning in terms of (1) course application and content, (2) online attendance over Skype for Business, and (3) face-to-face courses?
- RQ2: What are the students' impressions of hybrid learning in terms of (1) classroom atmosphere, (2) benefits, and (3) drawbacks?
- RQ3: Are there significant differences in students' perceptions of hybrid learning based on gender?
- RQ4: Are there significant difference in students' perceptions based on (1) the kind of high school they graduated from and (2) the number of hybrid courses they had previously taken?

Method

This study utilizes the components of descriptive study. The descriptive research method is a fundamental research technique that investigates the situation as it already exists. In descriptive research, characteristics of a specific event are identified based on observation, or correlations among two or more events are investigated (Williams, 2007). Descriptive studies offer information that identifies variables, illustrates connections, and helps to our comprehension of the argument being made (Thyer, 2001). In education, descriptive research usually creates ideas that others may look into using inferential techniques to see if generalizability is achieved. A method intended to give detailed descriptions is frequently the first step in grasping complicated relationships (Suter, 2012). A modified version of the questionnaire created by Gedik (2010) was used to collect the data. The Scientific Research and Publication Ethics Board of Education at Eastern Mediterranean University gave its permission to this study on March27,2020, with the issue number 2020/67.

Context and Participants

This research was carried out on the ITEC115 and ITEC190 courses during the 2019-2020 Spring semester. The courses are titled "ITEC190-Computer for Law" and "ITEC115-Introduction to Computers." These courses were designed to give the students the fundamental

information and expertise needed to introduce them to the computer's fundamental hardware components and operating system.

This study was carried out on the Virtual Learning platform developed by Özden M,Y. (2018) The platform used is based on Microsoft Office365 (Skype For Business) and Moodle (Learning Management System) working as single sign-on (SSO). Passwords and usernames are synced with university databases and Office 365. Furthermore, students may communicate with their instructor using Skype for business. Students can attend classes physically if they wish. MS Skype for Business and OneNote were recording attendance automatically during lectures. Almost every operating system has a Skype for Business application (e.g. windows, android, IOS etc.). Moodle is also a web-application that can be viewed from nearly any device that has an internet connection.

Every week, 4 (2-2) hours were allocated to each course. The theoretical section of the course took up two hours of the course. The remaining two hours were reserved for the practical application part of the course. Theoretical sessions were attended in person or over Skype for business. Practical classes were held in computer laboratories, where students had the opportunity to put their theoretical knowledge to the test with the assistance of an instructor.

When they're "in a meeting", the Skype for Business layout shows lecture notes/slides that the instructor used in class, along with the teacher's video. Furthermore, these lessons were being recorded each week, and edited videos were being uploaded on the course's Moodle site for on-demand viewing.

Table 1. Students' Demographic Information Frequencies

Gender	**F**	**%**
Male	41	40,2
Female	61	59,8
The Type of High School That Graduated From	**F**	**%**
Normal / Anatolian / Science High School etc.	92	90,2
Vocational / Technical High School etc.	10	9,8
The Number of Hybrid Courses Taken Previously	**F**	**%**
None	43	42,2
1	41	40,2
2	2	2,0
3 or more	16	15,7
Internet Access	**F**	**%**
No	4	3,9
Yes	98	96,1

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

Data Collection and Analysis

In order to collect quantitative data to answer the research questions, a modified version of questionnaire was utilized, which was created by Gedik et al. (2010). The purpose of the original questionnaire was to gather information on how the students felt about the experiences

they had in the hybrid learning environments. The questionnaire includes Likert-type scale components as well as open-ended questions. It was utilized for the same purpose, gathering information from students on how they used hybrid learning in computer literacy classes.

The questionnaire has four sections. Part A consists of ten questions about personal information such as gender, number of hybrids learning courses taken, and so on. Parts B and C both had components that were assessed on a Likert scale. Part B featured 23 components for potential helpful features of hybrid learning settings, whereas Part C covered 18 components for potential unfavorable aspects of hybrid learning settings. The final section of the questionnaire is the "Opinions" section, which consists of six questions in which learners are required to express their thoughts on hybrid learning.

A modified version of the Gedik (2010)'s questionnaire was posted on course's Moodle website, and students were requested to complete them following the midterm test period. The questionnaire was completed by 102 students in total. Table 1 shows the demographic information of the participants.

Statistical Package for Social Science (SPSS, Version 26) was used for quantitative data analysis, which included calculating standard deviations, frequencies, means, and percentages. The major goal was to answer the question of students' perceptions of hybrid learning, with a focus on the good and negative elements of it in learning environments.

Results

The study's findings will be given in this section. The results of each research question will be presented respectively.

RQ1: What are the students' perceptions of hybrid learning in terms of

(1) course application and content,
(2) online attendance over Skype for Business, and
(3) face-to-face courses?

Course Application and Content

In this section, results of first research question are presented. The means and frequencies of the learners' perceptions on course implementation and content are shown in Table 2. Students were asked to mark these things in the questionnaire's Part B and Part C respectively.

Table 2. Students' Perceptions About the Implementation and Content of Courses

Statements		**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**M**	**SD**
Resources and materials in the lesson were rich.	F	2	6	13	40	41	4,10	,97
	%	2,0	5,9	12,7	39,2	40,2		
A rich communication and interaction environment were provided.	F	4	5	16	38	39	4,01	1,05
	%	3,9	4,9	15,7	37,3	38,2		

It was possible to repeat what I learned in face-to-face lessons in the Web environment.	F %	3 2,9	6 5,9	14 13,7	38 37,3	41 40,2	4,06	1,02
It was possible to repeat what I learned on the web in face-to-face lessons.	F %	3 2,9	7 6,9	13 12,7	47 46,1	32 31,4	3,96	,99
Assessment in face-to-face and Web environments supported each other.	F %	3 2,9	6 5,9	15 14,7	39 38,2	39 38,2	4,03	1,02
The instructor was using hybrid environment well.	F %	2 2,0	6 5,9	12 11,8	35 34,3	47 46,1	4,17	,99
Communication and interaction with the lecturer were efficient.	F %	1 1,0	8 7,8	12 11,8	39 38,2	42 41,2	4,11	,96
I had technical problems while using the web page of the course.	F %	34 33,3	41 40,2	15 14,7	8 7,8	4 3,9	2,09	1,07
Adequate technical support was not provided for using the web page of the course.	F %	39 38,2	37 36,3	18 17,6	5 4,9	3 2,9	1,98	1,01
When face to face and Web environment were together, there was a lot of time loss.	F %	37 36,3	39 38,2	17 16,7	7 6,9	2 2,0	2,00	1,00
Hybrid learning environment was not suitable for the content of this course.	F %	40 39,2	41 40,2	16 15,7	4 3,9	1 1,0	1,87	,89
The activities and materials in the lesson were not rich.	F %	40 39,2	41 40,2	15 14,7	4 3,9	2 2,0	1,89	,93
There was an incompatibility / disconnection between the web environment and the face-to-face environment.	F %	41 40,2	39 38,2	16 15,7	4 3,9	2 2,0	1,89	,94
The face-to-face activities (discussion, guest presentations, group events etc.) were insufficient.	F %	43 42,2	37 36,3	16 15,7	4 3,9	2 2,0	1,87	,95
Having both web environment and face-to-face course activities increased the course load.	F %	38 37,3	37 36,3	16 15,7	7 6,9	4 3,9	2,04	1,08
Assessment in face-to-face and Web environments did not support each other.	F %	40 39,2	43 42,2	14 13,7	2 2,0	3 2,9	1,87	,93
The instructor could not use hybrid environment well.	F %	47 46,1	36 35,3	13 12,7	2 2,0	4 3,9	1,82	1,00
I did not have efficient communication and interaction with the lecturer.	F %	53 52,0	32 31,4	13 12,7	2 2,0	2 2,0	1,71	,91
I did not interact efficiently with the course content (presentations, document, etc.).	F %	38 37,3	42 41,2	16 15,7	5 4,9	1 1,0	1,91	,90

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

Table 2 reflects the learners' overall perceptions of the course's implementation and content. The means of each item reveal that learners are mainly happy with the course's implementation and content. Students evaluated the item "The instructor used mixed environment well.", the mean of this item (M=4,17) indicates that the majority of them believe hybrid environment was implemented successfully in the course.

Online Attendance Over Skype for Business

Students were asked to assess the questionnaire item "How do you consider your involvement in the course's Skype environment?" This was the seventh item in Part A of the questionnaire. Table 3 shows the results of this item. 69.6% of students stated they were highly active in Skype sessions, while 23.5% said they were engaged occasionally in Skype sessions. Only 6.9% of those questioned stated that they did not use Skype at all.

Students were asked to clarify their answers, and the majority of them were favorable, such as "it's a simpler method to attend courses" and "it helps with time management." Some of them, though, stated that they used Skype because they had to. Additionally, some students claimed that their devices or internet connections were inadequate during a live Skype session.

Table 3. Participation of Learners to Skype Sessions of the Course

Gender		**Not at all**	**Active Sometimes**	**Very Active**
Male	F	4	8	29
	%	9,8	19,5	70,7
Female	F	3	16	42
	%	4,9	26,2	68,9
Total	F	7	24	71
	%	6,9	23,5	69,6

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

Face-to-Face Courses

The questionnaire item "How do you view your involvement in the face-to-face atmosphere of the course?" was evaluated by participants. This question was addressed on the seventh item of A section of the questionnaire. According to Table 4, 36.3% of participants did not attend any face-to-face sessions. In face-to-face meetings, 53.9% were engaged sometimes and 9.8% were highly engaged.

When questioned why they gave that answer, several of them stated that they no longer attend face-to-face sessions since they discovered that they could attend lectures via Skype for Business. Some students stated that it is unnecessary for them to attend lessons when they can do it through Skype. One of the students explains why he/she wasn't very active by saying, "Instead of getting dressed, eating breakfast, and walking to faculty, I decided to use this good skype benefit. I just attended classes for lab sessions." Some of them stated that they like attending face-to-face meetings but were unable to do so owing of the Covid-19 epidemic.

Table 4. Participation of Learners to Face-to-Face Sessions of the Course

Gender		**Not at all**	**Active Sometimes**	**Very Active**
Male	F	18	21	2
	%	43,9	51,2	4,9
Female	F	19	34	8
	%	31,1	55,7	13,1
Total	F	37	55	10
	%	36,3	53,9	9,8

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

RQ2: What are the students' impressions of hybrid learning in terms of

(1) classroom atmosphere,

(2) benefits, and

(3) drawbacks?

Classroom Atmosphere

The means and frequencies of the students' perception of the hybrid learning environment's classroom atmosphere are shown in Table 5. Table 5 below lists items that can reflect students' impressions of the classroom environment. These items were included in the questionnaire's Parts B and C respectively.

Table 5. Students' Perceptions about the Classroom Atmosphere

Statements		**Str Dis Agr**		**Neu**	**Agr**	**Str**	**M**	**SD**
A rich communication and interaction environment were provided.	F %	4 3,9	5 4,9	16 15,7	38 37,3	39 38,2	4,01	1,05
I could actively participate in the course.	F %	3 2,9	8 7,8	12 11,8	42 41,2	37 36,3	4,00	1,03
It was good to have discussions both on the Web and in face-to-face environments.	F %	2 2,0	8 7,9	13 12,9	44 43,6	34 33,7	3,99	,98
I was given the opportunity to learn from my classmates.	F %	4 3,9	6 5,9	18 17,6	40 39,2	34 33,3	3,92	1,05
My participation in the course was supported by using various teaching methods (question-answer, collaborative learning, discussion in the forum, etc.).	F %	3 2,9	8 7,8	14 13,7	42 41,2	35 34,3	3,96	1,03
Interaction and communication with other friends in the classroom were efficient.	F %	3 2,9	11 10,8	14 13,7	41 40,2	33 32,4	3,88	1,07
With hybrid learning, an environment was provided where I could use my own learning methods (reading, listening, telling, practicing, discussion, etc.).	F %	2 2,0	10 9,8	12 11,8	44 43,1	34 33,3	3,96	1,01
The face-to-face activities (discussion, guest presentations, group events etc.) were insufficient.	F %	43 42,2	37 36,3	16 15,7	4 3,9	2 2,0	1,87	,95
I did not have efficient communication and interaction with other friends in the class.	F %	35 34,3	40 39,2	17 16,7	7 6,9	3 2,9	2,05	1,03
I did not interact efficiently with the course content (presentations, document, etc.).	F %	38 37,3	42 41,2	16 15,7	5 4,9	1 1,0	1,91	,90

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

The means of the items shown above suggest that participants felt the classroom environment

beneficial to their learning. Students were asked to assess the item "The face-to-face activities (discussion, guest presentations, group events etc.) were insufficient." the mean (M=1,87) indicates that the majority of them believe that face-to-face activities are adequate. In addition, students were asked to assess the item "A rich communication and interaction environment were provided" and the mean of the item was 4,01, indicating that most students believe interaction and communication in the classroom is rich. However, students assessed "Interaction and communication with other friends in the classroom were efficient." (M=3,88) item somewhat lower than the other questions mentioned above (Elmas, 2020).

Benefits

Part D of the questionnaire surveyed students for their thoughts on the hybrid learning environment. Students were requested to express their thoughts by answering the question, "Based on your experience in ITEC115 / ITEC190 course, would you please explain the issues that you think hybrid learning environments contribute most in learning lesson topics?" Students have varying perspectives on the benefits of the environment. The following are the most common and repeated responses:

- It is useful to learn theoretical parts of the lesson in skype sessions and practice what we learn in lab sessions.
- It is useful in the matter of lastingness.
- To learn the topics that I didn't understand with the help of PowerPoint slides and videos on the Moodle.
- I was able to both follow lesson and do the practice applications at the same time.
- It's nice to take the computer and listen to the lesson in a quiet place.
- Having mock exams on Moodle and watching the lesson records.
- To be able to watch the lessons later on video.
- I focus more easily when I attend classes at home.
- I learned to use the technological tools we use every day more efficiently.
- I learned about online lessons.
- It helped me with the reducing the busyness of the daily routine.
- It reduced the tiring and tension of the days. I think it is very comforting to attend the next lesson online after going through an intensive course.

According to students' replies, there are numerous benefits of hybrid learning from the learners' perspective, and those advantages assisted them learn their lesson contents better (Elmas, 2020).

Drawbacks

With the question "Based on your experience in ITEC115 / ITEC190 course, can you explain the challenges of hybrid learning environments? (Can you talk about the difficulties arising from the hybrid environment in learning the lesson?)". students were requested to express their perspectives. This was the second item on the questionnaire's Part D. The following are the most common and related responses:

- Internet problems, I am occasionally disconnected from online classes. (18 other students also complained about internet problems.)

- 1-Not enough resources (computer). 2-The Internet is slow and financially inadequate. 3-Homeworks are not suitable for everyone. 4- Disconnection during the lesson. 5-Not everyone knows how to use the resources properly. 6-Most importantly, the problem we have in exams.

- Since this is not a learning method that I am used to, I could not figure out how to take notes, how to study. However, when I used online education during the epidemic period, the lesson did not struggle me as much as I thought.

- Sometimes I have focus problems when the environment is not suitable.

- Sometimes it can be a little more difficult on the website because we ask questions more easily in face-to-face lessons and get more effective answers.

- Obligation to attend the course.

- Focusing problems and feeling of loneliness.

Some learners claim that hybrid learning caused them the challenges outlined above. These are generally connected to concerns such as internet speed, software (Skype For Business) utilized for courses, insufficient environment problems, and so on (Elmas, 2020).

RQ3: Are there significant differences in students' perceptions of hybrid learning based on gender?

Gender information was acquired from the first item in Part A of the questionnaire. The cross-tabulation analysis was done within participant gender and learning environment preference to address this research question. In the tenth item of Part A of the questionnaire, participants were asked, "If you had a choice, which environment would you prefer for this course?", Table 6 displays the results of the cross-tabulation analysis.

Table 6: Learners' preferences about the learning model for this course based on their gender

Gender		Face to face	Online Learning	Hybrid Learning	M	SD	p
Male	F	3	12	26	2,56	,63	,005
	%	7,3	29,3	63,4			
Female	F	16	21	19	2,13	,81	
	%	26,2	34,4	39,3			

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

As seen in the table above, 63.4% of male students favor hybrid learning, while just 7.3% choose face-to-face learning. However, only 39.3% of female students answered they would choose hybrid learning for this subject, while 34.4% said they would prefer online learning. An independent t-test was performed on the students' choices for the learning model for this course to determine whether there is a difference in perceptions between male and female students. As a result, there is a statistically significant difference between male and female learners' choices

for learning models, having p values less than,005. The following question on the questionnaire asked them to explain why. One of the students responded as "The face-to-face style is too theoretical for this course and makes it easier to forget what we learn. However, for this subject, online learning is rather practical." (Elmas, 2020).

RQ4: Are there significant difference in students' perceptions based on (1) the Type of High School Graduated and (2) the number of hybrid courses they had previously taken?

Type of High School Graduated

On the findings of the type of high school they graduated from and the participants' preferences for the learning model for this course, a cross-tabulation analysis and an independent t-test were performed. The results were derived from the second and tenth items of the questionnaire's Part A section. Table 7 summarizes the findings.

Table 1: Students preferences about the learning model for this course based on the high school they graduated

High-school type		Face to Face	Online Learning	Hybrid Learning	M	SD	p
Non-Vocational High School	F	18	32	42	2,26	,77	,09
	%	19,6	34,8	45,7			
Vocational High School	F	1	1	8	2,70	,68	
	%	10,0	10,0	80,0			

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

As shown in the table above, 8 of the students who graduated from vocational high school preferred hybrid learning, 1 preferred online learning, and 1 preferred face-to-face learning. 42 of the students who graduated from a non-vocational high school stated they would prefer hybrid learning, 32 preferred online learning, and 18 preferred face-to-face learning. In an independent t-test, the p-value is equal to,09, indicating that there is a marginally significant difference in the learners' choices for learning models depending on the high school from which they graduated (Elmas, 2020).

The Number of Hybrid Courses They Had Previously Taken

A mean comparison was performed using data from the number of hybrid courses they had previously taken and their choices for the learning method for this course. These data were gathered from the ninth and tenth items of the Part A section of the questionnaire.

The comparison's findings are provided in Table 8 below (findings are shown with mean values, with 1 indicating face-to-face learning, 2 indicating online learning, and 3 indicating hybrid learning):

Table 8: Students' preferences about the learning model for this course based on the number of hybrid courses they took before

The number of blended courses taken before	Face to Face	Online Learning	Hybrid Learning	M	SD
None	7	17	19	2,28	,73
1	8	8	25	2,41	,81
2	0	2	0	2,00	,00
3 or more	4	6	6	2,12	,81

Note. Table reprinted from Perceptions of Students About the Use of Blended Learning in Computer Literacy Courses (Elmas, 2020).

61% of participants who had previously taken a hybrid course preferred the hybrid learning style for this course. Those who have more than two experiences with hybrid learning, on the other hand, have lower means than those who have fewer or no experiences at all. Eight of the 18 students who had two or more experiences with hybrid courses favored online learning, while just 6 of them preferred hybrid learning. Face-to-face learning has the highest rate among students with two or more experiences.

Additionally, the One-Way ANOVA test was performed regarding the number of hybrid courses they had previously taken and their choice for the learning model for this course. Since the p value was shown to be ,56, the results of the ANOVA test indicate that there are no significant differences.

Conclusion

After the COVID-19 pandemic phase, hybrid learning has become much more crucial. The benefit of hybrid learning is that it enables students to take classes from home or in a dorm for the portions of the session that don't need for physical presence. This method can be used to teach the classes' theoretical components. As a result, substantially smaller class numbers may be used for lab sessions and practical lessons.

This study reveals how students feel about hybrid learning in computer literacy classes. The questionnaire provided the answers to the first study question, "What are the learners' opinions of hybrid learning in terms of (1) course execution and content, (2) online participation through Skype for Business, and (3) face-to-face courses?" such as follows:

- Perception of the students regarding the implementation and content of courses was positive.
- Slightly more than every 9 students out of 10 said that they are attending skype sessions and majority of them declared that they find online participation easier and more flexible.
- 53,9% of the students said they were “Active sometimes” where 36,3% of them said “Not at all”. Result could vary due to covid-19 pandemic.

The answers to the second research question, "What are learners' opinions of hybrid learning in terms of (1) classroom environment, (2) benefits, and (3) disadvantages?" are shown below.

- Students appear to think the classroom environment is effectively positive.
- The results demonstrate that hybrid learning offered several benefits, including the exchange of lecture notes, mock exams, and recorded courses.

- Students reported technological difficulties and their lack of experience with hybrid learning as some of the drawbacks they experienced.

The following are the results that answer the third study question, "Are there significant differences in students' perceptions of hybrid learning based on gender?"

- In terms of the participants' perceptions, significant difference between male and female learners' is found.

The following results of the fourth research question, which was, "Are there significant difference in students' perceptions based on (1) the sort of high school they graduated from and (2) the number of hybrid courses they had previously taken?" are presented below:

- The ANOVA test result shows that there is no significant difference between the groups in terms of the number of hybrid courses they have taken before.
- There is a marginally significant difference on the learners' preferences about learning model based on the high school they graduated (Elmas, 2020).

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