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Significance of Hybrid Learning Model During Covid-19 Pandemic at Higher Education Institution

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ABSTRACT

Blended learning is any combination of traditional analog education with modern digital technologies. At its broadest, blended learning describes the introduction of computer labs, interactive whiteboards, and educational software to the learning process. When making recommendations for teaching at higher education institutions in the period of the COVID-19 pandemic with the application of anti-epidemic measures, among the important recommendations was the use of a hybrid learning model for students. Teachers were able to adjust the course of all forms of higher education only after determining that students, given the material and technical conditions and computer skills, can carry out certain activities at a distance. The research implicitly indicates which type of hybrid learning model proved to be the most effective in mastering the course outcome and successful implementation and realization of teaching during COVID-19. The research was conducted at the Faculty of Humanities and Social Sciences in Osijek (Croatia), at the graduate and postgraduate level from 21st April to 28th June of the academic year of 2020. It was N = 73 respondents. An online questionnaire was conducted via Docs forms. This research will also try to answer whether learning outcomes are more achieved with blended learning. The results showed that most students wanted to have real-time instruction during the COVID-19 pandemic via the Big Blue Button rather than via the Google Classroom, and 94% thought they would better adopt course outcomes than the classic hybrid teaching model. The possibility for the student to organize his / her own workspace, but also to cooperate with other students and teachers in acquiring knowledge, and can be achieved with a precisely designed hybrid model of learning. It is the research that indicates the improvement of the quality of learning and the possibility of active participation of students in the learning process, which thus improves the learning outcomes.

1. Introduction

Hybrid learning is a combination of traditional and online education procedures, bearing in mind factors such as specific characteristics of teaching content, available resources, faculty

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level of online educational materials' development, instructional design models and number of students and their willingness to use online education effectively. Material. Research has shown that hybrid learning is the best form of learning during the COVID-19 pandemic because it harmonizes classical and electronic learning. The advantages of the hybrid learning model relate to the fact that different media serve to present learning content; that there is excellent availability of online content; that there is an interaction: teacher-student, student-student and student-teaching content and above all that the teaching content is adapted to students. So during COVID-19 the most popular form of e-learning is the one that is considered to communicate the best results for educational purposes and that is hybrid learning. Hybrid learning (blended learning or hybrid learning) is a flexible the term, another term often used for hybrid learning is blended learning (Reasons; Valadares & Slavkin, 2005). Given the results and facts in this study, it can be said that one of the main advantages of hybrid learning are that hybrid learning has the ability to provide students with a sense of community that other methods can not provide and that positively affects learning success (Department of Education and Skills, Ireland 2020). There are a number of benefits of hybrid learning enumerated by different authors. According to Hatters and Horn (2012) Hybrid learning (blended learning or hybrid learning) is a flexible term, another term often used for hybrid learning is blended learning. Given the results and facts in this study, it can be said that one of the main advantages of hybrid learning is that hybrid learning has the ability to provide students with a sense of community that other methods can not provide and that positively affects learning success (Sursok, 2015). There are a number of benefits of hybrid learning enumerated by different authors. According to Hatters and Horn (2012) hybrid learning (blended learning or hybrid learning) is a flexible term, another term often used for hybrid learning is blended learning. Given the results and facts in this study, it can be said that one of the main advantages of hybrid learning is that hybrid learning has the ability to provide students with a sense of community that other methods can not provide and that positively affects learning success (Wattskon, 2008, UNESCO, 2020). There are a number of benefits of hybrid learning enumerated by different authors. According to Hatters and Horn (2012) Given the results and facts in this study, it can be said that one of the main advantages of hybrid learning is that hybrid learning has the ability to provide students with a sense of community that other methods can not provide and that positively affects learning success. There are a number of benefits of hybrid learning enumerated by different authors. According to Hatters and Horn (2012) Given the results and facts in this study, it can be said that one of the main advantages of hybrid learning is that hybrid learning has the ability to provide students with a sense of community that other methods can not provide and that positively affects learning success (Yang, 2014; UNESCO, 2020).

There are a number of benefits of hybrid learning enumerated by different authors. According to Hatters and Horn (2012) the advantages are as follows: a) time: Learning is no longer limited to the day of school or school year; b) place: Learning is no longer limited to the classroom; c) the learning process: Learning is no longer limited to the work methods used by the teacher. Interactive and adaptive software allows students to learn in a way that is tailored to their needs' ID) pace: Learning is no longer limited to the pace of learning of other students in the class. The advantage of hybrid learning is that students learn from educational materials that are

available to them at all times, which allows each user to plan part of the learning process, which takes place outside the classroom, which achieves better results. It is possible to independently choose the pace of learning, availability, individualization, and flexibility (Schunn & Patchan, 2009). During the COVID-19 crisis, countries have implemented a range of measures to curb the educational impact of the pandemic. In times of emergency, speed in the implementation of responses is key, but evidence of what may work is limited, and constraints on resources and capacity are binding (UNESCO, 2020)

During the COVID-19 pandemic, university teachers had to adapt to the new e-learning in a very short time and where digital competence was key (Mavridi, 2020). The COVID-19 crisis, as a health hazard,has been tackled with social distancing amongother approaches. During the lockdown period, health concerns have been at the centre, and areat the heart ofnext steps in school reopening plans, in terms of how university scan openand under which conditions, and how remote learning can be used to complement the reliance on physical university in times of need (Worldbank, 2020, Schleicher, 2020)

At the University of Osijek at the Faculty of Philosophy, a hybrid model of teaching was offered via Moodle, Big Blue Button, Google Classroom, but with the teacher's ability to combine and/or search for an adequate model of hybrid learning. On the one hand to maintain social interaction with students and on the other hand to meet the learning outcomes of the course: Media Pedagogy and the course Multimedia Training. Considering that both courses, according to the goal of the course, also contained the topic of digital literacy of students and course holders, this research was considered an ideal combination to find an adequate model of hybrid learning and education during the COVID-19 pandemic with the aim of adopting learning outcomes. The teacher had the freedom to choose from the offered digital tools and in combination with e-learning systems to explore those digital tools that can be considered useful in achieving goals and solving tasks from both courses. Until the emergence of the COVID-19 pandemic, the digital tool was completely unexplored from the point of view of education. Wizer is a digital tool that allows users to create interactive worksheets for use in the classroom or at home. The tool is available through the latest versions of web browsers: Google Chrome, Mozilla Firefox, Internet Explorer and Safari. Because the tool interface is built according to reception standards it is also possible to access the tool through a browser on mobile devices (Hansen, 2015). The tool allows you to add different activities to make classic worksheets more interesting, accessible, and interactive. Activities that can be added: open-ended and multiple-choice questions, filling in gaps in the text, filling in an image, pairing, tables, sorting, drawing, and discussion (discussion). Elements that can be added: text, image, video, link, or embed in various content (Wietz, 2012).

The tool allows you to create a free and paid account. A free an account allows you to create an unlimited number of worksheets, unlimitedly assign worksheets to links directly in Google Classroom or Edmond, and access multiple worksheets created by other users of the tool. Registration is possible by using an existing Google, Edmond, or Microsoft account or by entering an email address and password. These are all additional explanations why this research was conducted and whose main goal was to explore an adequate model of hybrid education

with the aim of student achievement and above all the parallel maintenance of social interaction between teachers and students.

2. Methodology

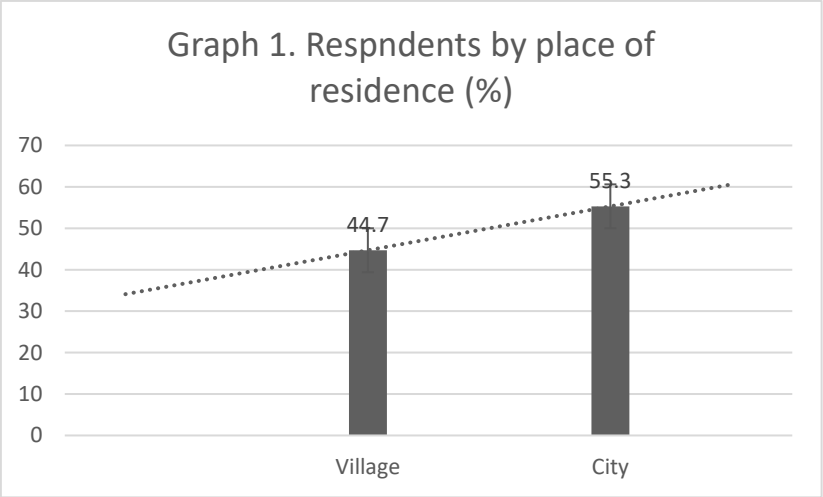
Due to the various possibilities provided by hybrid learning, the complexity of its implementation and implementation in teaching also increases. The research aims to design an educational method for a hybrid model of learning in higher education and to determine which principles of multimedia can be implemented in a hybrid model of learning in order to master the outcome of the course. The research had the following hypotheses:

- H_1: The hybrid learning model should be more effective than the traditional learning model.
- H_2: Combined learning improves the practical application of what is learned and increases the level of knowledge.
- H_3: Respondents using the hybrid learning model better adopt course outcomes that used the combined model using the Wizer.ME tool and the Big Blue Button compared to those respondents who only used Google Classroom and Moodle.
- H_4: Respondents with a combination of multimedia segmentation principle and principle *spatial and temporal connections* content can more easily adopt course content on the principle of redundancy and coherence.
- H_5: Teaching educational content expressed in visual form (especially moving images) better explain German grammar through narration than with a lot of written text on the screen.
- H_6: A hybrid learning model is more effective if more complex multimedia messages are divided evenly into less simple parts than when that message is given as a single continuous unit

2.1. Problem and sample of respondents

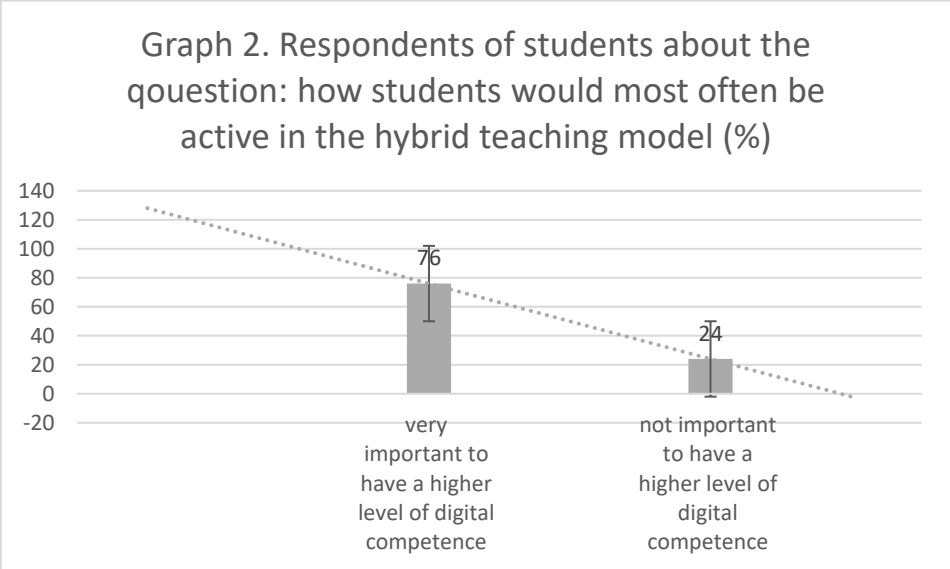
The research problem points to the insufficiency of research into designing a hybrid model in foreign language learning, not only in Croatia but also in the world, and the correct determination of the criteria of the principle of multimedia. The paper will offer an effective designed model of blended learning, based on the principles of multimedia. The paper will provide insight into individual outcomes and identified characteristics of successful blended learning. Didactic-methodological proposals will be proposed to support students and future teachers. The overall scientific contribution of the paper will have implications for the development of didactic-methodological practice in higher education, but will also determine possible guidelines for teachers and students in the joint design of a hybrid teaching model. The research was conducted at the Faculty of Humanities and Social Sciences in Osijek (Croatia), at the graduate and postgraduate level from 21st April to 28th June of the academic year of 2020. It was N = 73 respondents. An online questionnaire was conducted via Docs forms. This research will also try to answer whether learning outcomes are more achieved with blended learning. Independent variables are gender, age, student performance, and place of residence, i.e. sociodemographic characteristics of the respondents. Dependent variables are the frequency of use of individual media and the content-related dimensions of media use.

3. Results



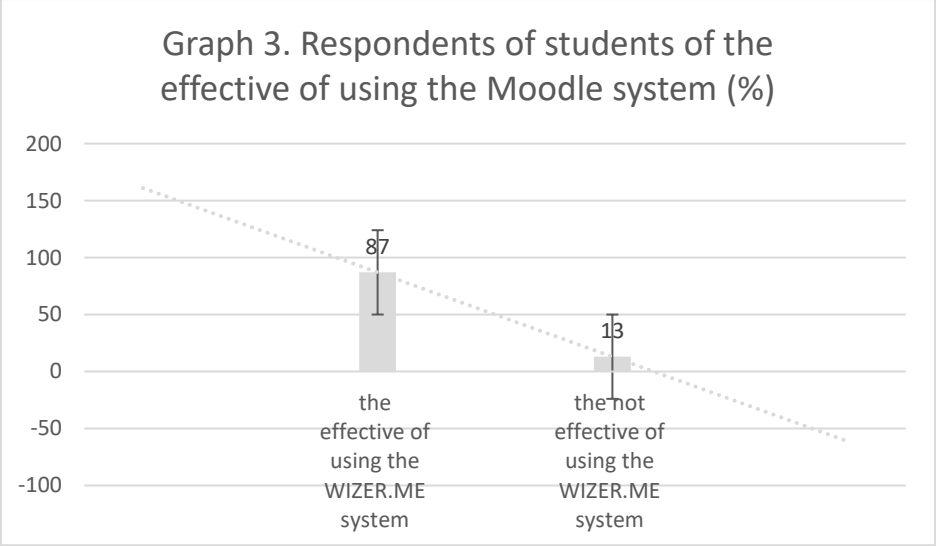
Graph 1. Respndents by place of residence (Source: Author)

The results showed that most students wanted to have real-time instruction during the COVID-19 pandemic via the Big Blue Button rather than via the Google Classroom and 94% thought they would better adopt course outcomes than the classic hybrid teaching model. The next question looked at how students would most often be active in the hybrid teaching model. The research showed that despite the ability of students to use computers, more than half of the respondents, i.e. 76%, believe that it is very important to have a higher level of digital competence in order to find their way in using digital tools (Graph 2).



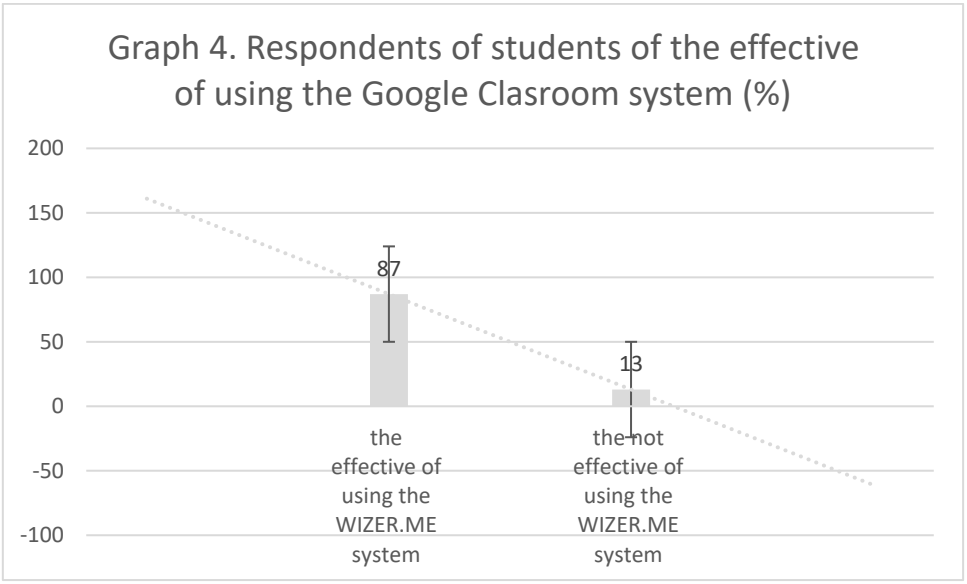
Graph 2. Respondents of students: how students would most often be active in the hybrid teaching model (Source: Author)

Regarding the hybrid learning model, only 9% of respondents thought that evaluation through the Moodle system was not effective, while 91% thought that testing knowledge through the Moodle system was effective (Graph 3.)



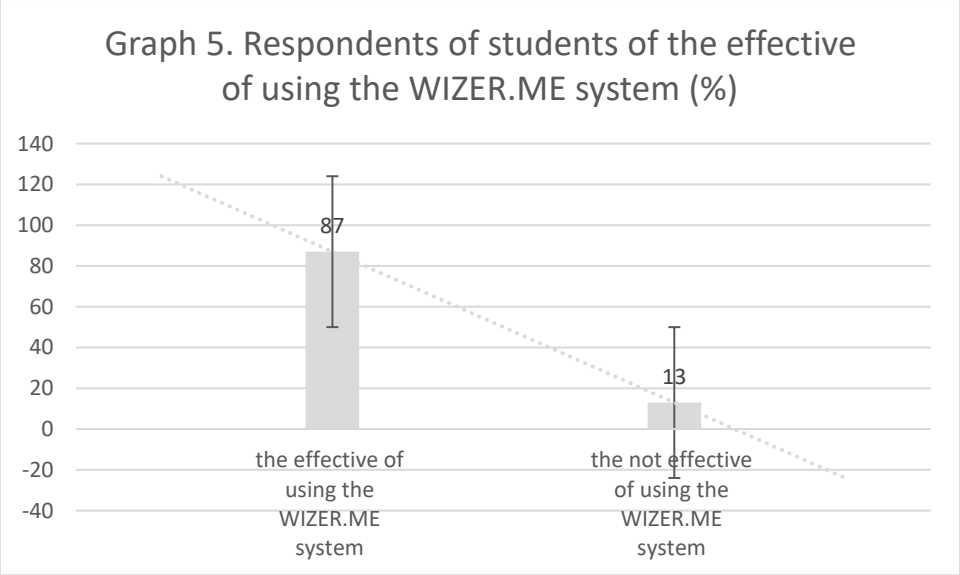
Graph 3. Respondents of students of the effective of using the Moodle system (Source: Author)

The next Graph 4. shows the results that 89% of respondents believe that during COVID-19 Google classrooms are a very good tool for setting up teaching materials, video lessons, and assignments.



Graph 4. Respondents of the effective of using the Google Clasroom (Source: Author)

In question 12, students were asked to choose what influenced their learning motivation during COVID-19. The results showed that most students are of the opinion that the teacher is the main factor in motivating learning, but a good combination of digital tools can increase students' interest in including e-work in the Google Classroom, without pressure. But more than 98% of students believe that teachers need to have greater digital competence for a good combination of using a hybrid learning model. More than 87% of respondents believe that the Wizer.COM tool has proven to be the most effective. This results are representing in the Graph 5.



Graph 5. Respondents of students of the effective of using the Wizer.Me system (Source: Author)

3.1. Inferential statistics

The t-test for independent samples for gender showed a statistically significant difference in the use of $t(130) = 3.48$, $p < 0.001$, with male ($M = 1.68$) preferring to use the Big Blue Button than female ($M = 1$). There was also a statistically significant difference $t(130) = 3.77$, $p < 0.001$ between females and males for using the Google Classroom reading in leisure time, and the results also showed that Females ($M = 1.36$) use it more in their leisure time. Also, the the t-test show for the H_2: Combined learning improves the practical application of what is learned and increases the level of knowledge a statistically significant difference in the use of $t(110) = 2.21$, $p < 0.001$, with male ($M = 1.39$) than female ($M = 2$).The same is with H_4: Respondents with a combination of multimedia segmentation principle and principle *spatial and temporal connections* content can more easily adopt course content on the principle of redundancy and coherence; a statistically significant difference in the use of $t(123) = 2.16$, $p < 0.001$, with male ($M = 1.21$) than female ($M = 1$) and for the H_5: Teaching educational content expressed in visual form (especially moving images) better explain German grammar through narration than with a lot of written text on the screen; it was found a statistically significant difference in the use of $t(119) = 3.21$, $p < 0.001$, with male ($M = 1$) than female ($M = 1.14$).

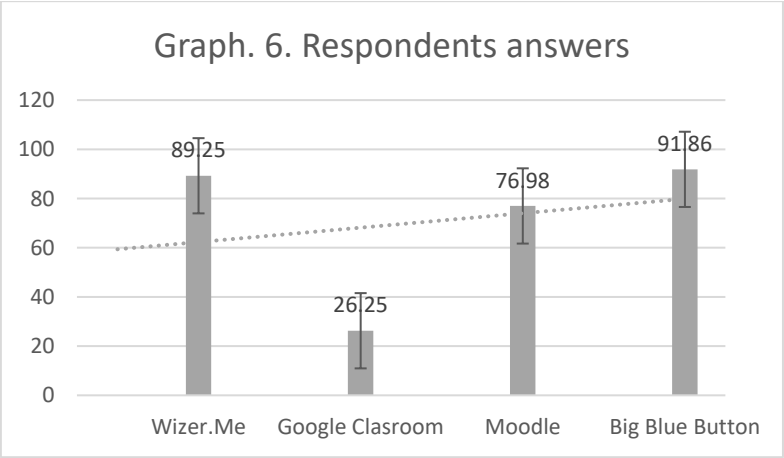
Table 1.
T-test results related to the gender of the subjects (Source:author)

variables	sex	N.	M.	SD	t
Do you using Big Blue B.	Male	40	1.68	47	3.48 ***
	Female	92	1.36	48	
Google Classroom	Male	40	1.83	38	
	Female	92	1.49	50	3.77 ***

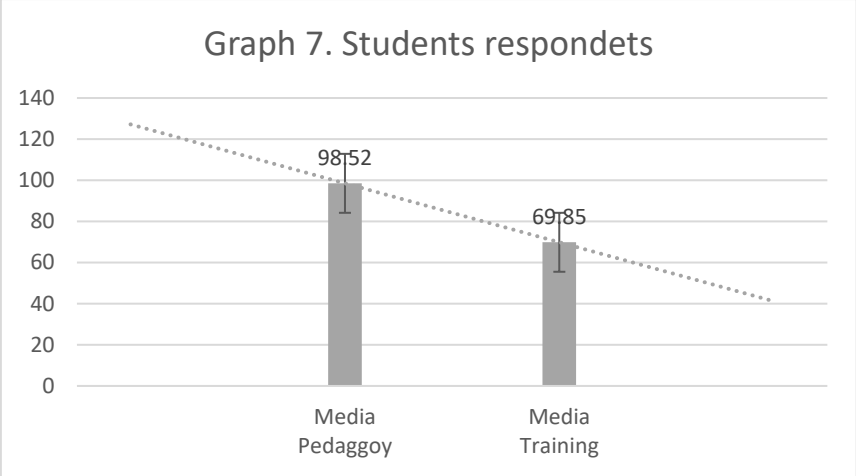
Table 2.
Respondents' opinion on the agreement of certain statements regarding Wizer.Me (%) (Source: Author) (Legend: Likert scale: 1-strongly disagree, 2-quite agree, 3-neither agree nor disagree, 4-quite agree, 5-completely agree)

Variable	1	2	3	4	5	%	M	MOD	SD
allows the creation of interactive worksheets for use in teaching	0	1	5	20	74	100	1.91	1	1.12
Elements that can be added: text, image, video, link or embed in various content.	0	1	6	24	68	100	20.03	1	1.05
Registration is possible by using an existing Google, Edmodo or Microsoft account or by entering an email address and password	1	3	9	68	19	100	1.12	1	1.01
Students who will join the class must create an account by logging in with an existing Google, Edmodo, and Windows account, or by entering an email address and password.	0	0	8	67	22	100	2.32	4	1.07
The student is enabled to monitor the student's performance according to the completion of the worksheet	0	0	3	22	75	100	1.91	1	0.71
Pronouncing certain German umlauts, phonemes and certain words in German gives me problems.	0	13	44	19	14	100	2.12	3	0.83
it is possible to define manual input or automatic display of feedback and results.	1	3	8	64	24	100	1.21	1	1.04

The Table 2 indicates the data of students' opinions on the agreement of individual statements, i.e. variables regarding the use of Wizer. Me. For the variable that allows the creation of interactive worksheets for use in teaching, students answered with 74% that they completely agree and only 1% that they do not agree at all. For the variable elements that can be added: text, image, video, or by adding various multimedia content, students completely agree with 68%; which means that the effectiveness of the wizer.Me was interactive and acceptable during hybrid teaching, as this variable indicated the existence of maintaining and the interactive connection between teachers and students. The highest percentage of responses to fully agree of 75% related to the Likert scale for the student the variable was enabled to monitor student achievement toward worksheet completion; whereby it can be concluded that Wizer. Me fully helped the functionality of hybrid teaching.



Graph 6. Student opinion on the importance of e-tools and systems for a hybrid model of education (Source:author)



Graph 7. Students' opinion on the satisfaction with the use of the combined model of hybrid learning through the Big Blue Button system (Source: authors)

4. Conclusions

This research will also try to answer the question of whether learning outcomes are more achieved with blended learning. The research implicitly indicates which type of hybrid learning model proved to be the most effective in mastering the course outcome and successful implementation and realization of teaching during COVID 19. This research can serve as an example for other faculties where it proves with the introduction of an adequate hybrid learning model verbal and nonverbal communication during COVID-19, but also provides the opportunity to independently perform certain tasks and self-improvement. The possibility for the student to organize his / her own workspace, but also to cooperate with other students and teachers in acquiring knowledge, and this can be achieved with a precisely designed hybrid model of learning. It is the research that indicates the improvement of the quality of learning and the possibility of active participation of students in the learning process, which thus improves the learning outcomes. Education is indispensable; it cannot be acquired against, but only in society. But this includes the expectation that all adolescents acquire the ability to be reflective of social reality, to be critical, with the ability to distinguish and the willingness to think about change. There is not just one option associated with education, such as the educated bourgeoisie option of creating the world. Education opens up an open horizon of opportunities in plural societies. The education system has to prepare for this open horizon, able to choose according to its own interests, but aware of the fact that the recognition of each other is the condition for the possibility of personal development. Finally, we must note that the role of teachers has changed drastically over the last few months, especially during COVID-19. With the advent of the hybrid model, their role has changed from a passive lecturer professor to an active research professor, who, taking advantage of all the benefits of new technologies, facilitates the teaching process while making teaching more interesting and effective. This research showed that the Big Blue Button, Google Classroom, and Wizer. Me to improve the adoption of learning outcomes, and was especially shown during the isolation of COVID-19. The highest percentage of responses to fully agree of 75% related to the Likert scale for the student the variable was enabled to monitor student achievement toward worksheet completion; whereby it can be concluded that Wizer. Me fully helped the functionality of hybrid teaching.

This research confirmed all the research hypotheses. The overall scientific contribution of the paper contains implications for the development of didactic-methodological practice in higher education, but will also determine possible guidelines for teachers and students in the joint design of a hybrid teaching model.

Declaration of Conflicting Interests

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