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Technology Acceptance of NAVID Learning Management System in the Iranian Medical English Courses under the COVID-19 Pandemic*

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Abstract
This mixed-method study endeavored to solicit the perspectives of Iranian collegiate students passing the obligatory course of medical English through *NAVID* Learning Management System and its acceptance during COVID-19 pandemic. Utilizing Technology Acceptance Model, this study also sought to examine the possible effect gender, academic degree, instructional mode, and e-learning duration in *NAVID* may have on the participants' attitudes. An online survey was employed to gather data from 78 Iranian students. Semi-structured interviews with ten participants were conducted as well to shed more light on the quantitative data regarding main advantages and disadvantages of medical English learning through *NAVID*. The data were analyzed through descriptive and inferential statistics along with inductive thematic analysis, respectively. Findings revealed that Iranian collegiate medical students viewed *NAVID* as a comprehensive e-learning platform to be favorable in terms of its *system/service quality*, *student/educational service quality*, and *perceived satisfaction*, but its *perceived satisfaction* was not aligned with their needs. Moreover, neither the individual variables, (viz., age and academic degree), nor the instructional variables (viz., instructional mode and e-learning duration) were predictors of the discrepancies among the participants in their perspectives and acceptance of *NAVID*. Learning ubiquitously and lacking face-to-face communication were the main advantage and disadvantage of learning medical English through *NAVID*, respectively. Results revealed that although under the Covid-19 pandemic the acceptance of *NAVID* and students' satisfaction with its use might not be related to the individual and instructional variables in the medical English courses, it might not be the case in others.

Keywords: Learning Management System, E-learning, COVID-19, Medical English, NAVID, Technology Acceptance Model

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1. Introduction

The growing spread of the COVID-19 pandemic in many parts of the world resulted in a temporary suspension of educational activities. According to UNESCO (2020), such a large-scale education suspension had been unprecedented. The introduction of full-online classes seemed to be the appropriate remedy for the unwanted situation (Al Lily et al., 2020; Bailey & Lee, 2020; Zourou & Potolia, 2021), as the pandemic spread could be maximized by populated social sectors such as university campuses (Weeden & Cornwell, 2020). In medical higher education of Iran, as in almost all parts of the world, this situation provided an incentive for the authorities and stakeholders to provide students with online courses or e-learning or mobile learning (m-learning), allegedly named emergency e-learning, which implies a rapid change from face-to-face education to online education (Murphy, 2020). This occurred because predicting the exact time to end this crisis was unlikely (Dhawan, 2020) and reducing face-to-face experiences could satisfy social distancing criteria (Murphy, 2020) to some degree. In this way, Iranian Medical universities have opted to build accounts for their stakeholders (e.g., practitioners, teachers, students, …) in a Learning Management System (LMS) which is a platform used in e-learning.

Levy and Stockwell (2013) refer to LMS as a web-based software application that provides teachers with a framework for assigning materials, making contacts with students, initiating student interactions, making assessment and accomplishing didactic tasks. LMS is also known as the Simulated Learning Environments, Interactive Learning Environments, Course Management Systems, or Electronic Learning Environments (De Smet et al., 2012). Research has already shown that the rapid growth of educational technologies (ed Tech) tools has resulted in their potential impact on educational practices (Luo & Yang, 2018; Jiang & Zhang, 2020), including creating more learning opportunities (Lai, Zhu, & Gong, 2015), improving learning outcomes (Aubusson et al., 2014; Crompton et al., 2017), and growing learner engagement (Fonseca et al. 2014; Rashid & Asghar, 2016). This study was an attempt to solicit the Iranian collegiate students' attitudes in medical English classrooms towards *NAVID*-supported activities through the application of

Technology-Acceptance Model (TAM) under pandemic circumstances of Covid-19.

TAM is a model defined as an individual's eagerness to use technology to get on with a task for which it was intended to back up (Teo, 2011). Davis (1989) developed TAM based on Fishbein and Ajzen's (1976) Theory of Reason Action to explain the reasons behind individuals' behaviors (cited in Dönmez-Turan & Kır, 2019, p. 21). Davis indicated that two prominent factors within TAM determine users' intentional behaviors to employ or reject Ed Tech tools, namely perceived ease of use and perceived efficacy. He defines the former as a persons' belief in the supportive function of a system and the latter as a person's belief in easy operation of the systems. This frame has been incorporated in many studies in different instructional-learning and professional contexts in both mainstream and language education. For example, Sun and Mei (2020) targeted Ed Tech acceptance of preservice Chinese EFL teachers, Koh and Kan (2020) showed the differences among Singaporean art students with regard to their perceptions of the quality of the system, their satisfaction with it and their use patterns. Kamal et al. (2020) investigated the effect of social media on TAM between graduate and undergraduate students and Rentler and Apple (2020) explored e-leaning acceptance of a specific LMS program in a Japanese context.

One of the popular LMS platforms widely used in medical higher education of Iran for online teaching and learning is *NAVID* LMS or *NAVID* through which synchronous educational web conferencing software can be integrated (Houshmandi et al., 2019). As part of *NAVID*, Adobe Connect and Big Blue Button (BBB) web conferencing system tools with synchronous communication applications can be tailored for teaching and learning various purposes (Fita et al., 2016). Using TAM, this study explored Iranian collegiate students' acceptance of *NAVID* in medical English classrooms not in an optional course they had experienced, but as a compulsory delivery mode in the time of COVID-19 pandemic. Under such circumstances, the spring semester sessions, which started from January 2020, were held for only a one-week period in conventional classrooms and after that there was a suspension for about 14 days. Then, the university administers provided

the teachers as well as all the students with free accounts on *NAVID*. As for the ethical issue, the participants consent for taking part in the survey and interviews gained through two consent form. This study was approved by the ethical committee of Medical University of Isfahan. Consequently, the following questions were proposed:

1. What are the medical students' attitudes towards English learning through *NAVID*?
2. To what extent the students' characteristics can influence their attitudes towards the applicability of *NAVID* and its acceptance in English classrooms of medical universities?
3. To what extent the teachers' instructional style and the length of online instruction influence students' attitudes towards the applicability of *NAVID* and acceptance of online medical English learning?
4. What are the main advantages and disadvantages of learning medical English through *NAVID*?

2. Literature Review

One way to organize distance education is through e-learning (Kerimbayev et al., 2017) as an alternative to conventional teaching method (Kumar Basak et al., 2018) and a fitting vehicle to provide content materials (Karkar et al., 2020). Nowadays, e-learning involves using online communication platforms to distribute educational multimedia content (Sethi et al., 2019). E-learning success and quality has been studied through different lenses and models (e.g., Fryer, Bovee, & Nakao, 2014; Khazaie et al., 2020). TAM is considered as one of the prevalent models to assess e-learning, and by extension LMS. Education literature is replete with exploring the effectiveness of and perspectives on e-learning from different fields and using various models and theories.

Smith et al., (2013) investigated the first-year chemistry students at the universities of England and Australia to explore the effect of AC on their learning performance. They used performance assessment of students, written assignments, and class and final exam reports to investigate this issue. The online discussions were analyzed to tap on all students and staff commentaries on the course. Quantitative results showed that AC resulted

in enhanced learning performance of the students. Commentary analysis results indicated that access to the class recordings was very helpful in classifying course contents. The only negative comment was about the incompatibility of AC with iPads.

A qualitative study by Yanga and Yenb (2016) aimed at finding out seven Taiwanese University students' perspectives on e-learning as a tool for their internship course as well as their feelings towards the facilitative role of this platform for learning. In-depth interview analyses revealed that e-learning enhanced teacher-student interaction, autonomy and motivation, and led to a more enjoyable learning experience, developed problem-solving skills, and provided an opportunity to deliver timely feedback to the students.

A comparative study of the academic staff and students' perspectives on e-learning by Alhabeeb and Rowley (2018) was conducted in Saudi Arabia to pin down the similarities and differences between the two parties in terms of Critical Success Factors (CSF) of e-learning. Two sets of related but separate surveys were distributed among 306 students and 230 academic staff. Results revealed that though the students believed in seven CSFs for e-learning, their counterparts were in favor of nine such factors. From among these factors, four of them were common and were ordered differently by both groups in terms of their importance. The students thought that teachers' characteristics, students' characteristics, support and training, and ease of access should be considered for the success of e-learning; however, the academic staff stated that students' characteristics are the most important factors.

Focusing on Human E-learning Interaction (HEI), Farhan et al. (2019) recruited 102 students and 10 teachers from a Canadian university to provide an account of their perspectives on a proposed E-learning User Interface (ELUI) in a mixed-methods study. Students' survey results revealed that their future use of ELUI was significantly predicted by perceived usefulness and ease of use of the program and their attitudes and behavioral intention towards it. Overall, the students' behavioral intention to use e-learning in the future was positive. Teachers' interview findings showed that they perceived the program to be time- and cost-

effective. They added that increased university support is required to enhance the quality of technology use.

The benefits and effectiveness of video-based e-learning was investigated in a survey study by Zaneldin et al. (2019). Sixty-seven undergraduate engineering students from UAE used instructional videos, then responded to the survey using the Blackboard platform. Students' performance in exams authenticated the benefits and positive impacts of the online experience as they outperformed their previous courses held traditionally. Survey results indicated that the majority of students were interested in video-based e-learning, and considered the videos to be supportive of and relevant to the course materials. Moreover, they mostly preferred instructor-made videos and seeing his/her face while recording. Despite their positive perspectives on the experience, they were in favor of blended learning, namely combining e-learning and face-to-face learning.

Kurt (2019) examined 144 Italian students' perceptions on LMS through survey and participants' self-reported perceptional evaluations. Path-analysis revealed that system quality (ubiquity, user-friendliness) was positively and significantly influencing system usage and user satisfaction. On the other hand, information quality was only impacting user-satisfaction. Finally, system usage and user-satisfaction led to lesser and higher degrees of system success, respectively.

Seven lecturers and nine postgraduate students at a public health school in Australia were interviewed in a study by Kite et al. (2020) the aim of which was to investigate the participants' perception of a LMS, called Canvas. A main theme extracted from the data was that Canvas mostly played the role of an information repository not as a locus for student-student and teacher-student interaction. The participants' belief that face-to-face learning was more contributory to learning and the obstacles to incorporate online learning were the main justification for using Canvas as only a site for providing learning resources.

Kerimbayev et al. (2020) described how LMS can offer strategic solutions to alleviate the challenges of vocational training of virtual education specialists. Online tasks as LMS Moodle were developed to

investigate how they can impact teacher and students from universities in Kazakhstan and Slovakia. They concluded that interactive international communication between students and teachers were successfully executed via LMS Moodle. This interactivity, in turn, resulted in greater students' activity and creativity and holding more discussions and seminars. Overall, teaching via LMS allowed new tools to be applied in the teaching process.

Demuyakor (2020) assessed 330 Ghanaian university students in China to explore their satisfaction with e-learning during COVID-19. The online survey results indicated that these respondents perceived e-learning as a great idea for instruction and supported its continuation. However, they complained about the high financial costs being imposed on them by e-learning and also connection problems.

3. Methodology

3.1 Research Design

A mixed-methods quantitative-qualitative design approach was employed to tap on Iranian medical students' perspectives on e-learning-supported English education via *NAVID* LMS. The design used in this study was QUAN→QUAL through which quantitative and qualitative data were collected sequentially. An online survey in Google Forms was designed to collect the quantitative data. A set of semi-structured interviews were conducted over skype to collect the qualitative data. They gave their consent to participate in the survey. The Cronbach's alpha coefficient of the questionnaire was 0.87. The face and content validity of the questionnaire was confirmed by five TEFL experts.

3.2 Participants

The convenience sampling was used to recruit 78 Iranian medical students at different Universities in Iran as the participants who took English as an obligatory course in the fall semester of the academic years 2020-2021. The demographic information of the participants is provided in Table 1.

Table1

Participants' Demographic Information

Gender (N)		Academic degree (N)		Age
Male	45	Bachelors	58	Ranged from 18 to 33
Female	33	Masters	17	
Total	78	Ph.D.	3	
		Total	78	

3.3 Data Collection Instruments

To answer the first three research question, the online survey developed in Google Forms included 61 questions was shared with different teachers teaching at different Iranian medical universities. They in turn shared the link with their students via social media or emails. These students had experienced e-learning via *NAVID* for at least two months. A total of 80 participants responded to the online survey among whom two were excluded due to their partial responding to the questions. The first section of the survey was about the respondents' demographic information (age, gender, the length of online instruction [hour per week], and academic degree) and two general questions about the experience (the technological tool used to attend the classes and the teachers' instructional mode). The second section of the survey consisted of 53 items adapted from Rentler and Apple (2020) and Al-Fraihat et al. (2020). To avoid miscomprehension, all the questionnaire items were translated into Persian to assess participants' perspectives on their online learning experience within the four subscales of perceived usefulness (7 items), system/service quality (24 items), student/educational system quality (16 items), perceived satisfaction/enjoyment (6 items). These items were developed in a five-point Likert-scale format from strongly agree to strongly disagree (appendix A, the English version). The last section of the survey included two items about the main advantages and drawbacks of online learning. The questionnaire was piloted by having five respondents (not included in the study) answering the questions which resulted in making some modifications to the ambiguous Persian equivalents. We asked the same teachers to provide the emails of those students who would like to be interviewed voluntarily. Ten individual semi-structured interviews were held in Persian over skype voice call using five guiding question (Appendix B). Each interview session lasted

between 10-15 minutes and recorded after having the respondents' informed consent.

3.4 Data Analysis

To answer the first research question, descriptive statistics (including frequency and percentage) were calculated. Independent samples t-test were employed to examine the difference between male and female respondents with regard to their opinions about the online learning experience. Three sets of one-way analysis of variance were calculated to find out whether the differences in the respondents' academic degree, length of exposure to online learning (hour per week), and the teachers' instructional materials have impacted their perspectives or not. To answer the last research question, the frequency of selecting each answer to the last two questions was calculated and the interview data were explored. All interviews were transcribed verbatim, translated into English, and analyzed inductively following Merriam (2009); the transcription of the interviews was read several times and segmented into separate units through which two broad segments, including the main advantages and the disadvantages of online learning emerged. Within each broad category, a set of sub-categories were identified which received a label and further grouped together based on thematic analysis.

4. Results

4.1 The Participants' Perceptions

The survey questions asked the respondents to mark one of the 5 Likert-point scales which best conveyed their opinion about each question. The percentage of selecting each option in the different subscales is represented in Fig. 1. For readers' convenience and saving space, percentage totals of the positive (strongly agree and agree) and negative options (strongly disagree and disagree) are used in Fig. 1.

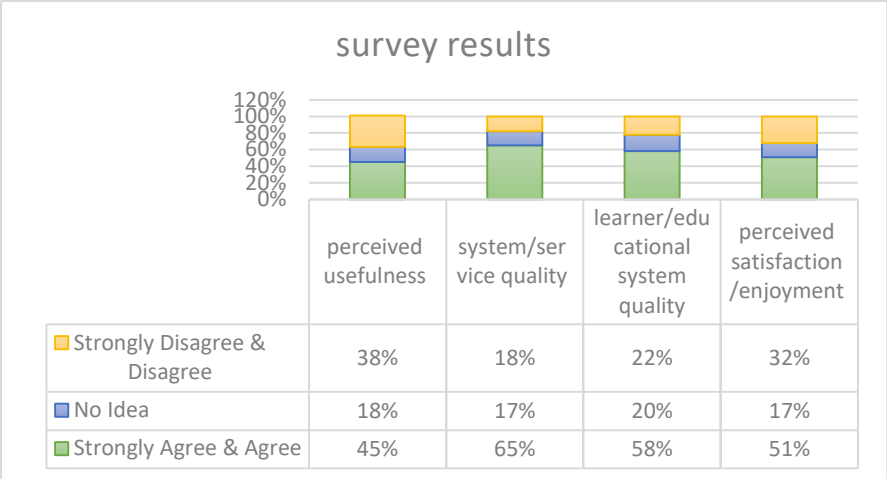

Figure 1. Analysis of participants' survey responses

Most students generally had positive perceptions towards their e-learning experience using LMS. This is evident when comparing the percentage of selecting the positive options (strongly agree and agree) with those of the negative ones. Sixty-five percent of participants were satisfied with the system/service quality. In conjunction, 58% of them believed that student/educational system quality was fulfilled in *NAVID*. With respect to perceived satisfaction/enjoyment, 51% of them indicated that they were pleased with *NAVID* and enjoyed it. The participants showed significantly lower satisfaction with perceived usefulness of online learning using *NAVID* as 38% of them either disagreed or strongly disagreed with the items asking about this subscale.

4.2 Gender and Academic Degree Influences

Research question two investigated the impact of gender and academic degree differences on students' acceptance of technology based on their perceptions. The ANOVA results presented in tables 2 and 3 show neither gender nor academic degree impacted the participants' technology acceptance (sig>0.05).

Table 2

ANOVA Results for the Influence of Gender Differences

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.388	3	.129	.507	.679
Within Groups	18.907	74	.255		

Total	19.295	77

Table 3

ANOVA Results for the Influence of Academic Degree Differences

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.470	3	.490	1.748	.165
Within Groups	20.747	74	.280		
Total	22.218	77			

4.3 Instructional Mode and the Length of Online Instruction Influences

The influence of the professors' instructional style and the length of online instruction (hour per week) was explored in research question three. In view of this, two sets of ANOVA statistics were calculated again. Similar to the previous individual variables, these two instructional variables did not have any impact on students' acceptance of technology as indicated in Table 4 and Table 5, respectively (sig>0.05).

Table 4

ANOVA Results for the Influence of Instructional Mode

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	120.674	3	40.225	1.76	.162
Within Groups	1690.29	74	22.84		
Total	1810.96	77			

Table 5

ANOVA Results for the Influence of E-learning Duration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.31	3	6.104	1.91	.135
Within Groups	236.40	74	3.195		
Total	254.71	77			

4.4 Main Advantages and Disadvantages of Online Learning

The participants' attitudes towards the main advantages and drawbacks of learning medical English through *NAVID* were explored using data from both instruments, namely the last two questions of the online survey and individual semi-structured interviews. Table 6 shows the frequency and percentage of selecting the statements representing the main advantage of

the experience. As detailed in Tale 6, more than two third (N=58) of the participants believed that the opportunity to be trained at any time and place was the main advantage of medical college English learning through *NAVID*.

Table 6
Descriptive Statistics of the Main Advantages of E-Learning

Category	Frequency	Percentage
Using various electronic resources	9	11.5%
Training at any time and place	58	74.4%
Better self-monitoring of academic achievement	3	3.8%
Repeat the training content whenever is required	8	10.3%
Total	78	100%

On the other hand, the main disadvantages of learning medical English trough *Navid* were lack of face-to-face communication and reduced student learning, respectively as presented in Table 7.

Table7
Descriptive Statistics of the Main Disadvantages of E-Learning

Category	**Frequency**	**Percentage**
Lack of face-to-face communication	24	30.%
Impossibility of conducting detailed and precise tests and assessments	11	14.1%
Decreased physical activity	4	5.1%
Reduced students' social activity	7	9%
Increased ancillary costs (e.g., internet and computer costs)	9	11.5%
Decreased academic motivation of students due to being far from university	9	11.5%
Reduced student learning	13	16.7%
Decreased social activity of professors	1	1.3%
Total	78	100%

Interview analyses revealed more about the participants' attitudes towards medical English learning via *NAVID*. Almost all interviewees

held positive attitudes towards the experience, although they also pointed out some negative aspects relating to both the instructional and technical issues. Accordingly, the transcribed interview data was categorized into three broad themes. Table 8 presents the themes and the coding system which is more elaborated on by presenting excerpts from interviews. Pseudonyms (L1 to L10) were used to ensure the anonymity of the interviewees.

Table 8

Themes and Codes Extracted from Interview Data

Themes	**Codes**
A. Positive points	1. Learning free from time and space limitations
	2. Having secure personal accounts
	3. Accessing online classes easily
	4. Having organized sections
	5. Being able to have multimodal modes of communication (including text, image, audio, and video)
	6. Being able to access the recorded class sessions
	7. Being able to access sessions using various Ed Tech tolls (e.g., smartphone, tablet, PC, computer, etc.)
	8. Reducing costs such as paper and printing costs
B. Instructional problems	1. Lacking face-to-face communication
	2. Reducing amount and depth of learning
	3. Being less active students than previous semesters
	4. Losing motivation due to being less active in class
	5. Lacking sufficient control on student engagement

C. Technical problems	1. Not operating so well with mobile data connection compared to Wi-Fi network. 2. Losing connection without any precautions 3. Losing microphone and speaker features abruptly 4. Needing some other programs to operate (e.g., flash player)

Almost all interviewees seemed satisfied with online medical English learning as they were able to receive and learn the materials ubiquitously. The following are the comments of two participants.

> *During the previous semesters, we had to attend the classes in person on the appointed time. I sometimes was not able to attend on time and most of the times I was marked as absent. Online learning alleviated this shortcoming as I had no trouble attending the classes on time and I could enter the class atmosphere anytime anywhere.* (L4)

> *I am not just a student; I am a teacher as well. As a consequence, I could not reside in the dorm and had to commute between the instructional-learning context and professional field in which my university was located. It is no surprise that I sometimes lost the classes because of traffic or climatic issues. I breathed a sigh of relief as this semester was online and I had no worries about such issues as I could attend the classes even in my own classes.* (L7)

Many of the participants reported that they were satisfied with privacy issues of the *NAVID*. The following comment is revealing in this regard.

> *I was very pleased to receive a text message containing the information about how to get access to my personal account page in NAVID. In my opinion, users' privacy*

> *issues are very important in cyber spaces which was successfully achieved in this system. (L3)*

When asked about technical issues of *NAVID*, most of the participants were positive, reporting that accessing the medical English class sessions were easier than they supposed. For example, L2 commented that:

> *I had no prior experience of online classes. As soon as being informed of holding the semester sessions online, I got frustrated because I suffer from kind of ccc……..ee .iittt iiii ee eeiii nn ddddd dddeee frustration as I joined the class in few seconds and could see my name in the class list.*

The participants commented that *NAVID* had organized and user-friendly sections. L1 stated:

> *Different parts of NAVID were organized and located in the page conveniently. I could easily find the needed features and act according to class requirements as everything was easily available.*

With regard to communicating with the teacher and classmates, the participants asserted that multimodal communication was an appealing feature of *NAVID*. The following comment is a representative of this point:

> *I could easily communicate with my medical English teacher and classmates whenever needed either by leaving a comment in the chat box or enabling my microphone. Even the teacher permitted us to use our voooo ottt eeeeeee nn eeee exceiii llll l eees… we could also upload pictures and other file types. L10*

They also thought that having access to the recorded class sessions was very helpful for their learning. As L8 stated that:

> *Most teachers recorded the class sessions from the beginning of class and shared the link with or we could access the files via our personal NAVID pages. I had no*

> *worries of missing any important point or not understanding a part of the medical English lessons, because I could easily review the whole session via the recorded file and compensate for it.*

Accessing the class sessions was possible using various kinds of technological tools including smartphones, PCs, computers, tablets, so on. This was enumerated as a positive point by L9.

> *I do not have a PC and initially I thought I could not attend the classes and I have to talk to my teachers to not blame me for being absent until I could buy one. But I got surprised when I realized that there was no problem with attending the classes using my cell phone.*

Some participants expressed positive perceptions towards the financial benefits provided by the medical English online learning. For instance, L2 stated that:

> *I was always fed up with carrying books to the university and submitting bulky hardcopies as my term projects or exercises, because apart from imposing financial burden they also caused some health problems for me.*

Technical and instructional problems were also explored in the interviews. When asked about instructional problems, most responses were concerned about low quality of learning compared to in-person classes. Lacking face-to-face communication was a factor leading to such a shortcoming.

> *In my opinion, even the most rigor and high-quality online learning experiences cannot replace conventional face-to-face classes especially when the number of attendees is high. (L7)*

According to L5 lacking face-to-face communication was detrimental to the quality of learning:

> *Despite all the positive aspects of online learning, I did not master all the learning materials deeply. I think holding classes in such a short time resulted in a superficial understanding as I really had problems in answering final exams, however I did not have the same problem previously.*

The same point also affected the students' active engagement in class discussions which finally led to losing motivation. L 3 and L7's comments represent these two issues, respectively.

> *I am an undergraduate student who attend crowded csssses ff 22 rr eeee ee eee ccccccc cccc eee uumeer ff online students was high and the class time was not so much, we rarely had a chance to have class discussions and mostly our medical English teacher was the sole speaker.*

> *Because I was rarely allowed to comment on the medical English materials, I was less motivated to study the lessons and be a critical learner than previous semesters. Indeed, the blame should not be targeted to my medical English teacher, because time and class limitations were the main barriers.*

Student active engagement was another factor being impacted by lacking face-to-face communication. According to L1:

> *We all had to disable our microphone and only listen to our medical English teacher, who was speaking uninterruptedly from the beginning of the class. There was no way to be sure that all the students were listening or were really attending the class.*

Technical problems reported by the respondents were mostly associated with the Internet connection. L10 complained that she only had access to mobile data and the problem led to losing two sessions:

> *The first two sessions I entered the classes successfully but after a few minutes I lost the connection and I was*

> *not able to fix the problem. My classmate said that you would better connect a Wi-Fi network because maybe mobile data signals do not have the needed speed to operate this online program.*

Losing connection was also problematic for those students who used Wi-Fi because they asserted that although they were online, they lost the voice. L9 and L3 experienced these problems while lecturing in the class and while being the audience of a lecture, respectively:

> *One session I was lecturing my PowerPoint and I was not sure that my classmates and professor had access to my voice after reaching the end of the slides I asked whether yyyy ddd yyy uueiii ……..een I eeeeeee eee connection somebody else was lecturing and I had to resume my lecture from the beginning. This problem happened to other two classmates as well.*

> *Sometimes I was not able to hear the person who was lecturing, whether my classmates or my medical English teacher, although there seemed to be no problem in connection. In such cases, I supposed the problem was with my connection but when I checked the chat box, I realized that my classmates had the same problem which happened out of a sudden.*

The Adobe Connect (vs. BBB), embedded in *NAVID*, operated only when some concomitant software were installed by the users. This was a problem based on what L2 stated:

> *At the beginning, running the program was not so straightforward. As soon as I opened my personal page, several notifications popped up which included instructions on how to run it on different devices… rrr example I had to download and run flash player in my PC. In sum, several pre-requisites had to be followed to use NAVID with Adobe Connect.*

5. Discussion and Conclusions

The first research question concerns the participants' attitudes towards medical English learning through *NAVID*. The results based on the survey responses showed that there generally had positive attitudes towards this experience. The items under the subscales system/service quality and perceived usefulness received the highest and lowest agreed upon responses, respectively. Positive attitudes towards system/service quality is related to students' positive attitudes towards *NAVID* which is in line with the findings of Roca et al.'s (2006), Saba's (2012), and Al-Samarraie et al.'s studies (2017). On the contrary, Lin and Wang (2012) found that system quality is not a determining factor for e-learning acceptance and satisfaction. The low-positive reactions of the participants to perceived usefulness may be attributed to their limited exposure and experience in using *NAVID* and their unfamiliarity with e-learning environments. To integrate e-learning to educational systems, institutions should take into account students' learning needs and, in turn, the students should accept instructional changes and attain the necessary digital skills (Rodrigues et al., 2019). In line with Patricia (2020), students in this study preferred face-to-face learning and perceived e-learning to be less inclusive of their learning needs. Perceived usefulness is one the main predictors of students' attitudes towards using e-learning during COVID-19 (Rizun & Strzelecki, 2020). Gamble (2018) also found that Japanese EFL students have responded moderately positively to LMS.

Regarding the second research question, the findings showed that neither gender nor academic degree differences contributed to the participants' technology acceptance and their attitudes towards Medical English learning via *NAVID* which corroborate the findings of Lau and Shaikh (2012). In contrast, Wang and Zhao (2020) found differences between male and female collegiate students in terms of their psychological states. Some other previous studies show differences among males and females in terms of the effectiveness of e-learning (Islam et al., 2011), comfort with and preference of e-learning (González-Gómez et al., 2012; Naresh et al., 2016), and more eagerness to participate in e-learning-supported English classrooms (Adams et al., 2018; Win & Wynn, 2015). As for the impact of academic degree on participants attitudes, this study contradicted Adams et al.'s (2018) findings in which

they found that the more the higher the educational level of the students, the more they embraced e-learning- and LMS-supported English language education.

As for the third question, the results revealed that instructional style was not related to differences in participants' attitudes and technology acceptance. This contradicts Bigirwa et al. (2020) which demonstrated that e-learning adoption was substantially impacted by instructional design. Although *NAVID* allows multimodal forum, some English teachers shared the English language materials in voice or pdf formats asynchronously. One reason might be related to the urgency of students' needs during the crisis that forced the teachers to develop their students with the needed classes sometimes without adequate technical support (Hodges et al., 2020). It is known that perceived instructor presence has a positive impact on LMS acceptance among students in EFL classrooms (Ghapanchi & Aurum, 2011). The absence of this presence and the apparent physical separation between the students and instructors is a characteristic of e-learning (Guri-Rosenblit & Gros, 2011; Sangrà et al., 2012) as an approach to distance education (Ali et al., 2018) which negatively impacted the effectiveness of LMS-supported language learning. Meanwhile, the length of online instruction did not affect the attitudes of the students and their acceptance of LMS. According to Moghavvemi and Salarzadeh Janatabadi (2018) exposure time has an incremental impact on e-learning which should be traced over time. Different results would be obtained as a consequence of more exposure to *NAVID*-supported medical English education in this study.

Regarding to question four, the main benefit of medical English learning via LMS was considered as ubiquitous learning. The opportunity to be fostered for content and learning activities without being tied by time and place limitations is an obvious advantage of e-learning (Afacan Adanır et al., 2020). Providing rich opportunities for e-student is one of the factors influencing their e-learning systems adoption in developing countries (Salloum & Shallan, 2018). On the contrary, lacking face-to-face communication and connection problems were the major instructional and technical problems, respectively which reflected Tang and Bradshaw's (2020) concern that communication medium is one of the

factors affecting instruction quality and team collaboration. Following Sarker et al. (2019), it is recommended that learning mode should be tailored in order for all students to benefit from e-learning. Due to lack of face-to-face interaction, the findings contradicted Kamal et al. (2020) who stated that knowledge sharing via social collaboration facilitates learning performance. On the other hand, the Internet and system characteristics are significant determining factors for e-learning quality and its user-friendliness (Kanwal & Rehman, 2017). Technological aspects are among the important factors to be considered when adopting e–learning (Al-Araibi et al., 2019).

Overall, the results of this study show that Iranian medical students embraced *NAVID* for learning English in terms of its system/service quality, its student/educational system quality, and perceived satisfaction/enjoyment, but perceived satisfaction was not so positively reported. Moreover, differences in gender, educational degree, instructional mode, and length of e-learning did not affect their acceptance of *NAVID*. The findings revealed that Iranian medical students seem to find e-learning through *NAVID* an effective and supportive educational medium irrespective of their age, academic degree, presentation the instructional materials, and the average length of exposure to such training during COVID-19 pandemic.

One of the limitations of the study is related to the short exposure period to online medical English classroom through Adobe Connect or BBB. Further studies conducted over a longer period might shed new light on the relationships among different TAM variables. More studies can also compare medical collegiate students from different academic majors along with their English and/or subject-area teachers' perceptions on the acceptance of *NAVID* to optimize the e-learning-supported medical English learning in Iran.

Ethics approval

Ethics approval for this study was approved by the Human Research Ethics Committee at the Medical University of Isfahan (Reference: IR.MUI.RESEARCH.REC.1399.732).

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Appendix A. the online survey (English version)

Demographic information:

Age: Academic degree: Gender:

Instructional information:

Length of e-learning (hour per week):

What tool did you use to connect the LMS?

Table computer

PC

Smartphone

Tablet

How did your medical English teacher instruct the courses?

Synchronous instruction via Adobe Connect or BBB

Recorded teaching of the materials (offline teaching)

Text file (PowerPoint, Pdf)

Text files + teacher's voice

Scanned photo of the lessons' pamphlets

What is the main advantage of e-learning?

1. Using various electronic resources
2. Training at any time and place
3. Better self-monitoring of academic achievement
4. Repeating the training content whenever is required

What is the main disadvantage of online medical English learning?

1. Lack of face-to-face communication
2. Impossibility of conducting detailed and precise tests and assessments
3. Decreased physical activity
4. Reduced students' social activity
5. Increased ancillary costs (e.g., internet and computer costs)
6. Decreased academic motivation of students due to being far from university
7. Reduced student learning
8. Decreased social activity of professors

1	Using *NAVID* enabled me to accomplish my tasks more quickly. SD D NI A SA
2	Using *NAVID* improved my learning performance. SD D NI A SA
3	Using *NAVID* helped me learn effectively. SD D NI A SA

4	*NAVID* was a useful tool for course practices. SD D NI A SA
5	I prefer taking online courses in *NAVID* instead of attending conventional class. SD D NI A SA
6	Holding courses on *NAVID* helped me get prepared for the exams. SD D NI A SA
7	Overall, *NAVID* was useful. SD D NI A SA
8	The layout was easy to navigate on PC/smartphones. SD D NI A SA
9	The important information on the screen was placed in areas most likely to attract my attention. SD D NI A SA
10	Texts and graphics were easy to understand. SD D NI A SA
11	Fonts (style, color, saturation) were easy to read on-screen. SD D NI A SA
12	I perceived the design of *NAVID* (e.g., fonts, style, color, images, videos) to be good and met the quality standards. SD D NI A SA
13	I could find my way around *NAVID* easily (just a few clicks to where I want to go). SD D NI A SA
14	I could find the required information easily on this *NAVID*. SD D NI A SA
15	I did not face system errors in this *NAVID*. SD D NI A SA
16	I was able to access pages within a reasonable time. SD D NI A SA
17	I could access the content easily from any device (tablet, notebook, iOS, Android). SD D NI A SA
18	There were enough and clear instructions/training about how to use *NAVID*. SD D NI A SA
19	It was easy to use *NAVID*. SD D NI A SA
20	It was easy to understand the structure of *NAVID* and how to use it. SD D NI A SA
21	*NAVID* was flexible to interact with. SD D NI A SA
22	All components within *NAVID* were fully integrated and consistent. SD D NI A SA
23	*NAVID* launched and ran right away. SD D NI A SA
24	I generally did not encounter any technical problems accessing this *NAVID*. SD D NI A SA
25	*NAVID* did not crash frequently. SD D NI A SA
26	*NAVID* protected my information from unauthorized access by logging only with my account and password. SD D NI A SA
27	*NAVID* provided me with a personalized entry page. SD D NI A SA
28	The IT services staff was available and cooperative when facing an error at *NAVID*. SD D NI A SA
29	Information from *NAVID* was in a form that was readily useable. SD D NI A SA

30	The structure of *NAVID* was well organized into logical and understandable components. SD D NI A SA
31	*NAVID* provided proper online assistance and help. SD D NI A SA
32	*NAVID* provided interactivity and communication facilities such as chat, forums, and announcements. SD D NI A SA
33	I believe that communication facilities had been effective components in learning English. SD D NI A SA
34	*NAVID* provided me with different learning styles (e.g. flash animation, video, audio, text, simulation, etc.) and they were interesting and appropriate in my study. SD D NI A SA
35	*NAVID* provided evaluation components and assessment materials (e.g., quizzes, assignments). SD D NI A SA
36	I believe it was good to use *NAVID*. SD D NI A SA
37	I have a positive attitude toward using *NAVID*. SD D NI A SA
38	I am not intimidated by using *NAVID*. SD D NI A SA
39	My previous experience with e-learning systems and computer applications helped me in using *NAVID*. SD D NI A SA
40	I was able to perform tasks in *NAVID* successfully. SD D NI A SA
41	I was satisfied with the performance of *NAVID*. SD D NI A SA
42	I enjoyed using *NAVID* in my study. SD D NI A SA
43	*NAVID* satisfied my educational needs. SD D NI A SA
44	I enjoyed online learning using *NAVID*. SD D NI A SA
45	*NAVID*'s interface for holding class sessions was user-friendly. SD D NI A SA
46	It was easy for me to take part in online classes. SD D NI A SA
47	Overall, I am pleased with the experience of using *NAVID*. SD D NI A SA
48	Using *NAVID* increased my knowledge and helped me to be successful in the module. SD D NI A SA
49	*NAVID* was a very effective educational tool and helped me to improve my learning process. SD D NI A SA
50	*NAVID* made communication easier with the instructor and other classmates. SD D NI A SA
51	*NAVID* saved my time in searching for materials and cut down expenditures such as paper costs. SD D NI A SA
52	*NAVID* helped me to achieve the learning goals of the module. SD D NI A SA
53	If it is possible I would like to take all courses online. SD D NI A SA

Appendix B: The guiding interview questions

1) What is your overall evaluation of online learning using *NAVID*?
2) What are the benefits of online learning using *NAVID*?
3) Did this tool help you achieve your instructional goals? If yes, how?
4) What are the instructional problems associated with *NAVID* during the semester?
5) What are the technical problems associated with *NAVID* during the semester?