DIGITAL HUMANITIES | RESEARCH ARTICLE

Distance learning during the COVID-19 pandemic: students’ communication and collaboration and the role of social media

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Abstract: COVID-19 has led to an increase in the use of distance learning and social media for educational and communication purposes. The paper aims to investigate the factors that impact communication and collaboration in a distance learning environment and outside of the virtual classroom during the COVID-19 pandemic and the role of social media in this process. The online survey was used to collect the data and test the research hypotheses. In total, 234 students’ answers were analyzed. The study findings indicate that the increasing use of Facebook (FB) for professional purposes improves students’ communication and collaboration during distance learning courses. High activity on FB and LinkedIn (LKND) is important for communication with educators. In line with engagement theory, active participation

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PUBLIC INTEREST STATEMENT

In this paper we investigate the factors that impact communication and collaboration in a distance learning environment and outside of the virtual classroom during the COVID-19 pandemic and the role of social media in this process. We find that the increasing use of Facebook (FB) for professional purposes, active participation in distance classes and high assessment of the online tools improve students’ communication and collaboration during distance learning courses. Increased activity on FB and LinkedIn (LKND) is also essential for communication with educators. The study adds to our understanding of distance learning in the midst of a pandemic and has practical implications for all active participants in the educational process.
in distance classes and high assessment of the online tools used positively influence the processes of communicating and collaborating among students. The study contributes to the distance learning literature as it adds to our understanding of distance learning in the midst of a pandemic through the lenses of engagement theory. It also has practical implications for all active participants in the educational process.

Subjects: Information & Communication Technology; ICT; Higher Education; Study Skills

Keywords: Social media; distance learning; Business and Finance education; COVID-19

1. Introduction

COVID-19 has led to fundamental changes in many areas of life in countries around the world. The pandemic has also impacted the higher education sector as the lockdowns imposed in most countries resulted in the immediate closure of universities and schools and the move to remote delivery of all academic activities (Sangster et al., 2020). This way, distance learning, increasingly popular but mostly voluntary over the years, has now become a must.

Distance learning can take various forms and be supported by different systems and applications. It can be referred to as e-learning, blended learning or mobile learning (Ajayi et al., 2019). The common feature of all these approaches is the fact that the delivery is remote (Means et al., 2010). The focal point of remote delivery is to facilitate the exchange of information, which enables the interaction and exchange of knowledge between students at any time. In addition, remote delivery is compatible with other teaching methods and technologies of prior learning in the sense that it can continue to support traditional learning tools. This type of interaction extends learning beyond the walls of the university and removes some of the restrictions imposed on learning, such as distance and space (Ally & Prieto-Blazquez, 2014; Bansal & Dhananjay, 2014) but we do not have a detailed account whether it enables communication and collaboration between the educator and the student, as well as among students. Communication and collaboration are essential competencies not only for education but also for professional success in the labor market.

The extent to which students find themselves comfortable in communication and collaboration with the use of distance learning depends on several factors, including their gender (Breslow et al., 2013; Green et al., 2015; Marks et al., 2005; Park & Choi, 2009), age (Breslow et al., 2013; Green et al., 2015; Marks et al., 2005; Park & Choi, 2009), prior experience (Henderikx et al., 2017). However, research is scarce in understanding other important contingent variables that impact students’ communication and collaboration in distance learning. Inspired by some prior research (cf.: Chugh & Ruhi, 2018; D’Aquila et al., 2019; Holmes & Rasmussen, 2018; Voivonta & Avraamidou, 2018), we argue that also students’ familiarity with the use of social media can influence their behavior during courses, including those which adopt the distance learning approach.

Social media can be used for entertainment (Whiting & Williams, 2013), social interactions (Edegoh et al., 2013; Papoola, 2014) as well as for professional purposes (Whiting & Williams, 2013), but they also offer new solutions and mechanisms for the exchange of knowledge for many educational institutions (Aydin, 2012; Voivonta & Avraamidou, 2018). In our study, we focus on LinkedIn (LNKD) and Facebook (FB) as the two most popular social media platforms (Duggan et al., 2015).

The study aims to investigate the factors that impact communication and collaboration in distance learning during the COVID-19 pandemic and the role of social media in this process. To address the above-mentioned gaps in the literature, we focus on the different aspects of social media usage (FB and LNKD) and their influence on soft skills development in a very specific distance learning environment. We formulate three main hypotheses regarding the impact of social media use on communication among students and educators, as well as on the collaboration during distance learning. As
a source of the data, we use the results of a survey conducted between May 2020 and June 2020 among the Business and Finance students compulsorily participating in distance learning programs in Poland. The students represent a mix of different levels of courses as well as full and part-time bachelor’s and master’s studies. 66% of respondents are full-time students, while 64% are bachelor’s level students. Although the average age of respondents is low (23 years old on average), majority of them 23 declare that they have job experience. We employ descriptive statistics and multiple regression to analyze the collected responses. The study findings indicate that increasing use of FB for professional purposes improves the communication among the students and the collaboration during distance learning classes (López-Hernández & Silva-Pérez, 2016). High activity on FB and LKND plays an important role in communicating with educators. Moreover, in line with engagement theory (Kearsley & Shneiderman, 1998; Tucker & Clarke, 2014), active participation in distance classes and high assessment of the online tools also determine the processes of communicating and collaborating among students.

This research is intended to make important contributions to the extant literature and practice. The present paper adds to our understanding of distance learning approach in education in the midst of a pandemic through the lenses of engagement theory (cf. Kearsley & Shneiderman, 1998; Pange et al., 2010; Thompson, 2009). We shed additional light on the factors that impact students’ communication and collaboration in this learning environment. Mainly, we add the missing element on the importance of students’ use of social media in the studying process and the development of their soft skills (Chugh & Ruhi, 2018; Debreceny et al., 2019; Voivonta & Avraamidou, 2018). Our study findings may be particularly interesting for academics as they might encourage them to take a proactive approach in developing curricula in distance learning environments. Finally, we identify some avenues that may be insightful for other researchers as more studies are needed to understand the distance learning better.

The work is structured into four sections. The next section describes students’ communication and collaboration in the distance learning environment. The section that follows provides information on the theoretical background of the study and presents the research hypotheses. After that, the empirical research methods and findings are discussed. The last section offers conclusions together with an indication of the potential avenues for future research.

2. Students’ communication and collaboration in the distance learning environment
The Covid-19 pandemic has caused serious changes in the educational landscape affecting 94% of the world’s student population in more than 190 countries (UNESCO, 2020). Most governments around the world have temporarily closed universities and schools in an attempt to contain the spread of the virus (Zhang et al., 2020). All academic activities have been switched to remote delivery, even in institutions in which online learning was not widely used (Sangster et al., 2020; Toquero, 2020). This emergency transformation involved various obstacles in remote learning (Crawford et al., 2020), such as, among others, lack of internet access or appropriate equipment, lack of a quiet space of access to computers, learning resource access issues. Faculty preference for traditional learning and inertia with regard to change were also included among a range of personal, social, technical, political, and economic infrastructure challenges the higher education institutions needed to face (cf.: Hashemi & Adu-Gyamfi, 2021; Iseolorunkami et al., 2021; Sangster et al., 2020). This emergent and sudden resulted in an increase in research work on various aspects of remote learning in the midst of a pandemic (cf.: Bozkurt & Sharma, 2020; Fujita, 2020; Hodges et al., 2020; Selwyn, 2020). The studies confirm that this situation is extraordinary not only for educators employed by higher education institutions but also for students. Creating an effective distance learning solution is not so easy in general (CoSN, 2020), not to mention the emergency COVID-19 pandemic situation.

The literature on distance learning mainly focuses on its overall effectiveness as a tool for supporting education and students’ satisfaction (e.g., Jones & Chen, 2008; Basioudis & de Lange, 2009; Basioudis et al., 2012; Gavira & Omoteso, 2013; Duncan et al., 2012; Baxter & Thibodeau,
2011). In some technical, quantitative disciplines that demand systematic work (Grabiński et al., 2015; Jones & Chen, 2008), distance learning approach can be less useful while teaching, as it falls short of sufficiency in terms of interaction (Jones & Chen, 2008). On the other hand, Chen and Jones (2007) found distance learners to be better prepared and more active as regards asking questions than their counterparts participating in traditional classes. Students learning remotely also perceived group work to be more satisfying and regarded related communication and decision-making processes as more effective (Jones & Chen, 2008). Researched distance learners were also found to have more autonomy in self-paced learning and to be more responsible for the learning process (Abraham, 2007). Therefore, distance learning approach promotes student-centered pedagogy, and prepares students for ongoing self-learning, important for the professional development and mobility on the labor market.

Continually changing economic environment forces enterprises to be more flexible, which also impacts ideal employees’ profiles and requires from them well-established abilities to adapt to various functions. It can be noticed that more and more often, mobility in the labor market depends not only on the technical knowledge of a specified profession but mainly on soft skills (Pincus et al., 2017). Soft skills are defined as the “interpersonal, human, people or behavioral skills needed to apply technical skills and knowledge in the workplace” (Weber et al., 2009, p. 356; De Villers, 2010). Team collaboration, communication skills, sharing knowledge and experience with others, and personal culture are considered particularly important in the professional field and enable a good relationship with clients, colleagues, and superiors. Several researchers have indicated a significant increase in the importance of soft skills in creating an organization’s success and the individual’s success in the labor market (DeLange et al., 2006; Mitchell et al., 2010; Robles, 2012; De Villers, 2010). Thus, the importance of including the development of competencies such as communication as well as group working and problem-solving abilities in education is also supported by research findings (Hassal et al., 2005; Holtzman & Kraft, 2011; Howcroft, 2017; Morgan, 1997; Zaid et al., 1994). Competitive pressures and technology have led to expectations that graduates should demonstrate additional competencies with increasing importance given to nontechnical capabilities and skills, which enable professionals to make successful use of the knowledge gained through education (Kavanagh & Drennan, 2008).

Before the pandemic, most academic courses included collaborative elements and have continued to do so since the distance learning approach was adopted. One of the ways in which collaboration through distance learning can be trained is via synchronous communication (online chat, messaging platforms, virtual classrooms, etc.) where all participants can actively engage in communicating from different geographical locations (Duncan et al., 2012). The variety of options like video conferencing and screen sharing can help all members of the group to collaborate, and the process of learning can be stimulated by the teacher who encourages learning by online quizzes, presentations or other activities. This way of working is more and more popular all around the world and can be used in a multinational environment at a very low cost. Another method used in distance learning is asynchronous communication, which provides more flexibility to students and can teach them other soft skills, such as time and workload management. Students learn to collaborate through the delegation of different tasks and learn to take responsibility for separate parts of the project before it is finally combined and finished (Sangster et al., 2020). Encouraging students to work together on specific tasks should be crucial in the modern education process as they can develop many soft skills needed in numerous workplaces (Chan & Chan, 2011). Group discussions on dedicated forums on online platforms, where students’ ideas are shared and discussed, can positively influence collaboration on a project, develop students’ engagement and improve their academic performance (Chan & Chan, 2011).

Despite the apparent benefits, distance learning faces a considerable number of technical and social challenges. Some researchers suggest that educational institutions and educators are still challenged on how to design learning content in a remote format in order to develop students’ skills and engage them in the courses (Kaliisa et al., 2019). Moreover, online communication and
collaboration require typing the responses and explanations and can take considerably more time and be less effective in some cases. Written messages must be carefully constructed in order to avoid sending an undesired message or unintentionally offending the recipient, which often takes more time than an oral conversation. Communicators ought to take great care when expressing their thoughts in order not to face the unintended consequences of the communication. Finally, generational differences in collaboration and communication tendencies may appear (Chen et al., 2012).

3. Theoretical background and hypotheses development

Education is crucial for social and economic change. For students, new information and communication technologies, as well as the development of applications for mobile devices, have brought extraordinary changes not only in education but also in society (Concannon et al., 2005; Gómez-Ramirez et al., 2019). Although there are some studies on the use of social media in education, the research on how they impact students’ skills is scarce. With this paper, we aim to fill this gap with the use of engagement theory as the theoretical lens.

The engagement theory was introduced to the literature by Kearsley and Shneiderman (1998). The underlying principle of engagement theory is that in order to make learning effective, students must be involved or “engaged” in their course of study through meaningful tasks and interaction with others (Tucker & Clarke, 2014). The engagement theory does not assume the need to support the educational process with the use of technology. However, technology may enable student engagement which could not have otherwise been accomplished. Therefore, it is used as a conceptual framework for technology-based learning and teaching (Pange et al., 2010).

According to this theory, to achieve student engagement, three components, linked to learning skills that emerge, are required. “Relate” represents the need for collaboration in learning and development of soft skills. “Create” means that students should be involved in assignments that are project-based, which requires defining problems and conducting original projects. “Donate” requires learning activities to be taken outside the academic environment and emphasizes the need for students to actively participate and contribute meaningfully to the wider community while learning (Kearsley & Shneiderman, 1998; Thompson, 2009).

Collaboration and involvement of the students are achieved with the use of communication, planning, management, and social skills, which are integral to working in teams (Tucker & Clarke, 2014). As a result, students engage by working together, seeking input and clarification from each other, motivating each other as well as learning about one another (Kearsley & Shneiderman, 1998). Becoming a part of a successful collaborative team allows students to effectively engage in the learning process and might be found useful in their future professional life. Collaboration is not a new approach in learning. However, historically speaking, students have been taught to work and learn on their own rather than in a team. As Kearsley and Shneiderman (1998) argue, collaborative learning increases students’ motivation to learn and gives them the opportunity to work in groups that are often quite diverse in terms of skills and backgrounds. It helps them to get an understanding of diversity and multiple perspectives.

Engagement theory in the computer-based learning environment does promote interaction. However, this interaction is understood as human interaction in the context of group activities, not individual interaction with an instructional program, measured, e.g., with the number of key presses or mouse clicks. Therefore, computers and the internet use are regarded as communication tools in the educational process, and not just a form of media delivery device (Kearsley & Shneiderman, 1998).

In our study, we focus on the distance learning approach in education. Therefore, the role of technology in the engagement theory, which is to facilitate all aspects of student engagement, is of particular interest to us. As Kearsley and Shneiderman (1998) stress, “the use of e-mail, online conferencing, Web databases, groupware, and audio/videoconferencing significantly increases the
extent and ease of interaction among all participants, as well as access to information”. With this paper we intend to provide new insights into the “relate” element of the engagement theory by adding new communications and collaboration tools to the ones mentioned above, namely social media.

As reported by Duggan et al. (2015), in the United States, 71% of FB users are students. FB was launched in 2004 and has become the third most popular global website, after Google.com and YouTube.com (Alexa, 2016). Access to FB is available from various mobile devices, including desktops, laptops, tablets, and smartphones, via the Internet and mobile networks. LKND is a professional Social Networking Sites (SNS) service designed specifically for business professionals. LKND was launched in 2003. It is the world’s largest professional network and the most popular global website (Alexa, 2016). LinkedIn aims to enable registered users to establish professional documentation and maintain a network of people they know and trust professionally. Like other social media platforms such as FB and Twitter, LKND can be accessed on various computer devices (Debreceny et al., 2019). LKND is an example of a social networking site used by many students and instructors for academic purposes. Research has shown that 50% of adults with college diplomas, who are online, use LKND (Greenwood et al., 2016). Some prior research (see among others: D’Aquila et al., 2019; Holmes & Rasmussen, 2018) found that social media are tools used by teachers and students to facilitate education. The rapid exchange of information and knowledge via social networks has significantly changed student learning (Chugh & Ruhi, 2018; Sharabati, 2018). Social media, which include blogs, discussion forums and social networks, have profoundly changed the way students and teachers communicate. With the increasing use of social media, the demand for communication and the exchange of information between people (Aydin, 2012) is growing.

In line with the engagement theory and conducted literature review we formulate the following hypotheses:

H1: The use of FB and LKND increases communication among students in distance learning.

H2: The use of FB and LKND increases communication among students and teachers in distance learning.

H3: The use of FB and LKND increases collaboration during distance learning.

For each hypothesis, independent variables were created describing a given factor. The next section describes the study design.

4. Empirical findings

4.1. Data collection and method of research

The primary source of data was an online questionnaire conducted among the students participating in distance learning courses in Business and Finance at the Cracow University of Economics, the University of Lodz, the University of Rzeszow, the Technical University of Krakow, the Technical University of Rzeszow, the University of Social Science and the Public University of Malopolska in the period from May 2020 to June 2020. The questionnaire was pre-tested in April 2020. 300 students took part in the survey. However, 234 answers were found to be valid. This difference stems from the fact that not all students who chose to participate in the study responded to all survey questions. Incomplete questionnaires were eliminated.

The questionnaire was divided into three sections. The first section contained questions related to personal characteristics of the students, such as gender, age, type of studies, work experience. The second section focused on students’ assessment of their collaboration and communication
with the use of online tools during and outside classes. The third and last section searched students’ use of social media, mainly FB and LKND.

The respondents were asked to attribute the following answers to questions related to the communication and collaboration as well as the use of social media: 1—never, 2—almost never, 3—very rarely, 4—rarely, 5—sometimes, 6—often, 7—very often. For analysis of the obtained results, descriptive statistics and multiple regression were used.

4.2. Variables

4.2.1. Dependent variables

Learning is a social activity that is constructed through communication, collaborative activities and interactions with others. Students organize and build their knowledge, but online technology is a medium that supports the interaction process (Duffy & Jonassen, 1992; Swan, 2005). Thus, incorporating technology and online tools in the study programs can result in generating an environment of interaction, cooperation and collaboration in and outside their classes (Al-Kindi & Al-Suqri, 2017; Awidi et al., 2019; Basantes et al., 2017; Kearsley & Shneiderman, 1998). Bansal and Dhananjay (2014) note that use of mobile applications and online tools such as WhatsApp increases immediacy and connection between students and teachers, while Ally and Prieto-Blazquez (2014) report that with online tools, students can contact at any time regardless of the time differences. The dependent variables were constructed based on students’ assessment of their communication with colleagues (COM_COL) and teachers (COM_TEACH) as well as collaboration (COLLAB) during and outside distance learning using online tools such as: emails, Messenger, WhatsApp, eLearning platforms, virtual whiteboard, sharing platforms, audio and video communication tool (MSTeams, Zoom).

4.2.2. Independent variables

After conducting a literature review, the independent variables were identified in order to reflect the factors influencing students’ communication and collaboration. Entertainment is the most important function of social media. Whiting and Williams (2013) found that their respondents solely use social media to satisfy their needs for leisure and amusement. Moreover, according to Edegoh et al. (2013), people use, for example, FB to make new and rediscover old friends. Social interaction or integration is one of the key reasons why people engage in the use of social media (Asemah, 2011). Whiting and Williams (2013), as well as Papoola (2014), confirm that social media are used to socialize and interact with family. Especially, FB’s social characteristics might provide an important infrastructure for productive collaboration between learners (Voivonta & Avraamidou, 2018). We assume that students using FB and LKND for private purposes (variables FB_AIM_PRIV and LNKD_AIM_PRIV) such as: amusement, seeking and establishing social contact, seeking and sharing various type of information, learning and self-education, following online groups and forum for public discussion, communicate and collaborate better in their studies.

Moreover, social media can be widely used for professional purposes such as finding information about deals, sales, products, businesses and jobs as well as promotion of the company or products (Whiting & Williams, 2013). Thus, students using FB and LKND for professional purposes (variables FB_AIM_PROF and LKND_AIM_PROF) engage more in online communication and collaboration in their studies.

Two variables FB_ACT and LKND_ACT aimed at measuring the activities of students on social media in order to understand how they use different social media platforms to connect, monitor, and engage with each other were based on a honeycomb framework Kietzmann et al. (2011). This framework presents seven building blocks of social media functionalities to describe different features of the social media user experience and the extent to which different social media are driven by each functionality. These functionalities refer to the extent to which users can converse with each other, share content, let others know about their presence, form relationships, know the
reputation of others, form groups, and ultimately reveal their identity (Baccarella et al., 2018; Kietzmann et al., 2011). Active users of social media are more involved in online communication and collaboration in their studies.

The variable representing time is used in order to measure the intensity of students’ use of social media. Bart (2009) defined light usage of social media as less than 31 minutes per day. Heavy usage was defined as over 61 minutes per day. We assume that students spending more time on FB (TIME_FB) or LKND (TIME_LKND) frequently engage in online communication and collaboration in their studies.

The relationship between prior distance learning experience and student performance has been studied but shows non-uniform results (Green et al., 2015; Marks et al., 2005; Yükseltürk & Bulut, 2007). According to Henderikx et al. (2017), previous positive learning experience is significantly related to the learning strategies and better time management and thus determines successful online learning. Taking these findings into consideration, we reason that students who assess their prior use of online teaching tools (USEFUL) positively and who actively participated in prior online classes and activities (TEACH_ACT) are more skilled at collaborating and communicating during distance learning.

4.2.3. Control variables
Several studies on gender (GEND) as a predictor of online course success show that there is no significant difference between male and female learners with regard to study success (Breslow et al., 2013; Green et al., 2015; Marks et al., 2005; Park & Choi, 2009). Nevertheless, the aim of the study is to investigate the possible relationship between gender and online communication and collaboration in distance learning.

The relationship between age characteristics (AGE) and online course outcomes has often been studied, showing similar results as research on gender as a predictor (Breslow et al., 2013; Green et al., 2015; Marks et al., 2005; Park & Choi, 2009). As the study concentrates on the factors that hinder or support collaboration and communication, we expect that age makes a difference as regards the searched aspects of distance learning.

Educational characteristics were frequently studied in relation to course outcomes providing contradictory results (Breslow et al., 2013; Green et al., 2015). We assume that learners at non-stationary studies use online communication and collaboration in their studies more frequently due to the lack of regular and everyday contact with classmates and teachers.

Finally, based on earlier studies (Henderikx et al., 2017), we assume that professional experience (EXPER) is positively related to better online communication and collaboration due to more professional knowledge.

The following Table 1 summarizes the variables and their measurement. The variables were standardized.

4.3. Descriptive statistics
Table 2 shows descriptive statistics for the sample. The average assessment of communication with colleagues in distance learning is higher (mean = 3.316) than with the teachers (mean = 2.626). The collaboration on online learning is rated relatively low by the respondents (mean = 2.958). Interestingly, the searched students use FB rather for private purposes, while LKND for professional reasons. However, it is worth noting that the use of FB both for private and professional aim is more widespread than LKND. Students use FB more actively than LKND.

The wider popularity of FB is also visible in the average time spent on FB. In the case of FB, it is 340 minutes monthly on average, while as regards LKND, it is only about 11 minutes monthly on average. Interestingly, the average assessment of self-activity during distance learning made by
| Variable            | Variable function | Description                                      | Measurement                        | Original scale | References                                      |
|---------------------|-------------------|--------------------------------------------------|------------------------------------|----------------|------------------------------------------------|
| COM_COL             | Dependent         | Communication among the students                 | Index (average) of 10 items        | Ordinal 1 … 7  | Basantes et al.,                               |
| COM_TEACH           | Dependent         | Communication with the teachers                  | Index (average) of 10 items        | Ordinal 1 … 7  | Basantes et al.,                               |
| COLLAB              | Dependent         | Collaboration of students                        | Index (average) of 10 items        | Ordinal 1 … 7  | Basantes et al.,                               |
| FB_AIM_PRIV         | Independent       | Use of FB for private purposes                   | Index (average) of 2 items         | Ordinal 1 … 7  | Edegoh et al.,                                 |
| FB_AIM_PROF         | Independent       | Use of FB for professional purposes              | Index (average) of 11 items        | Ordinal 1 … 7  | Whiting & Williams,                            |
| LNKD_AIM_PRIV       | Independent       | Use of LNKD for private purposes                 | Index (average) of 2 items         | Ordinal 1 … 7  | Edegoh et al.,                                 |
| LNKD_AIM_PROF       | Independent       | Use of LNKD for professional purposes            | Index (average) of 11 items        | Ordinal 1 … 7  | Whiting & Williams,                            |
| FB_ACT              | Independent       | The activity on the FB                           | Index (average) of 7 items         | Ordinal 1 … 7  | Kietzmann et al.,                              |
| LNKD_ACT            | Independent       | The activity on the LNKD                        | Index (average) of 7 items         | Ordinal 1 … 7  | Kietzmann et al.,                              |
| TIME_FB             | Independent       | Time spent on FB monthly                         | In minutes                         | Metric         | Bort,                                          |
| TIME_LNKD           | Independent       | Time spent on LNKD monthly                       | In minutes                         | Metric         | Bort,                                          |
| USEFUL              | Independent       | The assessment of the usefulness of selected tools of distance learning | Index (average) of 11 items        | Ordinal 1 … 7  | Marks et al.,                                  |
| TEACH_ACT           | Independent       | The assessment of self-activity during distance learning | Index (average) of 10 items        | Ordinal 1 … 7  | Marks et al.,                                  |
students is relatively high (mean = 5.076) but their assessment of the usefulness of selected tools of distance learning is slightly lower (mean = 3.913).

The average age of respondents is 23. Women represent most of the searched population (almost 85%). 66% of respondents are full-time students, while 64% are bachelor’s level students. Nearly 85% of respondents declare that they have job experience.
Appendix A provides correlations between all variables. It is apparent that there exists correlation between the use of FB for professional aim and the collaboration and communication, which at this point already supports the hypotheses. There exist significant correlations between the use of FB and LKND for private and professional purposes and the activity on FB and LKND, respectively.

4.4. The results of the estimation of equation

Table 3 presents the results of the estimation of the equation testing the first hypothesis.

The results reveal that only the estimates of three independent variables are statistically significant: use of FB for professional purposes (FB\_AIM\_PROF), the assessment of the usefulness of selected tools of distance learning (USEFUL) and the assessment of self-activity during distance learning (TEACH\_ACT). This means that increasing use of FB for professional purposes, the positive assessment of the usefulness of selected tools of distance learning and the assessment of self-activity during distance learning improve communication among students in distance learning. Thus, the first hypothesis, which states that the use of FB and LKND increases communication among students in distance learning, is partially supported. The statistical results provided by the equation, testing the hypothesis, show that the equation represents a relatively high degree of explanation because the adjusted R-squared ($R^2$) equals 0.251, therefore in 25.1% of changes in communication among students are explained by the proposed independent variables.

The results of the estimation of the second linear regression are presented in Table 4, showing a positive and significant influence of the activity on the FB (FB\_ACT), the activity on the LKND (LKND\_ACT), the assessment of the usefulness of selected tools of distance learning (USEFUL) and the assessment of self-activity during distance learning (TEACH\_ACT) on students’ communication with teachers.

Regression 2 confirms that the active use of FB and LKND and high assessment of online classes by students and their engagement impact students’ communication with educators. This finding is in line with the results of the studies conducted by, e.g., Voivonta and Avraamidou (2018) and Chugh and Ruhi (2018). Thus, the second hypotheses, which states that the use of social media increases communication among students and teachers in distance learning, is partially supported. The statistical results provided by the equation testing the hypothesis show that estimated regression represents a relatively high degree of explanation because the adjusted R-squared ($R^2$) equals 0.292. The model collectively explains 29.2% of the variability of communication with teachers around its mean.

The results of the estimation of the third regression are presented in Table 5. They show a positive and significant effect of the use of FB for professional purposes (FB\_AIM\_PROF), the activity on the LKND (LKND\_ACT), time spent on LNKD (TIME\_LKND), the assessment of the usefulness of selected tools of distance learning (USEFUL) and the type of the study (TYPE\_STUD) on the collaboration during online classes.

The positive signs of the coefficients show that the use of FB for professional purposes, the high activity and time spent on LKND, as well as the assessment of the usefulness of selected tools of distance learning positively affect collaboration in distance learning. Thus, the third hypothesis, according to which the use of FB and LKND increases collaboration during distance learning, is partially supported. The statistical results provided by the equation testing the hypothesis show that the equation represents a relatively high degree of explanation because the adjusted R-squared ($R^2$) equals 0.273. Our model collectively explains 27.3% of the variability of the COLLAB around its mean.

5. Conclusions
The rapid development of technology impacts not only people’s lives in general, but also education (Concannon et al., 2005). In such critical moments as the COVID-19 lockdown, distance methods of learning are irreplaceable when it comes to supporting the educational...
Table 3. The results of the estimation of equation testing the first hypothesis

| N = 234 | Dependent Variable: COM_COL |
|-----------------|-------------------------------|
| R = 0.544 R² = 0.296 Adjusted R² = 0.251 | |
| F(14.219) = 6.568 p < 0.000 Std.Error of estimate:0.701 |

|                      | b* | Std.Err. | b  | Std.Err. | t(219) | p-value |
|----------------------|----|----------|----|----------|--------|---------|
| Intercept            | 0.868 | 0.481 | 1.805 | 0.073 |
| FB_AIM_PRIV          | −0.044 | 0.084 | −0.024 | 0.045 | −0.521 | 0.603 |
| FB_AIM_PROF          | 0.194 | 0.080 | 0.124 | 0.051 | 2.417 | 0.016 |
| LNKD_AIM_PRIV        | −0.011 | 0.079 | −0.012 | 0.087 | −0.143 | 0.887 |
| LNKD_AIM_PROF        | −0.106 | 0.136 | −0.065 | 0.083 | −0.781 | 0.435 |
| FB_ACT               | 0.128 | 0.090 | 0.097 | 0.068 | 1.424 | 0.156 |
| LNKD_ACT             | 0.193 | 0.124 | 0.173 | 0.111 | 1.556 | 0.121 |
| TIME_LNKD            | 0.026 | 0.059 | 0.000 | 0.001 | 0.442 | 0.659 |
| TIME_FB              | 0.069 | 0.062 | 0.000 | 0.000 | 1.110 | 0.268 |
| USEFUL               | 0.237 | 0.067 | 0.216 | 0.061 | 3.551 | 0.000 |
| TEACH_ACT            | 0.225 | 0.063 | 0.148 | 0.042 | 3.552 | 0.000 |
| GEND                 | −0.070 | 0.059 | −0.157 | 0.133 | −1.175 | 0.241 |
| AGE                  | 0.086 | 0.070 | 0.015 | 0.012 | 1.225 | 0.222 |
| EXPER                | −0.070 | 0.062 | −0.156 | 0.138 | −1.127 | 0.261 |
| TYPE_STUD            | −0.099 | 0.067 | −0.170 | 0.114 | −1.487 | 0.138 |

b* stands for standardized regression coefficients, significant b values* are bolded
Table 4. The results of the estimation of equation testing the second hypothesis

| N = 234 | Dependent Variable: COM_TEACH |
|---------|-----------------------------|
|         | R = 0.578 R² = 0.334 Adjusted R² = 0.292 |
|         | F(14.219) = 7.863 p < 0.000 Std. Error of estimate: 0.549 |

|   | b* | Std.Err. | b | Std.Err. | t(219) | p-value |
|---|----|----------|---|----------|--------|--------|
| Intercept | 0.978 | 0.376 | 2.599 | 0.010 |
| FB_AIM_PRIV | -0.043 | 0.082 | -0.019 | 0.035 | -0.526 | 0.600 |
| FB_AIM_PROF | 0.146 | 0.078 | 0.075 | 0.040 | 1.876 | 0.062 |
| LNKD_AIM_PRIV | 0.031 | 0.077 | 0.028 | 0.068 | 0.407 | 0.684 |
| LNKD_AIM_PROF | -0.136 | 0.132 | -0.067 | 0.065 | -1.029 | 0.304 |
| FB_ACT | 0.192 | 0.088 | 0.116 | 0.053 | 2.188 | 0.030 |
| LNKD_ACT | 0.266 | 0.121 | 0.192 | 0.087 | 2.207 | 0.028 |
| TIME_LNKD | 0.053 | 0.057 | 0.001 | 0.001 | 0.921 | 0.358 |
| TIME_FB | -0.010 | 0.060 | 0.000 | 0.000 | -0.158 | 0.875 |
| USEFUL | 0.145 | 0.065 | 0.106 | 0.048 | 2.236 | 0.026 |
| TEACH_ACT | 0.255 | 0.062 | 0.135 | 0.033 | 4.142 | 0.000 |
| GEN | -0.077 | 0.058 | -0.139 | 0.104 | -1.332 | 0.184 |
| AGE | -0.099 | 0.068 | -0.014 | 0.010 | -1.455 | 0.147 |
| EXPER | 0.068 | 0.060 | 0.123 | 0.108 | 1.137 | 0.257 |
| TYPE_STUD | 0.074 | 0.065 | 0.102 | 0.089 | 1.137 | 0.257 |

b* stands for standardized regression coefficients, significant b values* are bolded
Table 5. The results of the estimation of equation testing the third hypothesis

| Variable          | b*   | Std.Err. | b    | Std.Err. | t(219) | p-value |
|-------------------|------|----------|------|----------|--------|---------|
| Intercept         | 0.208| 0.506    | 0.412| 0.681    |        |         |
| FB_AIM_PRIV       | -0.034| 0.083   | -0.019| 0.048    | -0.407| 0.684   |
| FB_AIM_PROF       | 0.323| 0.079    | 0.221| 0.054    | 4.087  | 0.000   |
| LNKD_AIM_PRIV     | -0.131| 0.078   | -0.153| 0.091    | -1.683| 0.094   |
| LNKD_AIM_PROF     | -0.126| 0.134   | -0.083| 0.088    | -0.944| 0.346   |
| FB_ACT            | 0.035| 0.089    | 0.028| 0.071    | 0.394  | 0.694   |
| LNKD_ACT          | 0.242| 0.122    | 0.232| 0.117    | 1.979  | 0.049   |
| TIME_INKD         | 0.133| 0.058    | 0.002| 0.001    | 2.288  | 0.023   |
| TIME_FB           | 0.064| 0.061    | 0.000| 0.000    | 1.043  | 0.298   |
| USEFUL            | 0.189| 0.066    | 0.184| 0.064    | 2.874  | 0.004   |
| TEACH_ACT         | 0.107| 0.062    | 0.075| 0.044    | 1.709  | 0.089   |
| GEND              | -0.023| 0.059   | -0.056| 0.140    | -0.396| 0.692   |
| AGE               | 0.150| 0.069    | 0.028| 0.013    | 2.178  | 0.030   |
| EXPER             | -0.034| 0.061   | -0.081| 0.145    | -0.560| 0.576   |
| TYPE_STUD         | 0.169| 0.066    | 0.308| 0.120    | 2.565  | 0.011   |

b* stands for standardized regression coefficients, significant b values* are bolded.
process. Their implementation and use can also have other positive consequences, such as the improvement in students' competence in terms of soft skills, including communication and collaboration capabilities. In this study we focus on Business and Finance courses. Soft skills are particularly needed in the work of contemporary professionals and have long been a concern of education.

However, the digital and generation gap as well as the specific characteristic of distance learning can represent an obstacle to the development of students' communication and collaboration skills. The research on understanding what drives communication and collaboration in a distance learning environment is scarce. Thus, this study addresses this gap in the literature. Firstly, it provides empirical evidence on the important contingent variables that impact students' communication and collaboration in emergency distance learning caused by the COVID-19 pandemic. Secondly, it proves and tests the different aspects of social media usage (FB and LKND) and its influence on the development of soft skills in a very specific distance learning environment. Some authors have already identified the multiple benefits of social media usage for learning and teaching, such as improved performance, the convenience of learning and higher engagement (see: Chugh & Ruhi, 2018). As social media usage continues to grow in higher education, more research on their impact is warranted (see: Chugh & Ruhi, 2018; Voivonta & Avraamidou, 2018).

The analysis of 234 Business and Finance students' responses allowed us to partially support our three hypotheses. The study findings indicate that the increasing use of FB for professional purposes improves communication among the students and collaboration during distance learning. High activity on FB and LKND plays an important role in communicating with educators. LNKD activity and time spent on this social medium also determine students' collaboration. The results are in line with other studies confirming that social media can provide a valuable teaching tool that enhances student learning and form an important infrastructure for productive collaboration and communication between students and teachers (cf. Aydin, 2012; Voivonta & Avraamidou, 2018). But the study also identifies different factors that impact the studied phenomena. Active engagement in the distance classes and high assessment of the online tools also positively influences the processes of communicating and collaborating, which is in line with engagement theory (cf. Kearsley & Shneiderman, 1998; Tucker & Clarke, 2014). Finally, the type of study and age are factors significantly influencing students' collaboration during classes.

The study contributes to the extant knowledge of distance learning, studying it through the lens of engagement theory (cf. Kearsley & Shneiderman, 1998). We add the missing element to the factors that impact the student's communication and collaboration in distance learning. We show the importance of students' use of social media in the teaching process. We also argue that distance learning should foster the development of soft skills, which are essential for professional (see: Chugh & Ruhi, 2018; Voivonta & Avraamidou, 2018). Finally, the study may have practical implications, as it provides arguments for the broader use of social media in distance education for communication and collaboration purposes. The educators can promote FB or LNKD among students and encourage them to apply them while, e.g., working on a joined project.

Our study is not free from limitations. One is the sample size. Replication with more data could enable generalization of the results and a meta-analytic combination of study results. Furthermore, an interesting direction for future research would be to explore other social media use (e.g., Twitter or Instagram) in the teaching setting for the purpose of producing scientific evidence about the ways how they can be utilized to enhance communication and collaboration as well as to achieve other educational goals (cf. Debreceny et al., 2019). Future researchers could consider investigating the link between the use of social media and academic performance.
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References
Abraham, A. (2007). Student-centred teaching of accounting to engineering students: Comparing blended learning and traditional approaches. Faculty of Commerce-Papers, University of Wollongong, 1–11. Accessed 1 October 2020. Available at: https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1463&context=commpapers

Ajayi, A. Ayo, C. K., Olamide, O., & Amoo, E. O. (2019). Mobile learning and accounting students’ readiness in tertiary and professional institutions in Nigeria. Cogent Arts & Humanities, 6(1), 1–25. https://doi.org/10.1080/23311983.2019.1676570

Alexo (2016). The top 500 sites on the web. Accessed 1 October 2020. Available at: https://www.alexa.com/
top/sites

Al-Kindi, S. S., & Al-Suqri, M. N. (2017). Mobilizing learning: Using moodle and online tools via smartphones. International Journal of Knowledge Content Development & Technology, 7(3), 67–86. https://doi.org/10.5865/IJKCT.2017.7.3.067

Ally, M., & Prieto-Blazquez, J. (2014). What is the future of mobile learning in education? Revista De Universidade Sociedad Del Conocimiento, 1(1), 142–151. https://doi.org/10.7238/rusc.v1i1.2033

Asemah, E. S. (2011). Selected mass media themes. Jos University Press.

Awidi, I. T., Paynter, M., & Vujosevic, T. (2019). Facebook group in the learning design of a higher education course: An analysis of factors influencing positive learning experience for students. Computers & Education, 129, 106–121. https://doi.org/10.1016/j.compedu.2018.10.018

Aydin, S. (2012). A review of research on Facebook as an educational environment. Educational Technology Research and Development, 60(6), 1093–1106. https://doi.org/10.1007/s11423-012-9260-7

Baccarela, C. V., Wagner, T. F., Kietzmann, J. H., & McCarthy, J. P. (2018). Social media? It’s serious! Understanding the dark side of social media. European Management Journal, 36(4), 431–438. https://doi.org/10.1016/j.emj.2017.07.002

Bansal, D., & Dhananjay, J. T. (2014). A study of students’ experiences of WhatsApp mobile learning. Global Journal of Human-Social Science Research, 14(4), 27–32. https://doi.org/10.1016/j.emj.2018.07.002

Bart, M. (2009). Do college students spend too much time on Facebook, YouTube and other social networking sites? Faculty Focus. Magna Publications. Accessed 1 October 2020. Available at: https://www.facultyfocus.com/uncategorized/do-college-students-spend-too-much-time-on-facebook-youtube-and-other-social-networking-sites/

Basantes, A. V., Naranjo, M. E., Gallegos, M. C., & Benitez, N. M. (2017). Mobile devices in the learning process of the faculty of education science and technology of the Technical University of the North in Ecuador. Formación Universitaria, 10(2), 79–88. http://dx.doi.org/10.4067/S0718-50062017000200009

Basiosioudis, I. G., & de Lange, P. A. (2009). An assessment of the learning benefits of using a web-based learning environment when teaching accounting. Advances in Accounting, Incorporating Advances in International Accounting, 25(1), 13–19. https://doi.org/10.1016/j.adiac.2009.02.008

Basiosioudis, I. G., de Lange, P. A., Suwardy, T., & Wells, P. (2012). Accounting students’ perceptions of a learning management system: An international comparison. Accounting Research Journal, 25(2), 72–86. https://doi.org/10.1108/039611211287279

Baxter, R., & Thibodeau, J. (2011). Does the Use of Intelligent Learning and Assessment Software Enhance the Acquisition of Financial Accounting Knowledge? Issues in Accounting Education, 26(4), 647–656.

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Coronavirus pandemic. Asian Journal of Distance Education, 15(1), i–vi. https://doi.org/10.5281/zenodo.3778083

Breslow, L., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom: Research into edX’s first MOOC. Research & Practice in Assessment, 8, 13–25. https://www.learntechlib.org/p/157941/

Chan, C. K. K., & Chan, Y. Y. (2011). Students’ views of collaboration and online participation in Knowledge Forum. Computers & Education, 57(1), 1445–1457. https://doi.org/10.1016/j.compedu.2010.09.003

Chen, C. C., & Jones, K. T. (2007). Blended learning vs. traditional classroom settings: Assessing effectiveness and student perceptions in an MBA accounting course. The Journal of Educators Online, 4(1), 1–15. https://doi.org/10.9743/JOE.2007.1.3

Chen, C. C., Jones, K. T., & Xu, S. (2012). The communication methods of today’s students. The CPA Journal, 82(11), 66–71.

Chugh, R., & Ruhi, U. (2018). Social media in higher education: A literature review of Facebook. Education and Information Technologies, 23(2), 605–616. https://doi.org/10.1007/s11639-017-9621-2

Concannon, F., Flynn, A., & Campbell, M. (2005). What campus-based students think about the quality and benefits of e-learning. British Journal of Educational Technology, 36(3), 501–512. https://doi.org/10.1111/j.1467-8535.2005.00482.x

CoSN (2020). COVID-19 response: Preparing to take school online. https://www.cosn.org/sites/default/files/COVID-19responseMember%20Exclusive_0.pdf

Crawford, J., Butler-Henderson, K., Rudolph, J., & Glowatz, M. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. Journal of Applied Teaching and Learning (JALT), 3(1), 9–28. https://doi.org/10.37074/jolt.2020.3.1.7

D’Aquilla, J. M., Wang, D., & Mattia, A. (2019). Are instructor generated YouTube videos effective in...
accounting classes? A study of student performance, engagement, motivation, and perception. Journal of Accounting Education, 47, 63–74. https://doi.org/10.1016/j.jaccedu.2019.02.002

De Villiers, R. (2010). The incorporation of soft skills into accounting curricula: Preparing accounting graduates for their unpredictable futures. Meditari Accountancy Research, 18(2), 1–22. https://doi.org/10.1108/1022259201000007

Debreceny, R. S., Wang, T., & Zhou, M. J. (2015). Research in social media: Data sources and methodologies. Journal of Information Systems, 33(1), 1–28. https://doi.org/10.2308/isys-51984

DeLange, P., Jackling, B., & Gut, A. (2006). Accounting graduates’ perceptions of skills emphasis in Australian undergraduate accounting courses: An Investigation from 2 Victorian Universities. Accounting and Finance, 46(3), 365–386. https://doi.org/10.1111/1467-629X.2006.00173.x

Duffy, T. M., & Jonassen, D. H. (1992). Constructivism and the technology of instruction: A conversation. Erlbaum.

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015). Demographics of key social networking platforms, Pew Research Center, Washington, USA. Accessed 1 October 2020. Available at: https://www.pewresearch.org/internet/2015/01/09/demographics-of-key-social-networking-platforms-2/

Duncan, K., Kenworthy, A., & McNamara, R. (2012). The effect of synchronous and asynchronous participation on students’ performance in online accounting courses. Accounting Education, 21(4), 431–449. https://doi.org/10.1080/09639284.2012.673387

Edgooh, L. O. N., Asenmah, E. S., & Ekamem, I. B. (2013). Facebook and relationship management among students of Anambra State University, Nigeria. International Review of Social Sciences and Humanities, 6(1), 205–216.

Fujita, N. (2020). Transforming online teaching and learning: Towards learning design informed by information science and learning sciences. Information and Learning Sciences, 127(7–8), 503–511. https://doi.org/10.1108/ILS-04-2020-0124

Gavira, L. R., & Omotoso, K. (2013). Perceptions of the usefulness of virtual learning environments in accounting education: A comparative evaluation of undergraduate accounting students in Spain and England. Accounting Education, 22(5), 445–466. https://doi.org/10.1080/09639284.2013.814476

Gómez-Ramírez, I., Valencia-Arias, A., & Duque, L. (2019). Approach to M-learning acceptance among University students: An integrated model of TPB and TAM. International Review of Research in Open and Distributed Learning, 20(3), 141–164. https://doi.org/10.19173/irrodl.v20i3.4061

Grabinski, K., Kędzior, M., & Krasodomska, J. (2015). Blended learning in tertiary accounting education in the CEE region – A polish perspective. Accounting and Management Information Systems, 14(2), 378–397. https://cis.ae.ouc.ac.kr/jcis/article/14_2_7.pdf

Green, A. J., Chang, W., Tanford, S., & Moll, L. (2015). Student perceptions towards using clickers and lecture software applications in hospitality lecture courses. Journal of Teaching in Travel and Tourism, 15(1), 29–47. https://doi.org/10.1080/15313220.2014.999738

Greenwood, S., Perrin, A., & Duggan, M. (2016). Social media update 2016 - Facebook usage and engagement is on the rise, while adoption of other platforms holds steady, Pew Research Center, Washington, USA. 1–12. Accessed 1 October 2020. Available at http://downtowndubuque.org/wp-content/uploads/2017/01/Social-Media-Update-2016.pdf

Hashemi, A., & Adu-Gyampi, S. (2021). Effects of COVID-19 on the academic performance of Afghan students’ and their level of satisfaction with online teaching. Cogent Arts & Humanities, 8(1), 1. https://doi.org/10.1080/23311983.2021.1933684

Hassal, T., Joyce, J., Montaño, J. L. A., & Anes, J. A. D. (2005). Priorities for the development of vocational skills in management accounting: A European perspective. Accounting Forum, 29(4), 379–394. https://doi.org/10.1016/j.accfor.2005.03.002

Henderikx, M. A., Kreijns, K., & Kalz, M. (2017). Refining success and dropout in massive open online courses based on the intention–behavior gap. Distance Education, 38(3), 353–368. https://doi.org/10.1080/09639284.2017.1369006

Hodges, C., Moore, S., Locke, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. Educause Review, March 2020. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Holmes, A. F., & Rasmussen, S. J. (2018). Using Pinterest to stimulate student engagement, interest, and learning in managerial accounting courses. Journal of Accounting Education, 43(C), 43–56. https://doi.org/10.1016/j.jaccedu.2018.03.001

Holtzman, D. M., & Kraft, E. M. (2017). Skills needed in the 21st century workplace: A comparison of feedback from undergraduate business alumni and employers with a national study. Business Education & Accreditation, 31(1), 61–76. http://ssrn.com/abstract=3948629

Howcroft, D. (2017). Graduates vocational skills for the management accounting profession: Exploring the accounting education expectation – Performance gap. Accounting Education, 26(2), 459–481. https://doi.org/10.1080/09639284.2017.1361846

Iselourunkami, O. J., Adeloba, F. B., Adebola, O. G., Rotimi, E. M., Nweke-Love, C. H., Adebisi, T., & Lawal, A. I. (2021). COVID-19 pandemic: Nigerian University lecturers’ response to virtual orientation. Cogent Arts & Humanities, 8(1), 1–12. https://doi.org/10.1080/23311983.2021.1932041

Jones, K. T., & Chen, C. C. (2009). Blended-learning in a graduate accounting course: Student satisfaction and course design issues. The Accountant Educators’ Journal, 18, 15–28. https://www.aejournal.com/ojs/index.php/aej/article/view/60

Kalliou, R., Palmer, E., & Miller, J. (2019). Mobile learning in higher education: A comparative analysis of developed and developing country contexts. British Journal of Educational Technology, 50(2), 546–561. https://doi.org/10.1111/bjet.12583

Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. Accounting and Finance, 48(2), 279–300. https://doi.org/10.1111/j.1467-629X.2007.00245.x

Kearsley, G., & Shneiderman, B. (1998). EEngagement Theory: A framework for Technology-Based Teaching and Learning. Educational Technology, 38(5), 20–23. https://www.jstor.org/stable/44428478

Kietzmann, J. H., Hermkens, K., McCarthy, L. P., & Silvestre, B. S. (2013). Social media? Get serious! Understanding the functional building blocks of social media. Business Horizons, 56(3), 241–251. https://doi.org/10.1016/j.bushor.2011.01.005
López-Hernández, F. A., & Silva-Pérez, M. M. (2016). Factors of mobile learning acceptance in higher education. Studies on Education, 30, 175–195. https://doi.org/10.15581/004.30.175-195

Marks, R. B., Sibley, S. D., & Arbaugh, J. B. (2005). A structural equation model of predictors for effective online learning. Journal of Management Education, 29(4), 531–563. https://doi.org/10.1177/1052562904271199

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. U.S. Department of Education, 1-94. Accessed 15 October 2020. Available at: https://www2.ed.gov/rscstot/eval/tech/evidence-based-practices/finalreport.pdf

Mitchell, G. W., Skinner, L. B., & White, B. J. (2010). Essential soft skills for success in the twenty-first century workforce as perceived by business educators. The Delta Pi Epsilon Journal, 52(1), 43–53.

Morgan, G. J. (1997). Communication skills required by accounting graduates: Practitioner and academic perceptions. Accounting Education, 6(2), 93–107. https://doi.org/10.1080/09639289733151514

Pange, J., Lekka, A., & Toki, E. I. (2010). Different learning theories applied to diverse learning subjects: A pilot study. Procedia - Social and Behavioral Sciences, 9, 800–804. https://doi.org/10.1016/j.sbspro.2010.12.237

Popoola, M. (2014). New media usage for communication and self concept among journalism and mass communication students in Oyo State, Nigeria. New Media and Mass Communication, 26, 22–34. https://doi.org/10.1716/NMCM.VOL2622-34

Park, J. H., & Choi, H. J. (2009). Factors influencing adult learners’ decision to drop out or persist in online learning. Journal of Educational Technology & Society, 12(4), 207–217. https://www.learntechlib.org/p/74987/

Pincus, K. V., Stout, D. E., Sørensen, J. E., Stocks, K. D., & Lawson, R. A. (2017). Forces for change in higher education and implications for the accounting academy. Journal of Accounting Education, 40(C), 1–18. https://doi.org/10.1016/j.jaccedu.2017.06.001

Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today’s workplace. Business Communication Quarterly, 75(4), 453–465. https://doi.org/10.1177/1080569912460400

Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. Accounting Education, 29(5), 431–562. https://doi.org/10.1080/09639284.2020.1808487

Selwyn, N. (2020). Online learning: Rethinking teachers’ ‘digital competence’ in light of COVID19. Monash University. https://lens.monash.edu/education/2020/04/30/1380217/online-learning-rethinking-teachers-digital-competence-in-light-of-covid-19

Sharbat, M. M. N. (2018). The impact of knowledge sharing through Facebook on students’ academic performance in Palestine. International Journal of Business and Information, 13(2), 155–190. http://dx.doi.org/10.6702%2fijbi.201806_13(2).0002

Swan, K. (2005). A constructivist model for thinking about learning online. In J. Bourne & J. C. Moore (Eds.), Elements of quality online education: Engaging communities, Needham (pp. 13–30). Sloan-C.

Thompson, C. J. (2009). Educational statistics authentic learning CAPSULES: Community action projects for students utilizing leadership and E-based statistics. Journal of Statistics Education, 17(1), 1–11. http://doi.org/10.1080/10691898.2009.11889508

Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. Pedagogical Research, 5(4), 1–5. https://doi.org/10.29333/pr/7947

Tucker, E. D., & Clarke, J. E. (2014). Using Twitter for student engagement and skill learning in a hospitality human resources management course consortium. Journal of Hospitality and Tourism, 19(1), 1–21.

UNESCO. (2020). COVID-19 educational disruption and response. https://en.unesco.org/covid19/educationresponse/

Voivonta, T., & Avraamidou, L. (2018). Facebook: A potentially valuable educational tool? Educational Media International, 55(1), 34–48. https://doi.org/10.1080/09523987.2018.1439708

Weber, M. R., Finely, D. A., Crawford, A., & Rivera, D. J. (2009). An exploratory study identifying soft skill competencies in entry-level managers. Tourism and Hospitality Research, 9(4), 353–361. https://doi.org/10.1057/thr.2009.22

Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. Qualitative Market Research: An International Journal, 16(4), 362–369. https://doi.org/10.1108/QMR-06-2013-0041

Yükseltürk, E., & Bulut, S. (2007). Predictors for student success in an online course. Journal of Educational Technology & Society, 10(2), 71–83. https://dblp.org/rec/journals/ets/Yükseltürk807.bib

Zaid, O. A., Abraham, A., & Abraham, A. (1994). Communication skills in accounting education: Perceptions of academics, employers and graduate accountants. Accounting Education, 3(3), 205–221. https://doi.org/10.1080/09639289400000020

Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending classes without stopping learning: China’s education emergency management policy in the COVID-19 outbreak. Journal of Risk and Financial Management, 13(3), 113–115. https://doi.org/10.3390/jrfm13020055
### Appendix A. Correlations between variables

|      | COM_COL | COM_TEACH | COLLAB     | FB_AIM_PRIV | FB_AIM_PROF | LNKD_AIM_PRIV | LNKD_AIM_PROF | FB_ACT | LNKD_ACT | TIME_FB | TIME_LNKD | USEFUL | GEND | AGE | EXPER | TYPE_STUD |
|------|---------|-----------|------------|-------------|-------------|---------------|---------------|--------|----------|---------|----------|--------|------|-----|-------|----------|
| COM_COL       | 1.000   | 0.442     | 0.610      | 0.184       | 0.390       | 0.057         | 0.121         | 0.357  | 0.169    | 0.079  | 0.121    | 0.388  |      |     |       |         |
| COM_TEACH     | 0.442   | 1.000     | 0.455      | 0.208       | 0.368       | 0.092         | 0.149         | 0.362  | 0.138    | 0.103  | 0.177    | 0.368  |      |     |       |         |
| COLLAB        | 0.610   | 0.455     | 1.000      | -0.021      | 0.088       | -0.067        | 0.000         | 0.640  | -0.012   | 0.343  |          |        |      |     |       |         |
| FB_AIM_PRIV   | 0.184   | 0.208     | 0.218      | 1.000       | 0.518       | -0.067        | 0.000         | 0.640  | -0.012   | 0.343  |          |        |      |     |       |         |
| FB_AIM_PROF   | 0.350   | 0.368     | 0.420      | 0.518       | 1.000       | 0.053         | 0.160         | 0.647  | 0.100    | 0.140  |          |        |      |     |       |         |
| LNKD_AIM_PRIV | 0.057   | 0.092     | -0.021     | -0.067      | 0.053       | 1.000         | 0.680         | -0.060 | 0.562    | -0.096 |          |        |      |     |       |         |
| LNKD_AIM_PROF | 0.121   | 0.149     | 0.088      | 0.000       | 0.160       | 0.680         | 1.000         | 0.022  | 0.864    | -0.080 |          |        |      |     |       |         |
| FB_ACT        | 0.357   | 0.394     | 0.362      | 0.640       | 0.647       | -0.060        | 0.022         | 1.000  | 0.077    | 0.211  | 0.087    | 0.391  |      |     |       |         |
| LNKD_ACT      | 0.169   | 0.172     | 0.138      | -0.012      | 0.100       | 0.562         | 0.864         | 0.077  | 1.000    | -0.101 | 0.158    | 0.157  |      |     |       |         |
| TIME_FB       | 0.079   | 0.011     | 0.103      | 0.343       | 0.140       | -0.096        | -0.080        | 0.211  | -0.101   | 1.000  | -0.034   | -0.022 |      |     |       |         |
| TIME_LNKD     | 0.121   | 0.132     | 0.177      | 0.003       | 0.088       | 0.142         | 0.189         | 0.087  | 0.158    | -0.034 | 1.000    | 0.124  |      |     |       |         |
| USEFUL        | 0.388   | 0.383     | 0.368      | 0.292       | 0.360       | 0.086         | 0.134         | 0.391  | 0.157    | -0.022 | 0.124    | 1.000  |      |     |       |         |
| TEACH_ACT     | 0.296   | 0.362     | 0.213      | 0.010       | 0.161       | -0.014        | -0.049        | 0.181  | -0.097   | -0.017 | 0.092    | 0.288  |      |     |       |         |
| GEND          | 0.026   | 0.003     | 0.058      | 0.217       | 0.142       | -0.007        | -0.014        | 0.110  | 0.005    | 0.030  | 0.033    | 0.126  |      |     |       |         |
| AGE           | 0.023   | -0.176    | 0.004      | -0.277      | -0.150      | 0.147         | 0.154         | 0.277  | -0.066   | 0.056  | -0.138   | 0.164  |      |     |       |         |
| EXPER         | -0.031  | 0.019     | -0.032     | -0.062      | 0.083       | 0.058         | 0.143         | -0.061 | 0.120    | -0.132 | 0.055    | 0.009  |      |     |       |         |
| TYPE_STUD     | -0.016  | 0.170     | 0.166      | 0.134       | 0.104       | -0.032        | -0.100        | 0.141  | -0.167   | 0.101  | -0.118   | 0.164  |      |     |       |         |
