

Hybrid model in accounting education: The experience of management simulation course

Susana, Moreira Bastos^{a*}, ISCAP – CEOS.PP, Porto Polytechnic School, Accounting Department, Porto, Portugal

<https://orcid.org/0000-0001-9442-1348>

Helena, Costa Oliveira^b, ISCAP – CEOS.PP, Porto Polytechnic School, Accounting Department, Porto, Portugal

<https://orcid.org/0000-0001-5839-168X>

Valeria, Caggiano^c, Roma TRE University, Faculty of Education, Human Resources Department, Rome, Italy

<https://orcid.org/0000-0003-3073-7567>

Suggested Citation:

Susana, M. B., Helena, C. O. & Valeria, C. (2021). Hybrid model in accounting education: the experience of management simulation course. *Cypriot Journal of Educational Science*.16(5), 2402-2411.

<https://doi.org/10.18844/cjes.v16i5.6345>

Received from July 29, 2021; revised from August 03, 2021; accepted from October 25, 2021.

©2021 Birlesik Dunya Yenilik Arastirma ve Yayıncılık Merkezi. All rights reserved.

Abstract

Due to the COVID-19 pandemic and its effects on education, the transformation of didactics and technological methods was necessary to promote students' self-learning and motivation, alongside teachers' tutoring, guiding students' academic journey. This paper aims to investigate the effect of COVID-19 on digitalization accounting in higher education and explores the students' perception of the adapted hybrid model. The study follows a qualitative approach and rely on the final-year students of the accounting and management degree of Accounting and Business of Porto Polytechnic School. Data were collected through a questionnaire from students who experienced both distance and face-to-face education and completed the course of Management Simulation. The study highlights the digitalization of accounting teaching and the pandemic's effect on the future of digital accounting education. In sum, the hybrid model meets the needs of this practical course and can be a model to be applied in the future.

Keywords: Accountant; Digitalization Accounting Education; Digital Hybrid Pedagogy; Digital Education; Human Skills.

* ADDRESS OF CORRESPONCE: Susana Moreira Bastos, ISCAP –CEOS.PP, Porto Polytechnic School, Accounting Department, Porto.

Email address: susanass@iscap.ipp.pt

1. Introduction

The pandemic COVID-19 has affected all sectors across the world, including education. It triggered the greatest disruption in the history of education, impacting students and teachers around the world (D'Mello, 2021). This reality has forced to redirect and change, significantly, the didactics and methods of teaching and learning. It has resulted in a wake-up call for a new look at what distance teaching and learning are all about. It is fundamental to rethink the positioning of higher education schools concerning communication technologies use, that is, how participants' time and technology is used at a cognitive and social level. It is crucial to redesign the way digital education is approached. At this level, technology can help adapt learning to different student's realities and promote in educators/teachers the sense of what, how, when their students learn (OECD, 2021).

The pandemic required the change and reinvention of educational methods from face-to-face to digital distance learning. This transformation is necessary to motivate and maintain the quality of education. However, it is essential to point out that better technology does not imply better learning outcomes. Digitalization in education is needed now more than ever but the focus on humanization should be the face of this process of digital education – a process of using technology in education, so-called technological learning or e-learning (Sarea, Alhadrami, & Taufiq-Hail, 2021). Historically, accounting organisations at an international level have stressed the importance of rehabilitating accounting education, to be more relevant to practice, to produce more 'qualitative accountants'. One of these reforms is to incorporate technology into accounting education.

Employers expect accounting students to master information technology, thus the creation of course units such as Accounting Information Systems (Baswara, Widhiastuti, & Dewi, 2020) that is normally associated with management simulation courses. Using recent technologies in accounting education has become one of the most important priorities for improving the profession. The Association of Chartered Certified Accountants (ACCA, 2020) states that there is a great need to improve teaching methods to convey accounting subjects due to the accelerated development of accounting. Following, personalized learning is the key to an adaptive learning set (Molenaar, Horvers, & Baker, 2019). This learning process is based on several levels for the automation of personalized learning, to promote students' engagement with and in digital learning methodologies at the same time, it is required a hybrid human system regulation (D'Mello, 2021).

Due to the current situation, teachers quickly switched from traditional teaching to distance learning. In terms of pedagogical skills and challenges, distance learning requires a unique approach to maintain the quality of face-to-face learning, but the sudden transition has not allowed teachers to be prepared for this new context (UNESCO, 2020; Lim, 2020). Although most universities around the world are equipped with Learning Management Systems (LMS) (such as Microsoft Teams, Blackboard and Moodle) (Lim, 2020), faculty members are not well prepared to teach their courses virtually. The rapid transition to online education may pose a threat to the quality of education due to teachers' lack of technological knowledge. These LMS allow teachers to interact virtually with their students through live or recorded lectures/lessons, chat, online exams, quizzes and assignments. However, some teachers and students have faced challenges in dealing with this new form of delivery. Furthermore, using technology in education allows educators to get constructive and timely feedback from students about the effectiveness of teaching and learning methods used in the delivery of the material (Mihret, Abayadeera, Watty, & McKay, 2017).

According to Helfaya (2019), the use of LMS has skyrocketed the growth of e-learning in general and accounting education in particular. The integration between the internet and accounting education is seen as a vital way to support teachers to assess students electronically and to provide e-feedback. Besides, students appreciated the use of electronic assessment and feedback techniques

in teaching accounting subjects (Helfaya, 2019). Higher education institutions faced several challenges during the sudden transition to distance learning, which was related to technical infrastructure. Some institutions in low and middle-income countries reported that some students did not have access to the internet because they could not afford it. Other institutions in high-income countries were not prepared for such a transition because of the financial implication of investing in LMS (UNESCO, 2020a). In addition, some institutions have encountered unequal learning opportunities among students, with some students being able to have good access to the LMS, while others do not.

Teachers consider distance learning to be more time consuming than traditional teaching. Accordingly, virtual teaching requires teachers to incorporate online activities that have a positive impact on students' engagement, attitude and performance, which makes it more tiring than traditional teaching. Traditional (face-to-face) teaching tends to consume more time per student, in contrast, concerning the time log, online teaching spends more time on evaluating student work, recording grades and technical issues (Bastos, Girardi, & Schvirck, 2021). Another difficulty is that distance learning does not allow working effectively in all fields of study, e.g., practical areas of study such as teaching medicine and others requiring the use of laboratories (management simulation courses). The success of learning when it comes to the previously mentioned areas, cannot be effective unless reliable online learning technologies are available.

Today's teaching is marked by a strong presence of technologies. The way technology has been used in the teaching process has been questioned. Currently and driven by the pandemic, the invisible wall between technology, students and teachers has become a visible and watertight wall. Teacher-student and student-student relationships have been shifted. The technologies can even be used to combat the sense of fear that interpersonal relationships can be lost. Students are more and more connected to digital environments, the role of the school is to follow the trend and use virtualization to protect human relations and continue the personalization of education (Brâncoveanu, 2020).

The flexibility of e-learning in terms of time and place for both students and teachers has led to the rapid spread of this type of learning. However, the lack of human interaction between students and teachers was the main criticism of this type of teaching. The digitalization of accounting education can be helpful in terms of flexibility, but teachers are concerned about students' learning and acquisition of knowledge. The lack of an effective learning process due to the sudden transition to e-learning may have led to unintended consequences that may affect students' future professional prospects (Aguguom, Ajayi, & Dare, 2020). The digitalization of the accountancy profession requires that universities in this area of knowledge change their teaching paradigm and promote one that fosters in students the skills that accompany the future of the profession. The accounting itself is the same as it has been for many years. However, the globalization of business, strict regulations, and numerous technological solutions and innovations continuously affect accounting.

Accountants are required to rapidly adapt and transform in regards to business practice and processes, without abandoning the rules and principles of accounting. The profession faces numerous challenges in the age of digitalization. The main ones can be systematized as follows: the use of Big Data in accounting and reporting, Cloud Computing and continuous accounting, Artificial Intelligence, and Blockchain (Moore & Felo, 2021). Changes in technology and digitalization will have a significant impact on the profession in the years to come. The educational system must change in the direction of increasing this need for the digitalization of business. The requirement for timely information influences how accountants do their work, their knowledge of new skills, especially in engineering, which leads to new types of accounting professionals (Gulin, Hladika, & Valenta, 2019).

This sudden transition to distance learning also shifted the students' performance. It is crucial to have an effective and efficient method of assessment to determine whether or not students are learning. There are mainly two types of assessment methods: summative and formative. In summative assessment, students are examined to determine the level of learning objectives achieved. Whereas formative assessment is a continuous process of evaluation by the teacher to understand the needs of the students. Due to the closure of educational institutions, it becomes more important to value formative assessments to better understand students' learning (Lieberman, Levin, & Luna-Bazaldua, 2020). Regarding exams during the pandemic, UNESCO (2020b) conducted a survey in 84 countries to collect information on how educational institutions had conducted end-of-semester exams. Of these, 58 countries reported that they had rescheduled or postponed exams, some countries provided alternative assessment methods with "home-based exams" and online testing, and other countries cancelled all exams and replaced them with assignments, projects and other methods of assessing work in progress.

It is time to plan the recovery of the education system and to think about the future of education. According to Organisation for Economic Co-operation and Development (OECD, 2021), blended learning cannot be discharged, the return to face-to-face and in-school learning has varied from country to country. This means "countries should be prepared to alternate between three types of schooling in the near future, sometimes simultaneously in different parts of their territory: 1) in-school teaching with appropriate health measures; 2) hybrid schooling with a mix of in-presence and remote schooling; 3) remote schooling through a variety of means" (OECD, 2021, p.13). Being prepared for these scenarios is crucial to ensure that learning continues during a pandemic. This organisation points out ten principles for effective and equitable recovery in education: first, keeping schools open as much and as safe as possible; "ensure equity and align resources with needs; provide a remote learning infrastructure which is designed to reach all students; support teachers in their professional lives; enable teachers and parents to support learners; provide targeted support to meet students' learning and social and emotional needs; co-design a robust digital learning infrastructure with teachers and stakeholders; empower teachers to exercise their professionalism and benefit from professional learning opportunities; encourage a collaborative culture of innovation; and learn from national and international evidence" (OECD-Education-International, 2021, p. 14).

1.1. Purpose of study

This paper focuses on the accounting and management degree at the Accounting and Business of Porto Polytechnic School, namely on the course of Management Simulation Project I and II (MSPI and MSPII). The course provides equivalence to the internship and accreditation to the professional association of accountants in Portugal. The degree is structured in 3 years, the practical subjects MSPI and MSPII take place in the third year, where students apply the knowledge acquired along the degree. Students working in a group and manage a virtual company during the year. The simulation is based on business relationships between several other companies/groups and the performance of simulated real-life operations. Interactions are supported by a business software (an Enterprise Resource Planning (ERP)) with the legally imposed deadlines as a requirement. Before the pandemic, students worked in a group of three. During the pandemic, to ensure a safe distance, in the first semester of 2020/2021, groups of two students had, in alternated weeks, face-to-face and distance classes. In the second semester, students in groups of four had, in alternated weeks, face-to-face classes (two members of the group) and distance classes (the other two members of the group). The two students at a distance (at home) supported the team at face-to-face classes, in the execution of tasks, through ZOOM meetings. This technology allows the team at home to follow their colleagues work and had the opportunity to support them at a distance. The main purpose of the study is to gauge the students' perception of the hybrid model adapted in MSP, during the pandemic. The

research questions are: 1 - Do students agree with the adaptation of the learning model (context and practical application)? 2 - Do students perceive the assessment process adaptation? 3 - Do students perceive teachers' support? 4 – How important is the adaptation of tools or use of new tools to students? 5- Which learning format (face-to-face or mixed learning) better fit students' expectation, under a non-pandemic context?

2. Materials and Methods

Data collection

A questionnaire was created and validated specifically for the study. It was sent to the students who accomplished with success the curricular units MSP. Data collected were disaggregated according to the teaching method followed during the pandemic: at distance, face-to-face and hybrid model. The students enrolled are 259 in the academic year 2020/2021 (from September 2020 until July 2021). The questionnaire was created in Google Forms and has 22 closed-ended questions and an open question. It was divided into five parts: sample characterization (I), learning model (II), assessment process (III), teachers support (IV), used tools (V), learning format in non-pandemic context (VI) and an open question (VI). In the IV and V parts, there were used Likert scales with 5 levels (where 1 is “totally disagree”, and 5 is “totally agree”). The questionnaire was emailed by the four teachers to each class (six classes) in July. To reduce the possible non-respondent bias, the questionnaire was sent twice with an interval of two weeks.

Data analysis

Once the questionnaire was closed, the responses database was prepared and the data were processed with statistical analysis software. All quantitative data analyses were performed with the IBM SPSS V26 © program. In the first approach, an exploratory analysis of the items was made using descriptive statistics. In which was also observed that all the distributions of the responses were strongly symmetric. In addition, Cronbach's alpha presents a value of 0.733, which indicates strong reliability or internal consistency, of a composite score of the instrument used in the study.

3. Findings

The sample of 207 students corresponds to a rate response of 79,9%. About 84% of the students have between 20 and 25 years old (V1), 82,1% attend classes during the daytime (V2) and only 28,9% has work experience (V3), which means that most of them have not yet entered the labour market. Of the working students (24,6%) about 55% labour is in accounting and administration, namely as an accounting technician, administrative and financial worker; 13,3% labour are in auditing, fiscal controlling and consulting and 22% work in the different areas, namely services, logistics, and commercial. Table 1 present the Mean and Deviation of the sample

Table 1

Characterization of the Sample

Variables	Age (V1)	Teaching System (V2)	Professional Experience (V3)	Professional Field (V4)
Mean (M)	1,27	1,18	1,75	2,25
St. Deviation (STD)	0,725	0,384	0,432	1,653

The second part of the questionnaire is regarding student’s perception of theoretical contents and practical application of the contents, in mixed learning and distance learning. Students consider that they were not prejudiced in the learning process. The distance learning process in the practical application of the contents, presents the lower levels, as can be seen from table 2.

Table 2: Learning Model

Variables	Theoretical Contents	Practical application of the contents
Hybrid Model	83% (M=1,83; STD = 0,376).	65,7% (M=1,66; STD = 0,476).
Distance Learning	78,7% (M = 1,79; STD = 0,410).	5,1% (M = 1,55; STD = 0,499).

Pearson correlation shows a linear association between the learning process (hybrid model and at a distance) regarding the theoretical and practical application of the contents. The theoretical and practical application presents in both learning models a variation around the line of best fit of 0,553 and 0,616 representing a strong association, while the association between the practical applications of the contents presents a small and a medium-strength association 0,246 and 0,344. Table 3 presents the correlations.

Table 3: Pearson Correlation

	Hybrid model in theoretical contents	Hybrid model in the practical application of the contents
Distance learning in theoretical contents	0,553**	0,246**
Distance learning in the practical application of the contents	0,344**	0,616**

** Correlation is significant at the 0.01 level (2 ends).

The third part of the questionnaire regards the evaluation model: tests performed on Moodle Avalia Platform and tests carried out in the traditional format. Students consider that performed tests on digital platforms (75,4%) and in a traditional format (81%) did not harm their assessment. Although, around 16% of the 25 respondents to the last question (the open one), mentioned the shortage of feedback on the team work performed weekly. As consider feedback to be important to highlight their made mistakes and correct them; improving the students' work, both in group and individually. Some respondents also mention the difficulty to coordinate team work in mixed teaching and suggest to change the evaluation process, not to harm the final evaluation of the student(s) that most contribute to team work.

In the fourth part, regards the teacher-student relationship and the support given by the teacher, in distance, face-to-face and mixed learning: 90,9% of the students considered to have the necessary support from teachers during the current context and 93,7% of the students considered that teachers “were always available”.

The fifth part concerns the technological tools used in distance and face-to-face learning. Questions were presented to the students with a Likert scale of response. Table 4 presents the students' perception about technological tools.

Table 4: *Technological Tools*

Variables	Tools in distance learning (Zoom, among others)	Tool in face-to-face classes in pandemic context (ERP, VNC, mobile communication)
Effectiveness	84% (M = 4,15; STD = 0,804).	86% (M = 4,28; STD = 0,781).

Despite most of the students consider the technological tools appropriated. In the open question, about 16% of the respondents consider that teamwork would be efficient if they have access to the ERP remotely, allowing them to work at home. When asked whether or not there was a balance between academic/professional and personal life during the period when teaching was entirely at distance, 76% of the students considered that there was a balance.

In the last part, students were asked about the learning format that better fit with their expectation (under non-pandemic circumstances): between face-to-face learning, face-to-face learning with some evaluation components at a distance (eg: assignments, presentation of reports, some at a distance lectures/seminars) and mixed learning About 72% of students choose face-to-face learning or face-to-face learning with some evaluation components at distance. In addition, only 28% of the students choose mixed learning.

The assessment in the course is formative. Although during the pandemic several face-to-face mandatory assessment moments were compromised. This raised the question of the efficiency of the assessment methods when applied to this new context. The sudden change to distance learning implied an adjustment of assessment methods. Table 5 presents the assessments criteria before and in the pandemic context.

Table 5 *Assessment*

Before Pandemic	In Pandemic Context
Four moments of face-to-face oral evaluation	Two moments of online oral evaluation
Two moments of individual written evaluation, in traditional format	One moment of individual written evaluation in traditional and other in digital format
Continuous assessment of several task performed during classes	Continuous assessment of several task performed during classes

4. Discussion

Courses such as MSP bases on simulated practices where students apply the knowledge acquired throughout the course are the most difficult to replicate in distance learning contexts. The didactics and technological methods that support these practical environments will have to change

to allow students to experience the same situations, problems and facts that occur in real working life. According to the findings, students felt that their learning regarding practice was not affected by the distance imposed in teaching. However, comparing the responses on whether learning was distinct in the distance and mixed learning model, a 10% decrease between the two were found.

The way LMS systems are implemented in higher education institutions is fundamental to the development of digital and mixed learning (Lim, 2020). The use of appropriate communication and information technology allows the learning process to take place both in a face-to-face setting and at a distance. The technologies used in MSP, in the last academic year, allowed the continuity of accounting education, ensured the assimilation of contents and enabled students to complete the degree to complete it. Students considered the technologies used (ERP, communication platforms - ZOOM and equivalents, assessment platform - Moodle Avalia - and VPN viewer) the most appropriate. However, some point out that there was no remote access to the ERP, which did not facilitate the execution of the requested activities during class, which means, the group colleagues in face-to-face class would only be able to finish the activities requested if the ones at home had remote access to the system (Molenaar, Horvers & Baker, 2019). Remote access would have avoided an overload of work for the group in certain classes.

The use of technology in education allows teachers to have faster access to the information worked on by students and to be able to provide a timely response that helps the student along the way (Helfaya, 2019). Timely feedback allows the student to reflect on the error and correct it. Although the students overwhelmingly stated that the teachers were always available to support them, in the open question, the issue of timely feedback was raised by some students.

To avoid the circulation of paper documents during the pandemic context some adjustments were made. So, the continuous assessment of several tasks, performed during classes, was done in digital. Students send the evaluation elements to the class email format (created specifically for the purpose). The individual written evaluation moments were maintained with a different format: the first test was done on a digital platform and the second on a traditional format (paper). The students considered that they were not disadvantaged by the adequacy of the assessment methods in general (Brâncoveanu, 2020). Although, students complain about tests on a digital platform. Concerning the oral assessment of the final report: in MSP I, students were required to present the final report at a distance, in MSP II, despite the possibility to present face-to-face, students chose to present ear a distance.

Distance learning is more time consuming for those involved (Bastos, Girardi, & Schvirck, 2021). So it is, crucial to understanding the balance between personal life and academic life. Most MSP students were able to balance the time spent studying with their personal life, both during the distance learning period and during the mixed learning period.

Will there be, in the future, a place for a hybrid model in this curricular unit? For these students, such a future is possible, nevertheless, their preference lies in face-to-face education. Furthermore, when asked about the type of teaching most suitable to prepare them for the profession, the students show a clear preference for face-to-face education. Looking at the three types of schooling proposed by the OECD (2021), students prefer the first type of in-school teaching with appropriate health measures.

5. Conclusions

Accounting education have evolved to respond to the demands of the accounting profession. In this way, technologies and simulated practices were introduced. The curricular units supported in simulated practices presented great challenges in the pandemic context to maintain the purpose for which were created – to simulate the business reality. These courses require eminently practical teamwork that involve face-to-face contact with group colleagues and work tools (such as accounting documentation and information systems). Among several challenges, mixed teaching pedagogical methods were presented. This study analyzes the students' perception regarding the adaptation of the course of MSP to hybrid teaching. Students consider the model appropriated to the pandemic context, namely in the practical application of the contents, assessment and monitoring of teachers. Although, students point out some difficulties in teamwork and in timely assessment.

Despite the good adequacy of the model, students prefer to go back to face-to-face teaching. The study presents some limitations, is a generalist and lacks in-depth analysis to understand a particular situation. The adaptation of accounting education in a business environment should privilege face-to-face teaching due to the degree of skills apprehended this way. However, it should encourage the development of new skills that enable distance communication and the handling/analysis of a large volume of digital documents.

Acknowledgements

Part of this work was supported by the Erasmus+ program of the European Commission under Grant 2017-1- ES01-KA203- 038589 in the frame of the project CoSki21- Core Skills for 21th-century professionals. The authors would like to thank the students of MSP who have collaborated with the research answering the questionnaires. This Work is financed by Portuguese funds through FCT – Fundação para a Ciência e Tecnologia, under the project UIDB/05422/2020.

References

- ACCA. (2020). The digital accountant – digital skills in a transformed world. Retrieved from https://www.accaglobal.com/in/en/professionalinsights/technology/The_Digital_Accountant.html
- Aguguom, T. A., Ajayi, A., & Dare, O. E. (2020). Covid-19 and Accounting Education in Sub-Sahara Africa. *European Journal of Business, Economics and Accountancy*, 8(3), 1–11. <https://www.idpublications.org/wp-content/uploads/2020/07/Full-Paper-COVID-19-AND-ACCOUNTING-EDUCATION-IN-SUB-SAHARA-AFRICA.pdf>
- Bastos, S., Girardi, S., & Schvirck, E. (2021). Technology 4.0 in Accounting: What future for education? In *International Conference in Information Technology & Educations (ICITED)*.
- Baswara, S. Y., Widhiastuti, R., & Dewi, L. C. (2020). Learning Model Based on Information Technology in an Accounting Education Courses Based on Technology at Faculty of Economics in Universitas Negeri Semarang. In *International Conference on Economics, Business and Economic Education 2019*, KnE Social Sciences (pp. 1280–1285). <https://doi.org/10.18502/kss.v4i6.6678>
- Brâncoveanu, R. (2020). Towards virtualization: Impact of technologies on educational ecosystems. In *Humanistic futures of learning: Perspectives from UNESCO Chairs and UNITWIN Network* (pp. 132–135). UNESCO.

https://www.researchgate.net/publication/338886346_Towards_virtualization_Impact_of_technologies_on_educational_ecosystems

- D'Mello, S. (2021). Improving student engagement in and with digital learning technologies. In OECD Digital Education Outlook 2021: Pushing the frontiers with AI, blockchain, and Robots. OECD Publishing. <https://tinyurl.com/yhez9ff>
- Gulin, D., Hladika, M., & Valenta, I. (2019). Digitalization and the challenges for the accounting profession. In I.-S. for A. I. and R. in Economy (Ed.), Proceedings of the ENTRENOVA - Enterprise Research Innovation Conference (pp. 502–511). Rovinj, Croatia. <https://www.econstor.eu/handle/10419/207712>
- Helfaya, A. (2019). Assessing the use of computer-based assessment-feedback in teaching digital accountants. *Accounting Education*, 28(1), 69–99. <https://doi.org/10.1080/09639284.2018.1501716>
- Lieberman, J., Levin, V., & Luna-Bazaldua, D. (2020). Are students still learning during COVID-19? Formative assessment can provide the answer. Retrieved from <https://blogs.worldbank.org/education/are-students-still-learning-during-covid-19-formative-assessment-can-provide-answer>
- Lim, M. (2020). Educating despite the COVID-19 outbreak: lessons from Singapore. Retrieved from <https://www.timeshighereducation.com/blog/educating-despite-covid-19-outbreak-lessons-singapore>
- Mihret, D. G., Abayadeera, N., Watty, K., & McKay, J. (2017). Teaching auditing using cases in an online learning environment: the role of ePortfolio assessment. *Accounting Education*, 26(4), 335–357. <https://tinyurl.com/yh7mwchv>
- Molenaar, I., Horvers, A., & Baker, R. S. (2019). Towards Hybrid Human-System Regulation. In 9th International Conference on Learning Analytics and Knowledge (pp. 471–480). <https://doi.org/10.1145/3303772.3303780>
- Moore, W. B., & Felo, A. (2021). The evolution of accounting technology education: Analytics to STEM. *Journal of Education for Business*, 1–7. <https://doi.org/10.1080/08832323.2021.1895045>
- OECD-Education-International. (2021). Principles for an Effective and Equitable Educational Recovery. Paris: OECD Publishing. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bri&AN=150092976&site=ehost-live&scope=site&custid=s8454451>
- OECD. (2021). OECD Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots. Paris: OECD Publishing. <https://doi.org/10.1787/589b283f-en>
- Sarea, A., Alhadrami, A., & Taufiq-Hail, G. A.-M. (2021). COVID-19 and digitizing accounting education: empirical evidence from GCC. *PSU Research Review*, 5(1), 68–83. <https://tinyurl.com/yjuo4eq1>
- UNESCO. (2020a). COVID-19 educational disruption and response. Retrieved March 13, 2020, from <https://en.unesco.org/covid19/educationresponse>
- UNESCO. (2020b). Exams and assessments in COVID-19 crisis: fairness at the centre. Retrieved from <https://en.unesco.org/news/exams-and-assessments-covid-19-crisis-fairness-centre>