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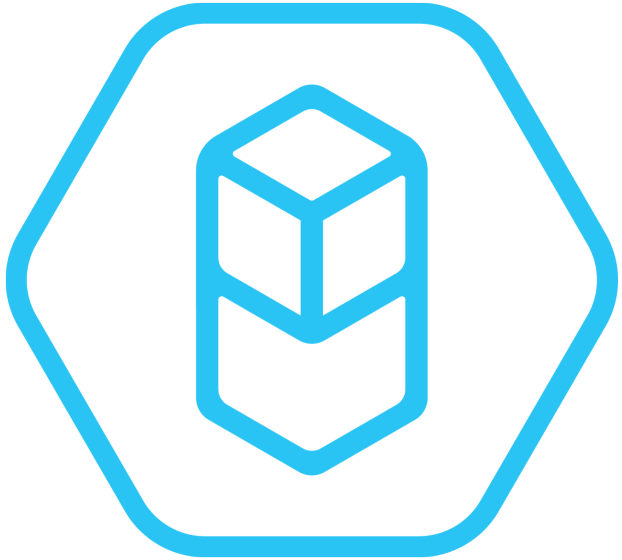

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RESEARCH ARTICLE

Revisiting early online learning experiences amid the COVID-19 pandemic in Indonesia: Benefits, barriers, and impact on pharmacy student learning outcomes

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Abstract

Background: The coronavirus disease 19 (COVID-19) imposed dramatic changes on pharmacy education. On-campus educational activities were suspended and transformed into online learning. Several studies reported experiences with online learning, yet few evaluated overall student acceptance and achievement of online learning. **Objective:** This study aimed to explore the benefits, barriers, pharmacy student learning achievement, and their recommendation towards an online learning model. **Methods:** A survey was conducted among 1,658 pharmacy students from 28 provinces in Indonesia using an online questionnaire that passed validity and reliability testing. Descriptive analyses were conducted subsequently. **Results:** Of the total sample, 85% viewed that online learning was the compelling option to continue education due to the COVID-19 travel restriction. Poor internet connectivity was the most relevant hurdle reported by two-thirds of respondents. Learning achievement was negatively affected, as the majority reported poor ability to understand the course material from lectures and laboratory practicum. In addition, the lack of class engagement was evident as students and lecturers were not prepared and adapted for virtual interaction. **Conclusion:** Online learning is a feasible method in the short term as it is practical and prevents COVID-19's spread. However, this may be problematic in the longer term since it has negatively affected students' overall performance. Some improvements can be undertaken, such as creating an engaging discussion during virtual teaching in combination with investments in better internet networks and computer access.

Introduction

The emergence of Coronavirus disease 19 (COVID-19) has become a global problem, threatening people's lives due to its massive spread and fatality (Vellingiri *et al.* 2020). Governments across the globe have implemented extreme policies, from imposing travel restrictions to total lockdowns, to contain the disease spread. Such policies had dramatic changes in most life sectors as people were forced to work from home and do activities online. Shifting to online activities has fueled the phenomenon of "virtual mobility". The internet, social media, and smartphones have been part of the daily lifestyle and enabled people to be "mobile" during the COVID-19 pandemic (Mouratidis & Papagiannakis, 2021). Remote work, remote conferencing, distance healthcare, and distance learning increased significantly during the pandemic (Mouratidis & Papagiannakis, 2021).

Distance learning is not a new concept in higher education; it has been applied for decades, particularly in developed countries. The United States witnessed the advent of online learning, which later spread all over the world, including many Asian countries as of 1998 (McCutcheon *et al.,* 2015). However, distance

learning is not the preferred method as compared to traditional learning activities. Indeed, it has suffered from several issues. For instance, online teaching was found to have little difference in terms of content and delivery compared to face-to-face education. This fact has been worsened by the lack of class interaction, particularly between teachers and students, thus contributing to lower student performance and cognitive abilities. In addition, the lack of self-control when studying online, the limited motivation for being an independent learner, and the lack of supervision of student progress have made online learning unsatisfactory for some students and faculty members (Zhou *et al.,* 2020).

The implementation of online learning before the COVID-19 pandemic has been problematic for students. For instance, in Saudi Arabia, online learning did not receive positive responses from medical students due to psychological, social, and demographic factors. In general, students were not ready to adopt and adapt to online learning. Technical problems related to computer accessibility, internet connectivity, and the lack of experience with online platforms were also prevalent, affecting student acceptance of online learning (Alavudeen *et al.,* 2021). Pharmacy education was also not immune to these issues, especially after COVID-19 led to the suspension of on-campus activities and the adoption of an online learning approach (Roman & Plopeanu, 2021).

Online learning has been the main feature of pharmacy education during the COVID-19 pandemic. Research in Saudi Arabia explained that online learning provided several valuable insights into changing the future of pharmacy education thanks to the lockdown policy, suggesting that it should be hybrid and include online and face-to-face learning activities (Ali *et al.,* 2021). Pharmacy educators should also be familiar with open book exams, which are underdeveloped and not popular so far in pharmacy courses. In addition, online learning has provided insight into how to create an efficacious assessment and monitoring method, as examinations and assignments were done remotely, which might induce unethical and irresponsible actions during exams, such as cheating and fraud. The use of technology for supporting teaching methods is also critical, as students and teachers are required to use digital tools and platforms (Basilaia & Kvavadze, 2020).

Despite the benefits, the implementation of online learning in the longer term may spark a backlash against the education system. For instance, findings from Bangladesh confirmed that college students suffered from symptoms of severe psychological distress and fear of academic failure after one year of the COVID-19 outbreak Hossain *et al.,* 2021). This matter went unnoticed until the stakeholders within the education system, including the government, universities, and educators, could take preventive measures to reduce such mental health issues. While many believed online learning is the ideal method amid COVID-19 restrictions, academic disparity and student psychological health were at stake (Hossain *et al.,* 2021). Another study showed that approximately one-third of medical students reported significant mental pressures when undertaking remote electronic exams. The main factors for this stress were the duration of the exam and technical issues, such as the ability to operate the digital platform and over-supervision to ensure honesty during exams. The fact that not all students enjoyed a hassle-free environment at their home when undertaking exams was another neglected aspect of successful online learning (Elsalem *et al.,* 2020). Anxiety and confusion were other issues experienced by students in South Korea, contributing to the lower achievement of learning outcomes (Kim & Park, 2021).

A plethora of publications confirmed the benefits and challenges of online learning in pharmacy education, most of which come from developed countries. However, studies are scarce on this issue and its extent to overall student learning achievement in developing countries. Also, student recommendations towards the sustainability of online learning are limited. These data are particularly essential, given the nature of pharmacy courses that combine multiple approaches, such as lecturing, tutoring, laboratory training/practicum, and clinical orientation. The absence of such studies would leave a gap in elucidating student understanding of pharmacy topics and delivery methods, particularly in a country like Indonesia, where pharmacy practice and education are growing. Therefore, this study aimed to identify benefits, barriers, learning achievements, and recommendations of students towards the online learning model in Indonesia.

Methods

This cross-sectional study was conducted among pharmacy students across Indonesia from May to July 2020. An online questionnaire was constructed to identify the perception of students of the benefits, barriers, overall achievement, and expectations for participating in an online learning model. Respondents were recruited according to the following inclusion criteria: they had to be undergraduate students enrolled in a pharmacy or apothecary programme at the time of the research, willing to participate in the study, have completed at least six semesters or three years of study,

and have participated in on-campus lectures and laboratory training/practicums.

Ethical clearance was not deemed necessary due to the study nature that fits to educational purposes. In addition, student participation was kept anonymous, and consent for publication and participation were obtained from all respondents.

Snowball sampling was used to recruit participants. The questionnaire was first distributed to a group of seed participants and was subsequently shared with other potential students according to the inclusion criteria. The questionnaire consisted of two main sections: multiple-choice and open-ended questions. The multiple-choice section included items related to the perceived benefits and achievement of learning outcomes. The second section enabled respondents to fill out recommendations regarding the perceived barriers and implementation of online learning.

The questionnaire was tested for face and content validity and subsequently tested for internal reliability in 180 students. The questionnaire is valid if the correlation coefficient is > 0.3 and reliable if the value of Cronbach's alpha is > 0.6 (Priyastama, 2017). The validity and reliability testing showed that the questionnaire was valid (with a correlation value greater than 0.3) and reliable (with a Cronbach alpha value greater than 0.6).

Data analysis for the multiple-choice section was carried out using descriptive statistics focusing on response percentages. The open-ended questions were evaluated using thematic analysis by sorting, filtering, and reviewing the responses into themes illustrating recommendations to improve the online learning model.

Results

Overall, this study recruited 1,658 respondents from 44 universities in Indonesia (Table I). Most participating universities were private (82%), and Zoom was the most common platform for online learning and teaching within the participating universities.

Table I: Participating university characteristics

Parameter	N (=44)	%
Status of university		
State university	8	18
Private university	36	82
Platform of online teaching		
Zoom	33	75
Google Meet	4	9
Self-developed online platform	7	16

As shown in Table II, the majority of participants in this study were female (82%) and were sitting in the undergraduate programme (84%). Respondents in this study were from 28 of 34 provinces in Indonesia. The majority of respondents lived in the islands of Java and Sumatra, which are home to several pharmacy schools.

Table II: Participant characteristics

Parameter	N (=1,658)	%
Gender		
Male	303	18
Female	1,355	82
Education level		
Undergraduate	1,388	84
Apothecary programme (one year pre-pharmacist education)	270	16
Area of residence		
Sumatra Island (Aceh, Bangka Belitung, Bengkulu, Riau Islands, Lampung, Riau, South Sumatera, North Sumatera)	369	22
Java Island (Banten, Jakarta, Central Java, East Java)	610	37
Bali, Maluku and Nusa Tenggara Island (Bali, Maluku, North Maluku, West Nusa Tenggara, East Nusa Tenggara)	226	14
Kalimantan Island (South Kalimantan, West Kalimantan, Central Kalimantan, East Kalimantan, North Kalimantan)	220	13
Sulawesi Island (Gorontalo, South Sulawesi, Central Sulawesi, North Sulawesi)	214	13
Papua Island (Papua, West Papua)	19	1

Table III shows that 85% of respondents reported online learning to be the most suitable method during the COVID-19 pandemic. Student overall satisfaction with online learning was equal, reflecting that online learning may or may not be delivered optimally according to participants. This finding is supported by the statement that dissatisfaction with course delivery was also evident. Almost half of the respondents (48%) were dissatisfied with how the lecturer delivered the course material. Furthermore, the ease of use of online learning was somewhat problematic, as only slightly more than half of the respondents mentioned their agreement (52%).

Interestingly, most respondents (68%) did not perceive online learning as cheap or cost-saving. In addition, students often encountered technical glitches during online sessions (63%). These might be a problem for sustainable online learning. Apart from the cost issue, the majority of students (53%) were more likely to ask questions during online classes than when attending lectures on campus.

Table III: Student perception of the benefits of online learning

Statement	N (=1,658)	%
Online learning is most suitable method during COVID-19 pandemic		
Disagree	255	15
Agree	1,403	85
Student's overall satisfaction with online learning administration		
Not satisfied	823	50
Satisfied	835	50
Student satisfaction with course delivery by the lecturer		
Not satisfied	790	48
Satisfied	868	52
Online learning is easy to undertake		
Disagree	793	48
Agree	865	52
Online learning is cost-saving		
Disagree	1,120	68
Agree	538	32
Students are more enthusiastic to ask questions during online learning as compared to on-campus		
Disagree	779	47
Agree	879	53
The implementation of online learning was smooth (without technical issues)		
Disagree	1,050	63
Agree	608	37

This study compiled several barriers identified by the respondents (See Table IV). Internet connectivity was the most reported (92%), followed by the lack of interaction during online sessions (90%). Interestingly, a small proportion of students mentioned that online laboratory training was impractical (35%).

Table V highlights the perceived overall achievement towards the online learning model. The majority of respondents stated that their comprehension of online course material and practicum material was lower as compared to on-campus activities, with 61% and 79%, respectively.

In general, respondents recommended several improvements for the online learning model, as shown in Table VI. These recommendations vary from installing a user-friendly platform to the availability of a recorded version of the lectures, supports for internet package, connection, and the selection of a teaching schedule that fits the time difference in Indonesia.

Table IV: Student perception of barriers to online learning

Type of barrier	N (%)
Unstable internet connection particularly for students living in rural areas	1,526 (92)
Lack of focus during online session particularly if the lecturers did not compel for live interaction	1,493 (90)
Teaching delivery was not attractive leading to student boredom when attending the online lecture	1,166 (70)
Overwhelmed by assignments	1,162 (70)
Difficult to grasp understanding for online practicum (online simulation cannot substitute on-campus practicum)	1160 (70)
Lecturers cannot use digital platform properly affecting teaching delivery	994 (60)
Noise disturbance from other online participants	994 (60)
Digital platform is not user-friendly	963 (58)
Presence of fatigue due to lengthy online session	963 (58)
Conflicting lecturing timetable due to poor scheduling	845 (51)
Devices such as laptop and computer were starting to break-down (slow response, fail to execute file, virus attack and appearance glitch) due to over-use for online session	722 (44)
Time difference between Indonesian region when attending online class (Indonesia has three different time zones: GMT+7, GMT+8, GMT+9)	719 (44)
Lack of self-control as students were tempted to do other tasks	711 (43)
Students were not prepared for online class	601 (36)
Laboratory training was impractical	583 (35)

Table V: Student perception of the overall achievement of the online learning model (n=1,658)

Statement	N (=1,658)	%
Student's ability to comprehend teaching material during online learning as compared to on-campus		
Lower	1,012	61
Not change	513	31
Higher	133	8
Student's ability to comprehend laboratory training/practicum material during online learning as compared to on-campus		
Lower	1,314	79
Not change	306	19
Higher	38	2

Table VI: Compilation of student's recommendation on sustainability of online learning model

Type of student recommendation
The online learning platform should be user-friendly, easy to operate and accessible for students and lecturers
There should be a recorded version of the lecture which is downloadable or accessible at any time
Better management of lecture timetable to prevent conflicting schedule
The provision of assignment should be proportional and fit to course material. This is to prevent task overload and task which is irrelevant to course material
Expanded access to internet by collaborating with internet providers to reach students in outer area
Lectures and practicum can be delivered asynchronous so they can be replayed by students. If possible, practicum should be delivered under hybrid model
More discussion and live interaction with the lecturers
Learning can be delivered using application that it is not always dependent to internet connectivity
Supports for internet data coverage e.g., financial supports or internet data package for students
Management of teaching schedule that is not too early or too late since there is different time zone in Indonesia

Discussion

This study revealed that online learning was the preferred method amid the COVID-19 pandemic. This result is in line with that of previous findings showing that it was inevitable for students to accept reality and perceive distance learning positively due to the suspension of face-to-face learning. This finding also strengthened the fact that online learning is not immune to the problem. Many factors influence student intentions, including teacher characteristics, student motivation, and acceptance of the technology used (Baber, 2021). This result is in line with previous findings among medical students, who were quite receptive to e-learning during COVID-19 (Ibrahim *et al.,* 2021); thus, designing better e-learning, increasing interaction, providing motivation, and integrating learning are all the pursuit of an ideal online learning model. Although the shift to distance learning occurred suddenly, participants expressed an overall positive view of their experience with online education and highlighted areas for improvement (Altwaijry *et al.,* 2021).

This study found that students had a lower perception of achievement in the online learning model than in face-to-face learning, also supported by the results of a previous study (Bani Hani *et al.,* 2021). The transition from traditional classroom teaching to distance learning, whether synchronous or asynchronous, is inevitable. Students are generally satisfied with online learning and comprehension. There is a significant relationship between satisfaction and achievement of medical school learning outcomes (Bani Hani *et al.,* 2021). Another study also reported high student satisfaction with the online learning model (Moore *et al.,* 2021).

Technology and internet connectivity were mentioned as significant barriers to online learning. Although most respondents were millennials, they still encountered issues with the online platform interface. Poor internet connection was also prevalent, affecting the quality of undertaking online sessions.

Although presumably lower than traditional education, online learning costs were not explored in this study. Respondents considered costs incurred for online learning to be higher than for face-to-face sessions. Also, poor internet connection has forced students, especially those living in rural areas, to rent facilities, e.g., boarding houses around the campus or other places such as cafés or restaurants, to have a more stable internet connection. This issue was categorised as an additional expense to online learning.

Online learning might eventually limit interactions between lecturers and students. Despite students reporting being keen to ask questions during online lectures, a significant proportion of respondents were hesitant to ask in face-to-face sessions. Attending online courses provided students with the opportunity to ask questions. However, some of them worked in silos, highlighting the fact that their characteristics and engagement in class might not be optimal.

Regarding the low overall achievement of lectures and practicums, it was a challenge for universities to immediately improve e-learning systems that better describe learning activities approaching offline activities. The majority of students had mixed feelings about online learning, with most preferring conventional classroom learning. Students were pessimistic about their chances of learning professional skills and core competencies online (Muflih *et al.,* 2021). In contrast, research from 2019 showed that online lectures were superior to offline learning (Pei & Wu, 2019).

As reported in many countries, respondents in this study faced several barriers and voiced common complaints about online lectures or practicums, primarily related to the delivery method of online learning. Although e-learning met student expectations, its effectiveness should be verified further (Suwannaphisit *et al.,* 2021). Many countries reported poor internet connection, including Bangladesh, where students experienced internet disturbances and anxiety (Hoque et al. 2021). Therefore, governments should provide stable

electricity and internet so that online learning can be effective and students do not get bored due to process interference (Oyediran *et al.,* 2020). In Saudi Arabia, online learning was initiated before the COVID-19 pandemic; medical students did not fully accept it due to various factors, particularly technical problems related to accessibility, unpreparedness, and unstable internet connections (Alavudeen *et al.,* 2021).

One of the keys to successful online learning is preparation. This study found that well-prepared teaching may improve the comprehension and enthusiasm of students. More interactive e-learning has similar effects on skill outcomes as compared to face-to-face sessions if better prepared (Kyaw *et al.,* 2019), consistent with findings among nursing students (McCutcheon *et al.,* 2015). Alternatively, a hybrid model can be adopted to improve outcomes and student satisfaction with the process and the results (Grønlien et al. 2021).

Research showed that blended learning in pedagogical practice is a current need recommended in the post-COVID-19 era (Potu *et al.,* 2021). Therefore, the best learning method is a combination, which should be started as soon as the situation normalises, as this will lead to further development of professional skills and improve the quality of learning (Yekefallah *et al.,* 2021). Otherwise, student boredom will occur (Irawan, Dwisona & Lestari, 2020). Another noteworthy point is the positive perception of educators of e-learning in establishing a more professional learning and teaching experience. This belief is meaningful because it probably derives from the educator's prior learning experiences and could be used to anticipate how educators would behave in the classroom (Handal, Groenlund & Gerzina, 2011).

Student recommendations for distance learning present fundamental improvements so that complaints or barriers encountered during lectures can be reduced while improving learning outcomes for lectures and practicums. The students recommended an individual input through a questionnaire that was written openly and then compiled by the researcher into a complete input. The authors believe that these recommendations are essential for education managers in universities, especially pharmacy education.

Conclusion

Online learning was the most suitable method in pharmacy education during the COVID-19 pandemic. Several benefits and barriers were reported leading to the acceptance of the online learning model. Nevertheless, learning comprehension has become another issue, given the poor understanding of course materials and laboratory training topics. Recommendations were mainly driven towards improving online platforms, securing financial support, and providing better internet connection.

Conflict of interest

The authors declare no conflict of interest in this research. They did not receive funds from any party so that the intervention from other parties is not possible.

Authors' declaration

The authors hereby declare that the data and all contents presented in this article are the original results of the research. All the claims related to the content of this article are the responsibility of the authors jointly.

References

Alavudeen, S. S., Easwaran, V., Mir, J. I., Shahrani, S. M., Aseeri, A. A., Khan, N. A., Almodeer, A. M., & Asiri, A. A. (2021). The influence of COVID-19 related psychological and demographic variables on the effectiveness of e-learning among health care students in the southern region of Saudi Arabia. *Saudi pharmaceutical journal*, **29**(7), 775–780. https://doi.org/10.1016/j.jsps.2021.05.009

Ali, M., Allihyani, M., Abdulaziz, A., Alansari, S., Faqeh, S., Kurdi, A., & Alhajjaji, A. (2021). What just happened? Impact of on-campus activities suspension on pharmacy education during COVID-19 lockdown - A students' perspective. *Saudi pharmaceutical journal*, **29**(1), 59–66. https://doi.org/10.1016/j.jsps.2020.12.008

Altwaijry, N., Ibrahim, A., Binsuwaidan, R., Alnajjar, L. I., Alsfouk, B. A., & Almutairi, R. (2021). Distance Education During COVID-19 Pandemic: A College of Pharmacy Experience. *Risk management and healthcare policy*, **14**, 2099–2110. https://doi.org/10.2147/RMHP.S308998

Baber, H. (2021). Modelling the acceptance of e-learning during the pandemic of COVID-19-A study of South Korea. *The International Journal of Management Education,* **19**(2), 100503. https://doi.org/10.1016/j.ijme.2021.100503

Bani Hani, A., Hijazein, Y., Hadadin, H., Jarkas, A. K., Al-Tamimi, Z., Amarin, M., Shatarat, A., Abu Abeeleh, M., & Al-Taher, R. (2021). E-Learning during COVID-19 pandemic; Turning a crisis into opportunity: A cross-sectional study at The University of Jordan. *Annals of medicine and surgery (2012)*, **70**, 102882. https://doi.org/10.1016/j.amsu.2021.102882

Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. *Pedagogical Research,* **5**(4), em0060. https://doi.org/10.29333/pr/7937

Elsalem, L., Al-Azzam, N., Jum'ah, A. A., Obeidat, N., Sindiani, A. M., & Kheirallah, K. A. (2020). Stress and behavioral changes with remote E-exams during the Covid-19 pandemic: A cross-sectional study among undergraduates of medical sciences. *Annals of medicine and surgery (2012)*, **60**, 271–279. https://doi.org/10.1016/j.amsu.2020.10.058

Grønlien, H. K., Christoffersen, T. E., Ringstad, Ø., Andreassen, M., & Lugo, R. G. (2021). A blended learning teaching strategy strengthens the nursing students' performance and self-reported learning outcome achievement in an anatomy, physiology and biochemistry course - A quasi-experimental study. *Nurse education in practice*, **52**, 103046. https://doi.org/10.1016/j.nepr.2021.103046

Handal, B., Groenlund, C., & Gerzina, T. (2011). Academic perceptions amongst educators towards eLearning tools in dental education. *International dental journal*, **61**(2), 70–75. https://doi.org/10.1111/j.1875-595X.2011.00017.x

Hoque, M. N., Hannan, A., Imran, S., Alam, M. A., Matubber, B., & Saha, S. M. (2021). Anxiety and Its Determinants among Undergraduate Students during E-learning in Bangladesh Amid Covid-19. *Journal of affective disorders reports*, **6**, 100241. https://doi.org/10.1016/j.jadr.2021.100241

Hossain, M. J., Ahmmed, F., Rahman, S. M. A., Sanam, S., Emran, T. B., & Mitra, S. (2021). Impact of online education on fear of academic delay and psychological distress among university students following one year of COVID-19 outbreak in Bangladesh. *Heliyon*, **7**(6), e07388. https://doi.org/10.1016/j.heliyon.2021.e07388

Ibrahim, N. K., Al Raddadi, R., AlDarmasi, M., Al Ghamdi, A., Gaddoury, M., AlBar, H. M., & Ramadan, I. K. (2021). Medical students' acceptance and perceptions of e-learning during the Covid-19 closure time in King Abdulaziz University, Jeddah. *Journal of infection and public health*, **14**(1), 17–23. https://doi.org/10.1016/j.jiph.2020.11.007

Irawan, A. W., Dwisona, D., & Lestari, M. (2020). Psychological Impacts of Students on Online Learning During the Pandemic COVID-19. *KONSELI: Jurnal Bimbingan dan Konseling (E-Journal),* **7**(1), 53-60. https://doi.org/10.24042/kons.v7i1.6389

Kim, S. H., & Park, S. (2021). Influence of learning flow and distance e-learning satisfaction on learning outcomes and the moderated mediation effect of social-evaluative anxiety in nursing college students during the COVID-19 pandemic: A cross-sectional study. Nurse education in practice, **56**, 103197. https://doi.org/10.1016/j.nepr.2021.103197

Kyaw, B. M., Posadzki, P., Paddock, S., Car, J., Campbell, J., & Tudor Car, L. (2019). Effectiveness of Digital Education on Communication Skills Among Medical Students: Systematic Review and Meta-Analysis by the Digital Health Education Collaboration. *Journal of medical Internet research*, **21**(8), e12967. https://doi.org/10.2196/12967

McCutcheon, K., Lohan, M., Traynor, M., & Martin, D. (2015). A systematic review evaluating the impact of online or blended learning vs. face-to-face learning of clinical skills in undergraduate nurse education. *Journal of advanced nursing*, **71**(2), 255–270. https://doi.org/10.1111/jan.12509

Moore, R., Purvis, R., Bogulski, C., Maddox, T., Haggard-Duff, L., Schulz, T., ... & McElfish, P. (2021). Learning during COVID-19: rapid E-learning transition at a regional medical school campus. Journal of Regional Medical Campuses, 4(2). https://doi.org/10.24926/jrmc.v4i2.3645

Mouratidis, K., & Papagiannakis, A. (2021). COVID-19, internet, and mobility: The rise of telework, telehealth, e-learning, and e-shopping. *Sustainable cities and society*, **74**, 103182. https://doi.org/10.1016/j.scs.2021.103182

Muflih, S., Abuhammad, S., Al-Azzam, S., Alzoubi, K. H., Muflih, M., & Karasneh, R. (2021). Online learning for undergraduate health professional education during COVID-19: Jordanian medical students' attitudes and perceptions. *Heliyon*, **7**(9), e08031. https://doi.org/10.1016/j.heliyon.2021.e08031

Oyediran, W. O., Omoare, A. M., Owoyemi, M. A., Adejobi, A. O., & Fasasi, R. B. (2020). Prospects and limitations of e-learning application in private tertiary institutions amidst COVID-19 lockdown in Nigeria. *Heliyon*, **6**(11), e05457. https://doi.org/10.1016/j.heliyon.2020.e05457

Pei, L., & Wu, H. (2019). Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. *Medical education online*, **24**(1), 1666538. https://doi.org/10.1080/10872981.2019.1666538

Potu, B. K., Atwa, H., Nasr El-Din, W. A., Othman, M. A., Sarwani, N. A., Fatima, A., Deifalla, A., & Fadel, R. A. (2022). Learning anatomy before and during COVID-19 pandemic: Students' perceptions and exam performance. *Morphologie*, **106**(354), 188–194. https://doi.org/10.1016/j.morpho.2021.07.003

Priyastama, R. (2017). Buku sakti kuasai SPSS, pengolahan data & analisis data

Roman, M., & Plopeanu, A. P. (2021). The effectiveness of the emergency eLearning during COVID-19 pandemic. The case of higher education in economics in Romania. *International Review of Economics Education,* **37**, 100218. https://doi.org/10.1016/j.iree.2021.100218

Suwannaphisit, S., Anusitviwat, C., Hongnaparak, T., & Bvonpanttarananon, J. (2021). Expectations on online orthopedic course using constructivism theory: A cross-sectional study among medical students. *Annals of medicine and surgery (2012)*, **67**, 102493. https://doi.org/10.1016/j.amsu.2021.102493

Vellingiri, B., Jayaramayya, K., Iyer, M., Narayanasamy, A., Govindasamy, V., Giridharan, B., Ganesan, S., Venugopal, A., Venkatesan, D., Ganesan, H., Rajagopalan, K., Rahman, P. K. S. M., Cho, S. G., Kumar, N. S., & Subramaniam, M. D. (2020). COVID-19: A promising cure for the global panic. *The Science of the total environment*, **725**, 138277. https://doi.org/10.1016/j.scitotenv.2020.138277

Yekefallah, L., Namdar, P., Panahi, R., & Dehghankar, L. (2021). Factors related to students' satisfaction with holding

e-learning during the Covid-19 pandemic based on the dimensions of e-learning. *Heliyon*, **7**(7), e07628. https://doi.org/10.1016/j.heliyon.2021.e07628

Zhou, L., Wu, S., Zhou, M., & Li, F. (2020). 'School's out, but class' on', the largest online education in the world today: Taking China's practical exploration during The COVID-19 epidemic prevention and control as an example. *Best Evidence of Chinese Education,* **4**(2):501–19. https://doi.org/10.15354/bece.20.ar023

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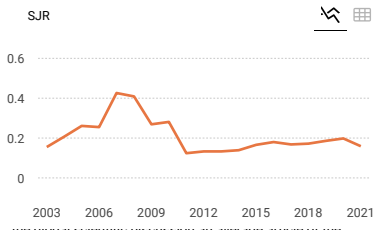

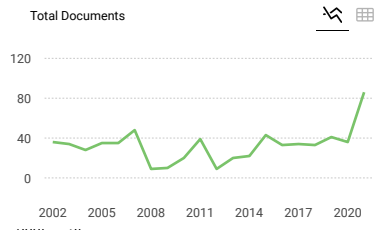

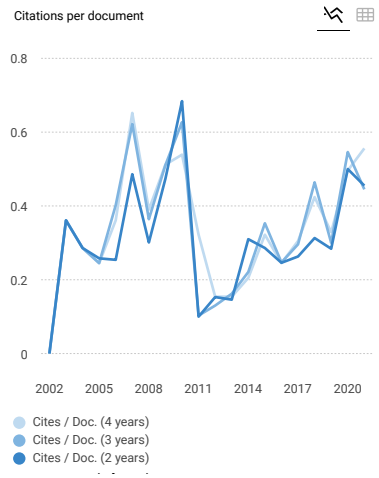

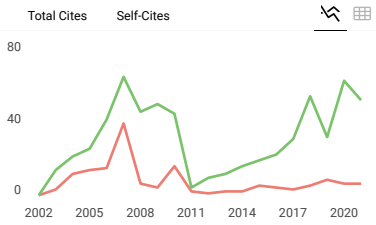

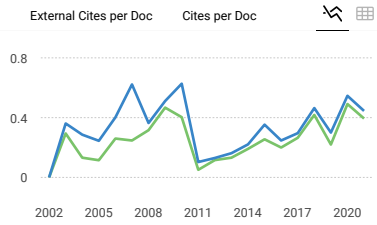

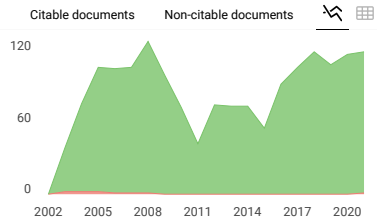

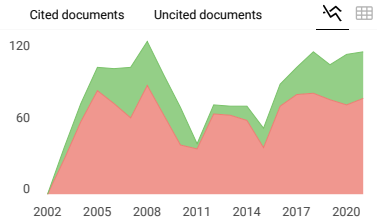

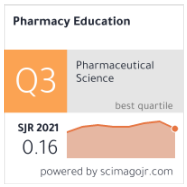

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