



## **PUBLICATIONS ON OPEN AND DISTANCE EDUCATION**

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## INTRODUCTION

Distance education, also known as online learning, is the education of students who may not always be physically present in a learning institution or where the learner and the teacher are separated by both time and distance (Kaplan et.al 2016). Traditionally, this usually involved correspondence courses where—in the student corresponded with the school. This correspondence is a technology-mediated modality and has evolved with the evolution of technologies such as video conferencing, TV, and the internet (Anderson, 2020).

This report is a desktop analysis of recent publications that have been done by various researchers worldwide in open and distance education /online learning between 2017 and 2023. The names of the researchers, years of publication, and a brief synopsis of the thematic areas of the studies have been outlined. The publications cover the following thematic areas: Inclusive Online learning, the Impact of Covid 19 on Distance Education, Competency of ODEL Instructors, Analysis of ODEL Programs, and Cultural inclusivity in online learning. Additional thematic areas include; Students' perceptions of Distance Education, Online assessment methodologies, Reflective Professional Practice on Distance Education, Design / Elements of Distance Education programs, Perceptions of ODEL Learners, and lastly, The Comparison between distance learning and face-to-face learning.

## PUBLICATIONS ON OPEN AND DISTANCE LEARNING (ODEL)

THEMATIC AREA	TITLE OF THE ARTICLE AND HYPERLINK	BRIEF SYNOPSIS
Reflective Professional Practice on Distance Education	<p>Coughlan. T, Goshtasbpour. F, Mwoma.T, Makoe. M, Aubrey-Smith. F, Tanglang. N (2023). Decision Making in Shifts to Online Teaching: Analysing Reflective Narratives from Staff Working in African Higher Educational Institutions. <i>Trends High. Educ.</i> 2023, 2, 123–139.</p> <p>Access the article <a href="#">here</a></p>	<p>The aim of this paper is to understand the nature of decisions that staff made as they moved to online teaching necessitated by the COVID-19 pandemic. It gives the reasons, processes, and reflections on the perceived impacts. A qualitative analysis was conducted on eighty-four participants with diverse roles connected with moving to online learning, from four institutions across Africa. Findings revealed that decisions related to policy and rules, pedagogy, community, and technology were frequently cited by participants. The main objective expressed in these narratives was maintaining the continuity of education for students. However, mixed impacts were observed on student engagement, and further decisions were made in response to this. The biggest tension in implementing the decisions was found between tools and technology and the participants or their communities. The recommendations given include; updating policies, introducing continuous assessment, and drawing in previous practices to try to reproduce in-person teaching online.</p>
Inclusive Online Learning	<p>Hedayati .M. A &amp; Gunawardena .C. N (2022). Culture, Ethics of Care, Community, and Language in Online Learning Environments: Supporting Adult Educators in a Digital era. <i>Handbook of Open, Distance and Digital Education</i>.</p> <p>Access the article <a href="#">here</a></p>	<p>Considering the increase in the number of online courses and programs across the globe, preparing educators for creating inclusive online environments for learners to thrive is imperative. The worldwide Covid pandemic of 2020 only accelerated the already rising trends of online course offerings in higher education and further expanded it to other sections of education and geographical locations. The focus of this chapter was on adults as learners specifically on the following aspects; cultural inclusivity, ethics of care, inclusive learning environment and teanslanguaging. Through reviewing the existing literature, this chapter uses a cultural and ethical lens to examine issues related to community and language to contribute to the design of equitable and inclusive online learning environments. The main finding revealed that an ethical course design in this context involves going beyond the mindset of merely</p>

		changing the delivery mode of a course. Thus, the study recommends that , ethical courses designs should involve thoughtful reflection on the context, the subject, the learners, and the technology and how to best build on the strengths of the online platform and avoid the potential pitfalls while addressing specific needs of learners in a caring manner.
Impact of Covid 19 on Distance Education	<p>Tugano M.S, Tria ,J.Z , Tonio .J.Z (2022), Modular Learning amidst COVID-19 Pandemic: Satisfaction Among Students in a Higher Education Institution, <i>International Journal of Professional Development, Learners, and Learning</i> , ss4(2), ep2206 , ISSN 2754-0618 (Online).</p> <p>Access the article <a href="#">here</a></p>	Educational institutions were compelled to close their doors due to the COVID-19 pandemic. This resulted in the sudden shift from face-to-face classes to flexible learning to allow continuity of providing quality education to students. The aim of this study was to determine the level of satisfaction of students of Catanduanes State University (CatSU) with modular learning as one of the flexible learning modalities used by the institution during the pandemic. The findings of the study showed that the student's level of satisfaction with modular learning has a varying degree of strength from "very satisfied" ( $\bar{x}$ =2.71) to "satisfied" ( $\bar{x}$ =2.01) in the different indicators covered by the study. Significant differences were likewise revealed in the level of satisfaction among students across colleges and year levels. The recommendations are that further investigation is needed to validate the findings. Studies not only exploring student satisfaction but also satisfaction among faculty members of the institution on the implementation of modular learning amidst the pandemic are also recommended.
Impact of COVID-19 on Distance education	<p>Dargo. M.J, Dimas.M (2021), Modular Distance Learning: Its Effect in The Academic Performance Of Learners In The New Normal. <i>Journal of Education, Teaching, and Learning</i>, Volume 6 Number 2 September 2021. Page 204-208 p-ISSN: 2477-5924 e-ISSN: 2477-8478</p> <p>Access the article <a href="#">here</a></p>	Due to the Covid-19 pandemic, schools, particularly in rural areas employed Modular Distance Learning (MDL) to ensure educational continuity. This study sought to investigate the effects of MDL on the academic performance of learners. Findings showed that the 2.25% decrease in the academic achievement of learners after the implementation of modular distance learning (MDL) denoted a significant difference in their academic performance. On a positive note, MDL was found to strengthen family bonding and independent learning, and is cost-effective. However, it is an additional workload to working parents, there is limited teacher-

		learner interaction, learners lack socialization with other children, and have no exposure to significant school activities but are rather exposed to many distractions at home.
Competency of ODEL instructors	<p>Aksan.J.A (2021). Effect of Modular Distance Learning Approach to Academic Performance in Mathematics of Students in Mindanao State University-Sulu Senior High School Amidst COVID-19 Pandemic, <i>Open Access Indonesia Journal of Social Sciences</i>.</p> <p>Access the article <a href="#">here</a></p>	<p>This study investigated the instructional competencies of teachers during the existence of the COVID-19 pandemic, which brought extraordinary challenges to the stakeholders, teachers, parents, and students. With this, the study sought to determine the perception of the students regarding the modular distance learning approach (MDLA) in Mathematics. The study used a descriptive research design and utilized the research survey questionnaire to get the data. Findings revealed the effectiveness of modular distance learning approach in learning Math despite of its challenges amidst COVID 19 pandemic. The students agreed on using the modular distance learning approach (MDLA) in Mathematics. Students who agreed on using the modular distance learning approach (MDLA) in Math had fewer challenges and performed very satisfactorily in Mathematics. In addition, when grouped by gender and age, they students had similar perceptions and there were no significant differences. The researcher therefore concluded that the academic performance of the STEM students were not affected by their perceptions in regards to modular distance learning approach.</p>
Competency of ODEL Instructors	<p>Tasan . R. (2021). Teaching Competencies and Pupils' Performance in the Implementation Of Modular Distance Learning Modality. <i>International Journal of Advanced Multidisciplinary studies</i> volume 1, issue 1, ISSN: 2782-893x</p> <p>Access the article <a href="#">here</a></p>	<p>This study aimed at finding out the significant relationship between teachers' level of competencies and the pupils' academic performance in the implementation of modular distance learning modality. Descriptive-correlational research was carried out. The findings revealed there is a significant relationship between the level of competencies of teachers and the diversity of learners, curriculum and planning, assessment, and reporting, in the implementation of modular distance learning modality. The conclusions made highlighted that the competencies of teachers greatly affect the</p>

		<p>performance of the pupils on modular distance learning modality. The recommendations are that the proposed intervention plan formulated should be utilized, crafted learning activities should be congruent to the competencies presented in the modules and Teachers and School Heads should provide adequate and child-friendly learning resources to the pupils.</p>
Competency of ODEL instructors	<p>Carreon, <a href="#">D. B.</a> (2021). Teachers' Readiness and Challenges in Modular Distance Learning, <i>SSRN, ELSEVIER</i></p> <p>Access the article <a href="#">here</a></p>	<p>This paper aims to determine the readiness and challenges encountered by select English teachers in the implementation of Modular Distance Learning in their respective public secondary schools. A researcher-made instrument was used to gather the necessary data. There was a total of 119 Junior High School English teachers from the province of Nueva Ecija who voluntarily answered the survey questionnaire. The three main categories examined by the researcher are the Knowledge and Skills Required, Access of Learning Materials, and Establishing Communication and Monitoring Students' Progress. The findings showed that the majority of the English teachers are prepared with regard to the implementation of Modular DL in their learning institutions. However, trainings and webinars are still needed by them to fully adapt in Modular DL. Moreover, a stable internet connection and familiarity to educational sites are also relevant needs of educators. As for the challenges, it was reported that they have significantly experienced setbacks in the three categories particularly on assessing the understanding of content areas and language practice of the students using modules. The lack of devices and poor internet connection was also revealed to be one of the major problems why the English teachers are having difficulty monitoring the progress of the students and encouraging their participation. In addition, providing the learners with learning and supplemental materials is also a setback. The support given by the stakeholders were also analyzed and it showed that there is a strong support and</p>

		<p>connection between the schools and members of the community such as the parents, local government units, students, and private organizations.. In conclusion, the majority of the English teachers are ready on the implementation of Modular Distance Learning, however they are encountering several challenges as outlined which require to be addressed. For further studies, similar studies may be conducted to help identify additional challenges experienced by both teachers and learners on a wider scope not only in teaching the English subject but even in other learning areas.</p>
Analysis of ODEL Programs	<p>Tomago. J, Egipto. C. J, Mary. R .F , Corpuz . M. R , et.al (2021). Advantages and Disadvantages of Modular Distance Learning in Learning Mathematics: Perception of Grade 9 Students, <i>International Journal of Scientific &amp; Engineering Research</i> Volume 12, Issue 11, November-2021 696 ISSN 2229-5518</p> <p>Access the article <a href="#">here</a></p>	<p>This study presented the advantages and disadvantages of modular distance learning among Grade 9 students of President Ramon Magsaysay State University. Findings revealed that the majority of the respondents were male and belonged to poor families. The advantages of Learning mathematics through the modular distance program included: having time to rest, being safe at home, and using other references to study while the predominant disadvantages included: needing to access the internet, getting frustrated, or stressed, and getting distracted easily. The study further revealed that there is no significant difference in the advantages and disadvantages of modular distance learning in learning mathematics when grouped according to profile variables. The researchers recommended that students may wisely manage their time to read and understand their modules to expand their learning on their own. Teachers may consider improving and providing self-learning modules filled with examples as well as activities wherein the students do not need to access the internet for further understanding. Future researchers who wish to conduct a similar study may use a bigger population, other grade levels, and other subjects and also incorporate other variables.</p>
Cultural Inclusivity in online learning	<p>Gunawardena, C. N. (2020). Culturally Inclusive Online Learning for Capacity Development Projects in International Contexts. <i>Journal of Learning for Development</i>, 7(1), 5-30. (Invited Article)</p>	<p>Digitalization has brought new challenges and opportunities. Harnessing these opportunities for appropriate change will make learning more accessible and inclusive. This paper explores cultural</p>

	<p>Access the article <a href="#">here</a></p>	<p>inclusivity in online learning design by discussing two international capacity development projects: an online tutor mentor development program in Sri Lanka and a hybrid physician assistant training program in Ghana. To provide guidance for culturally inclusive design, the researcher introduced the WisCom, (Wisdom Communities) design framework, well-suited for culturally-diverse learning cohorts , to guide the design of culturally inclusive online learning incorporating lessons learned from international projects. By emphasizing divergent thinking, consensus building, and the exploration of multiple solutions to complex, real-world problems, WisCom maximizes opportunities for participants’ diverse backgrounds and experiences to be valued. In conclusion, through the WisCom, (Wisdom Communities) design framework, this paper addressed the importance of establishing partnerships to develop and maximize the capacity that already exists in each context, and the vital role of a needs assessment. Cultural factors that impacted online design in the two projects were discussed in relation to developing a learning community, negotiating identity, power, and authority, supporting collaboration, engaging in authentic inquiry-based learning, navigating interactions in an additional language, and developing co-mentoring relationships to support learning online.</p>
Impact of COVID-19 on Distance Education	<p>UNICEF (2020). Guidance On Distance Learning Modalities To Reach All Children and Youth During School Closures - Focusing On Low- And Non-Tech Modalities To Reach The Most Marginalized, <i>UNICEF REGIONAL Office for South Asia</i></p> <p>Access the article <a href="#">here</a></p>	<p>This guidance on continuity of learning during school closures draws on the key lessons learned from the COVID-19 education response around the world. It has been developed for government policymakers and education staff of national and international organizations involved in the education response during school closures as a result of Covid 19 pandemic. The main recommendations provided in the guidance include : ensuring continuity of learning during school closures, combining self-learning and teacher guided modalities, leveraging learning opportunities through basic mobile phones and the use of printed learning kits and reading materials.</p>



Students' perceptions on Distance Education	<p>Fidalgo.P, Joan Thormann.J, Oleksandr K, et.al ( 2020). Students' perceptions on distance education: A multinational study, <i>International Journal of Educational Technology in Higher Education</i></p> <p>Access the article <a href="#">here</a></p>	<p>Investigating learners' perceptions, attitudes, and willingness to try Distance education (DE) can provide guidance and recommendations for universities that are considering expanding the use of DE formats. A survey was distributed to undergraduate students in Portugal, UAE, and Ukraine. The results of this study showed that in all three countries, students' major concerns about such programs were time management, motivation, and English language skills. Although students were somewhat apprehensive many indicated they were interested in taking DE courses.</p>
Online assessment methodologies	<p>Gunawardena, C. N., Moore, S. L., Barril, L., &amp; Thabotharan, K. (2020). Online Assessment Methods for Student-Centred Learning: Active Learning, Collaboration, and Application with Authentic Assessment [Invited Panel Presentation for Sri Lankan Universities]. <i>Sponsored by the United States -Sri Lanka Fulbright Commission, Colombo, Sri Lanka.</i></p> <p>Access the article <a href="#">here</a></p>	<p>The study proposes the shift from remote emergency online assessments done during the COVID pandemic to well-designed authentic assessments that simulate professional skills. Also, a shift beyond multiple choice to a variety of assessment methods, beyond worrying about proctoring to continuous assessments, and lastly, a shift towards changing the culture of assessment from pass/fail, normal/bell curve to learning improvement and student development.</p>
Online assessment methodologies	<p>Sanchez .D, Flor. N , &amp; Gunawardena. C (2020). Employing Social Learning Analytic Methods (SLAMs) to Reimagine the Social Dynamic of Online Learning Collaborations. In M. Brown, M. Nic Giolla Mhichil, E. Beirne, &amp; E. Costello (eds.), <i>Proceedings of the 2019 ICDE World Conference on Online Learning</i>, Volume 1, (pp. 817-832). Dublin, Ireland: Dublin City University.</p> <p>Access the article <a href="#">here</a></p>	<p>As online networks expand, learning collaborations will occur across disciplines, countries, and people. A particular challenge is determining the process and progress of these collaborations, and how the social dynamics of interacting groups support knowledge construction. Traditional methods that rely predominantly on content analysis of transcripts to determine the social construction of knowledge are time-consuming to conduct and often do not provide actionable data to improve the process before it is completed. One answer to this challenge is emerging Social Learning Analytic Methods (SLAMs) that offer robust and expedient means to analyze the performance of interacting groups online. The purpose of this study was to explore the social dynamic that supports knowledge construction in interacting groups by employing SLAMs. Using SLAMs, this study found that in a formal learning environment, higher phases of knowledge construction may be associated with</p>

		<p>postings containing high levels of positive sentiment and social presence. Finally, this study found that in social media informal learning environments, the social construction of knowledge occurred primarily within various stages of the Interaction Analysis Model.</p>
Designing / Elements of Distance Education	<p>Kotzé. D.A (2020) Theoretical framework for Open Distance Learning: a South African case study, <i>The Independent Journal of Teaching and Learning</i> - Volume 16 (1) / 2021</p> <p>Access the article <a href="#">here</a></p>	<p>This paper outlines the elements of a theoretical framework for open distance learning (ODL) in a developing country, A case study of Honour students in Development Studies at the University of South Africa (UNISA). With a special focus on students' access to and usage of the internet and web-based learning, the study contributes to developing a framework for distance education in a developing context. The results show that the vast majority of students are willing to engage fully with e-learning and are active internet users considering it as an important source of learning and information. However, that access and usage of the internet depend on the individual profile of a student. The elements to inform the design of an ODL theoretical framework are also outlined.</p>
Perceptions of ODEL Learners	<p>Laichena,M. E, Ayot.H. O, Ndethiu, S.M (2018). Teaching and Learning Needs as Learner Support Services offered in Open, Distance and E-Learning Programme in Selected Public Universities in Kenya, <i>African Research Journal of Education and Social Sciences</i>, 5(2), 2018</p> <p>Access the article <a href="#">here</a></p>	<p>The objective of the study was to assess teaching and learning services that are offered in Open, Distance, and E-Learning programs in selected public universities in Kenya. The research used a descriptive survey design as the study relied on attitudes, opinions, and the state of the services in the universities under the study. The study established that students rated the majority of teaching and learning services offered as poor. The study recommends that institutions offering the program should constantly evaluate the value of teaching and learning services offered by seeking the students' opinions so as to ensure that the services offered are beneficial to majority of students.</p>
Comparison between Distance and face to face learning	<p>Carmem L. E, Luciana .B, Airton. T, Pedro .R and Cleidilene. R. M (2018). Face-to-Face and Distance Education Modalities in the Training of Healthcare Professionals: A Quasi-Experimental Study, <i>Frontiers in Psychology</i></p>	<p>This study evaluates the effectiveness of an 18-month-long course in Family Health. The course was offered in two modalities, distance education, and face-to-face learning. Participants in the two modalities achieved similar academic performance. Findings revealed that no statistically significant differences were found</p>

	Access the article <a href="#">here</a>	regarding the study variables. Thus, further research is needed on the effectiveness of distance education and face-to-face learning as training modalities.
Analysis of ODEL programs	<p>Mwaniki. E, Mukirae .S, Chege .F, Ireri. A (2017). Development of Interactive Online Learning Modules: Lessons from Kenyatta University, Kenya, <i>Conference paper: Pan-Commonwealth Forum 8 (PCF8), 2016</i></p> <p>Access the article <a href="#">here</a></p>	<p>Kenyatta University introduced the open and distance learning program in 2003, In 2014, the university embraced the concept of e-learning and changed the program's name to Virtual and Open Learning. However, despite the change of name, instructional materials and pedagogical approaches did not change to reflect the shift. To address this, the School of Education in collaboration with the Commonwealth of Learning trained some academic staff to convert the soft copies of selected print modules into interactive modules. The findings of this report revealed that the training was beneficial to the trainees. The recommendations made were that: management involvement and support, technical support, and teamwork are important for the successful implementation of the program. Lastly, since technology is constantly evolving, there is a need for continuous retooling of online facilitators for best practices in developing online modules.</p>
Analysis of ODEL programmes	<p>Gunawardena.C, Jayatilleke.B.G, Kulasekara.G.U, et.al (2017). Implementing the First Cross-border Professional Development Online Course through International E-mentoring: Reflections and Perspectives, <i>Open Praxis, vol. 9 issue 1, pp. 31–44 (ISSN 2304-070X)</i></p> <p>Access the article <a href="#">here</a></p>	<p>This research paper discusses the accomplishments, issues, and challenges experienced by Open University of Sri Lanka (OUSL) academics when offering the first cross-border professional development online course to train online tutors and mentors. The course was delivered exclusively online and facilitated by OUSL academics and e-mentors from the USA. The course was comprised of 30 participants: 9 from Pakistan, 10 from Mauritius, and 11 from Sri Lanka. Data were collected using reflections and informal anecdotal records of the three OUSL academics. In addition, self-reflection instruments (pre, mid, and final) were administered to participants, in which participants made reflective journal entries. While there were many accomplishments in the design and delivery of the course, the findings revealed that there were many pedagogical, organizational, and technological challenges in</p>

		implementing the course. The paper provides recommendations to address such challenges when offering cross-border online courses in the future.
Analysis of Odel Programmes	<p>Anyonje .F. M (2017). Analysis of Distance Education Programmes in Kenya, <i>International Journal of Scientific and Research Publications</i>, Volume 7, Issue 8, August 2017 412 ISSN 2250-3153</p> <p>Access the article <a href="#">here</a></p>	<p>Distance education has been found to be an important mode of education delivery in the 21<sup>st</sup> century. Distance education has been found to have a high output especially improving skills, cost effectiveness, efficiency, and improved content delivery by use of technology. In Kenya some students have relied on this mode of study to access education. Institutions of higher learning have embraced this mode though faced with several challenges. The findings of this study have revealed several challenges facing distance education in Kenya. These include: scarcity of funds, lack of clear understanding of distance education, inadequate resources, slow and high cost of internet connectivity, lack of ICT skills by students and faculty members and an unfavourable communication policy. Despite this, distance education should be made accessible and designed to meet the needs of different types of students. The researcher recommends the following ways of improving the use of distance education in Kenya; Advances in internet use to make distance education efficient and effective, preparation of a web-based database and a back-up base in print format, subsidizing the cost of internet, provision of low cost computers and improved training for tutors. In conclusion, with support from the government, distance education should be embraced alongside the conventional teaching mode.</p>
Analysis of ODEL learners	<p>Wanyoike.M.S (2017). Factors influencing learners' enrolment in Distance learning programs in Kenya: A case of the University of Nairobi. <i>Master's Project, University of Nairobi</i></p> <p>Access the article <a href="#">here</a></p>	<p>The purpose of the study was to investigate factors influencing learners' enrolment in Distance learning programs in Kenya: the case of the Odel campus, the University of Nairobi with reference to the Diploma in Adult Education and Community Development program. The study adopted a descriptive survey design. The population of this study was learners who had enrolled into Diploma in Adult</p>

		<p>Education and Community Development programme. The researcher used snow ball technique to select learners enrolled in the programme as well as the graduates of the course. Findings revealed that most distant learners are adults, family-oriented, and employed. Print modules are used for instruction as the main mode of delivery with little use of online materials. There is no government financing for students, thus they use other personal sources of income. The findings revealed that the factors influencing the learners enrolment were, Firstly, family commitments; most distant learners are adults employed and with family commitment, that hindered them from full participation in learning. Secondly, the University of Nairobi has not fully embraced use of technology in delivery of distance learning programmes resulting to use of print media/ modules as the main mode of delivery with little use of online materials, and lastly loan facilities from Higher Education Loans Board were not available to distant learners forcing them to result to their SACCOS and banks for loans to enable them finance their education. The study recommends the following: Improvement of learner support services to cater for the different learner characteristics. There is need to diversify instructional materials to cater for different needs and situations of the distant learners. The Government should consider financing distant learners through loans from HELB to ease the fees burden and finally there is need to integrate technology in delivery of distant learning programmes..</p>
Analysis of Distance Education programs	<p>Opondo, P. A &amp; Boit , J. K (2017). Challenges of Open and Distance Learning in Kenya: The Case of Public Universities, <i>Proceedings of Kibabii University 2nd Interdisciplinary International Scientific Conference; June 14-15, 2017</i></p> <p>Access the article <a href="#">here</a></p>	<p>The Kenyan education policy is based on a number of legislations, all of which commit the government to the provisions of at least 12 years of compulsory, free and continuous schooling to the Kenyan children (Government of Kenya, 2008). However, so far, there is no specific act or directive deals with Distance learning per se. The Kenyan policy on Distance Education is far behind South Africa and even post-conflict Rwanda who have prepared very proactive policy documents to increase access via open and distance learning. This is</p>

		paper seeks to discuss the structural challenges that have led to this phenomenon.
Cultural perspectives of Online learning	<p>Gunawardena, C. N (2017). Cultural perspectives on social presence. <i>In Whiteside, A. L., Dikkers.A. G, &amp; Swan .K. (Eds.). Social Presence in Online Learning: Multiple Perspectives on Practice and Research (pp. 113-129). Sterling, VA: Stylus.</i></p> <p>Access the article <a href="#">here</a></p>	<p>Social presence or the degree to which an individual is perceived as a real person in mediated communication has been established by distance education research as a key ingredient of the social environment of online learning. The findings of this study established the key role of social presence in online communication. The social presence and satisfaction scales developed for this study, were considered valid and reliable by Cobb (2009) who encouraged further use of these scales in educational research. Additional findings showed that participants who felt a higher sense of social presence within the conference, enhanced their socio-emotional experience by using their emotions to express missing nonverbal cues in written form.</p>

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