



Satisfaction with Hybrid Learning in Mozambique: An Exploratory Study

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ABSTRACT

Original Research Article

Objective: To assess student satisfaction with the implementation of a hybrid learning model at a higher education institution during the COVID-19 pandemic, identifying pedagogical, technological, environmental, individual, and economic factors influencing adaptation.

Method: A descriptive, cross-sectional exploratory study was conducted using a structured online questionnaire with 41 closed-ended questions administered to second- to fifth-year undergraduate students. Satisfaction was measured using a Likert scale. Ethical approval was obtained (CIBSUL; Ref: 10/Abril/CIBSUL21). Digital informed consent, anonymity, and confidentiality were ensured.

Results: A total of 244 students (40.7% of 599 enrolled) participated. The majority were aged 18–35 years (88.1%), and 53.7% were male. Pedagogical practices such as presentation of the analytical plan (51.6% agreement; 27.9% strong agreement) were positively evaluated. However, perceptions regarding the realism of virtual classes were more critical (39.3% disagreement; 14.7% strong disagreement). Smartphones were the predominant access device (86%), while 45% reported internet access difficulties. Environmental constraints affected routine maintenance (46.0%), and 76% recognized that hybrid learning requires high self-discipline. Economically, 63% perceived hybrid learning as more costly than face-to-face education. Motivation to remain in the hybrid model showed a moderate tendency, with 37% neutral responses.

Conclusion: The findings indicate a predominance of dissatisfaction, although perceptions were heterogeneous. Institutional strengthening of pedagogical design, technological infrastructure, and socioeconomic support mechanisms is recommended to enhance sustainable hybrid learning implementation.

Keywords: Hybrid Learning, Student Satisfaction, Higher Education, Health Education, Digital Vulnerability.

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Introduction

In December 2019, the outbreak of COVID-19 rapidly escalated into a global pandemic, profoundly disrupting educational systems worldwide. By March 2020, approximately 150 countries had closed educational institutions, affecting more than 80% of the global student population (Sahu, 2020).

In response, many institutions adopted emergency remote teaching (ERT), defined as a temporary transition from face-to-face instruction to remote delivery in response to crisis conditions, without the structured pedagogical design characteristic of formal online or hybrid education.

Hybrid learning, in contrast, is a structured instructional model that intentionally integrates face-to-face and online components within a coherent pedagogical framework. It is not merely a temporary remote adaptation but an integrated educational design.

At the Faculty of Health Sciences (FCS) of UniLúrio, the implemented model during the pandemic did not correspond to purely emergency remote teaching. Instead, it consisted of a hybrid configuration in which theoretical instruction was delivered remotely during specific epidemiological phases, while practical sessions were conducted face-to-face in hospitals, laboratories, and other professional settings, in accordance with public health recommendations issued by the Mozambican Ministry of Health (MISAU).

In developing contexts, the implementation of hybrid learning raises structural challenges, particularly related to internet access, availability of technological devices, socioeconomic vulnerability, and the practical demands of health sciences education.

This study aimed to evaluate student satisfaction with the hybrid learning model implemented at FCS/UniLúrio, identifying associated pedagogical, technological, environmental, individual, and economic factors.

Method

This study adopted a descriptive, cross-sectional exploratory design. Hybrid learning was defined as a structured pedagogical model integrating remote theoretical instruction and face-to-face practical sessions.

Data were collected between August 1 and August 31, 2020, using a structured online questionnaire containing 41 closed-ended questions.

Prior to data collection, the questionnaire underwent pilot testing with a convenience sample of 20 undergraduate students who were not included in the final study sample. The pilot test aimed to evaluate the clarity, comprehensibility, and semantic adequacy of the items, as well as the logical sequence of questions and the estimated completion time. Participants were invited to provide feedback regarding ambiguous wording, redundancy, or difficulties in interpretation. Based on the feedback obtained, minor linguistic adjustments were made to improve clarity and coherence. The pilot also allowed for verification of the functionality of the online survey platform. As this was an exploratory study, full psychometric validation was not performed, which is acknowledged as a limitation.

The sample included undergraduate students enrolled in Medicine, Dentistry, Pharmacy, Nutrition, Optometry, and Nursing (day shift). First-year students, interns, postgraduate students, technical-vocational students, and night-shift students were excluded.

The questionnaire was distributed via WhatsApp® and accessed through smartphones, computers, or tablets.

Satisfaction was measured using a five-point Likert scale (Strongly Disagree to Strongly Agree). Descriptive statistics were applied.

Ethical approval was granted by CIBSUL (Ref: 10/Abril/CIBSUL21). Digital informed consent was obtained. Data were anonymized.

Results

Of 599 eligible students, 244 (40.7%) participated. The sample was predominantly aged 18–35 years (88.1%), with balanced sex distribution (53.7% male). Participants were mainly from Pharmacy and Nursing programs. (Refer to Table 1 and Figure 1.).

Table 1. Sociodemographic characteristics of study participants (n=244)

DESCRIPTION	n (%)	DESCRIPTION	n (%)
Gender		Age (years)	
<i>Male</i>	131 (53.7)	18 to 35	215 (88.1)
<i>Female</i>	113 (46.3)	36 to 64	29 (11.9)
CurrentProgram		Income (personal or family) Mt	
<i>Pharmacy</i>	64 (26)	Below 5,000	145 (59.4)
<i>Nursing</i>	60 (25)	5,000 to 15,000	67 (27.5)
<i>Dentistry</i>	44 (18)	15,000 to 25,000	15 (6.2)
<i>Nutrition</i>	40 (16)	25,000 to 35,000	12 (4.9)
<i>Medicine</i>	36 (15)	Above 35,000	5 (2.1)

Source: Own authorship

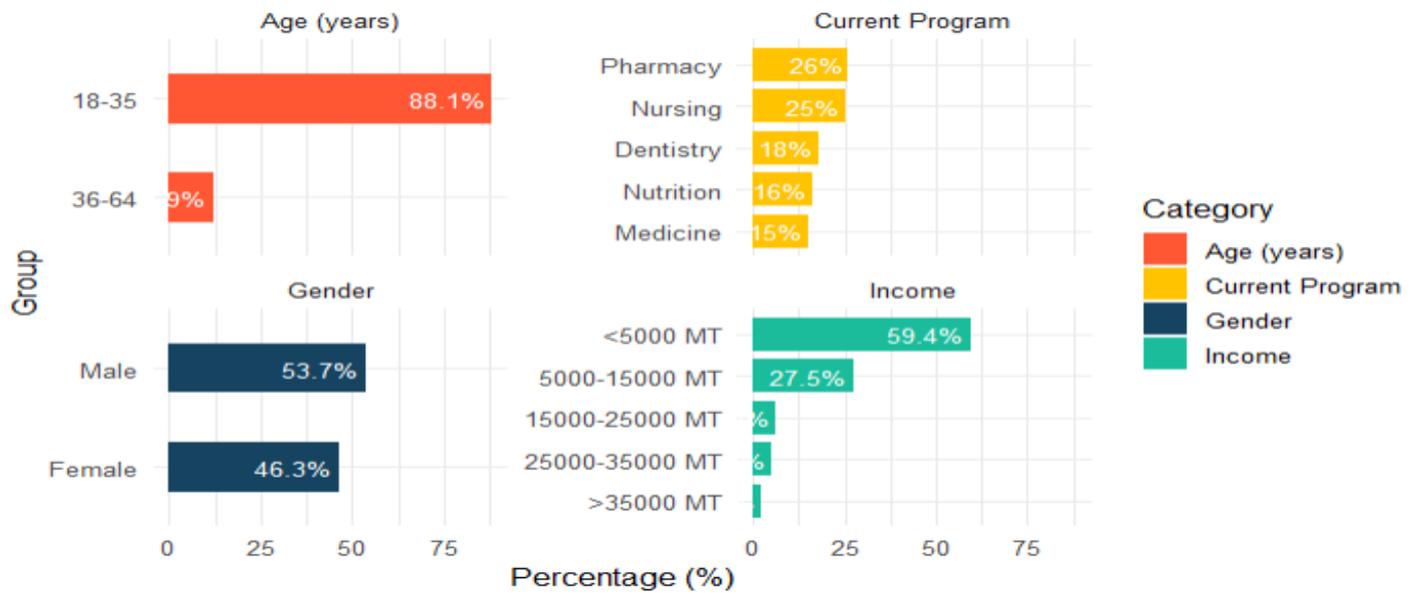


Figure 1: Percentage distribution of participants' sociodemographic characteristics (n=244).

Source: Own authorship

Pedagogical Factors

Student perceptions revealed heterogeneous evaluations of pedagogical practices within the hybrid model (Figure 2).

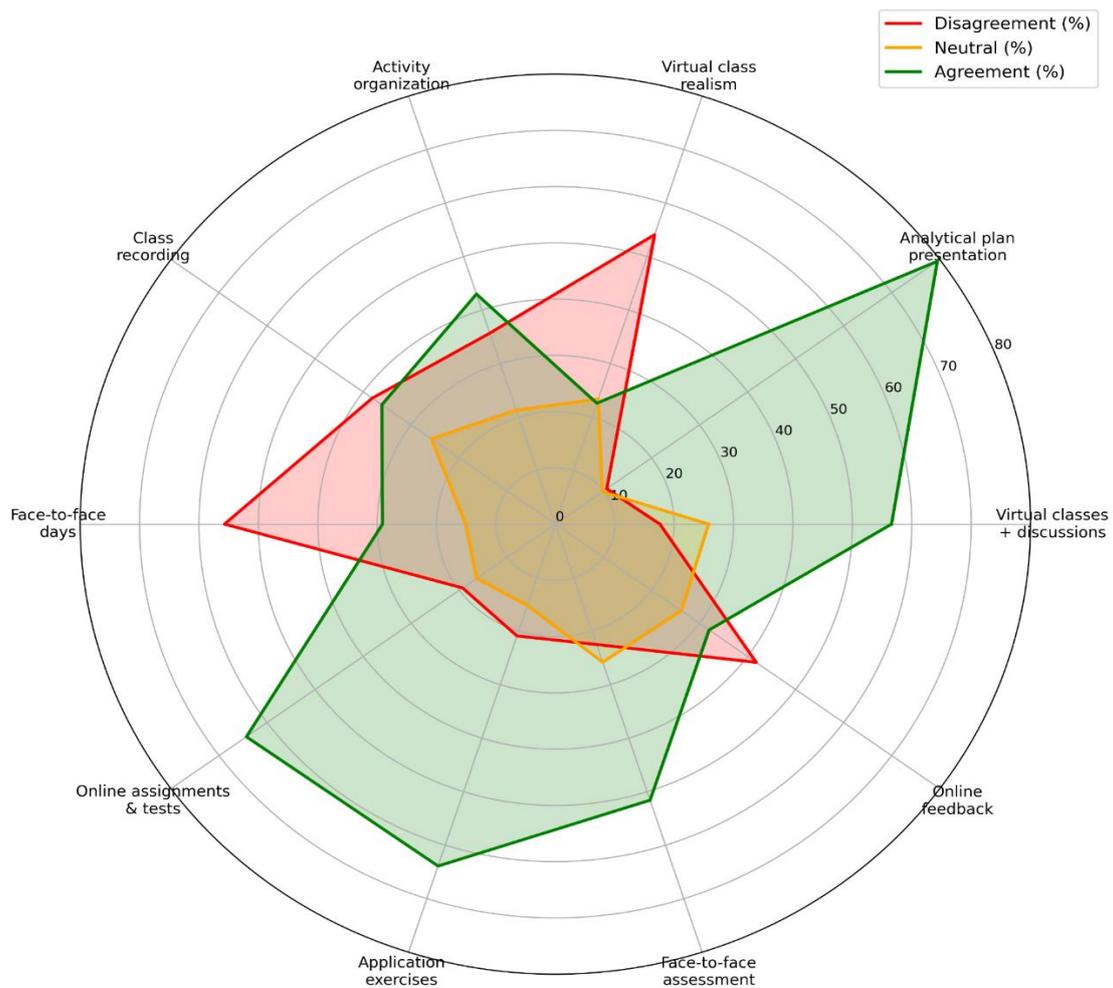


Figure 2: Distribution of perceptions regarding teaching practices in hybrid learning

Source: Own authorship

Structured elements such as the presentation of the analytical plan were positively evaluated (51.6% agreement; 27.9% strong agreement). Submission of assignments and exercises also received favourable evaluations (56.6% agreement).

Virtual classes accompanied by discussions were generally well received (47.5% agreement; 9.0% strong agreement).

However, the perceived realism of virtual sessions compared to face-to-face classes generated higher levels of disagreement (39.3% disagreement; 14.7% strong disagreement), with 23.4% neutral responses.

Regarding activity organization, responses were distributed across agreement (34.0%), neutrality (21.3%), and disagreement (25.8%).

Recording of virtual classes received mixed evaluations, with 29.5% agreement and 26.2% disagreement.

Face-to-face exams were the most frequently used assessment method (45.1% first mention; 51.8% second mention). Online exams represented 13.5% in the first mention and 26.8% in the second.

When asked whether assessment methods reflected academic performance, responses were distributed: 30.7% disagreement, 26.2% neutral, and 26.6% agreement.

These findings suggest structured pedagogical components were positively perceived, while experiential and interactive dimensions of online sessions generated more critical evaluations.

Technological Factors

Smartphones were the primary device used to access online components (86%). Only 5% used laptops, 1% desktops, and 3% tablets. Notably, 5% reported having no suitable device. (Table 2).

Table 2. Computing equipment available for accessing online classes

Equipment	Percentage (%)
Smartphone	86%
Laptop Computer	5%
Desktop Computer	1%
Tablet	3%
None	5%

Source: Own authorship

Internet access presented significant constraints. Approximately 43% classified connectivity as extremely challenging, and 45% maintained neutral evaluations. Only 12% described access as easy or very easy.

These data indicate structural technological vulnerability, with strong dependence on mobile devices and unstable connectivity potentially influencing satisfaction levels.

Environmental and Individual Factors

Figure 3 summarizes the environmental and student-related determinants affecting the hybrid learning model, emphasizing academic routine maintenance, study conditions, domestic and family-related barriers, self-discipline requirements, and levels of student motivation.

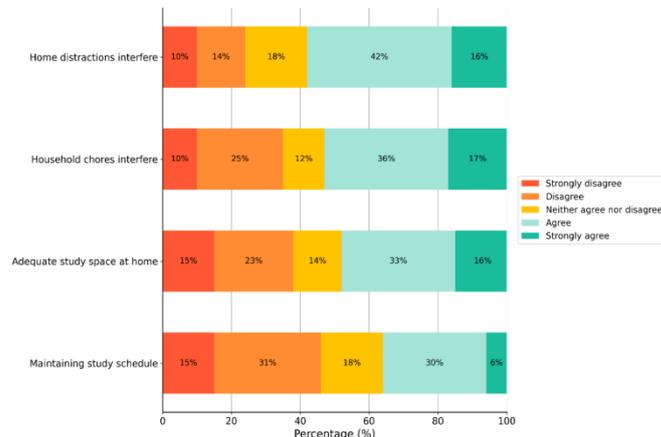


Figure 3: Environmental and student factors influencing the hybrid learning method

Source: Own authorship

Approximately 46.0% reported that the hybrid model did not facilitate maintenance of an academic routine. Difficulties in sustaining regular study schedules were reported by 31%. Regarding study environment, 23% lacked an adequate home space, while 33% reported having suitable conditions. Household chores (36%) and family distractions (42%) were identified as barriers. A substantial majority (76%) agreed that hybrid learning requires high self-discipline. Motivation to remain in hybrid learning was heterogeneous: 33% agreed, 6% strongly agreed, 37% neutral, 18% disagreed, and 6% strongly disagreed. (Figure 4).

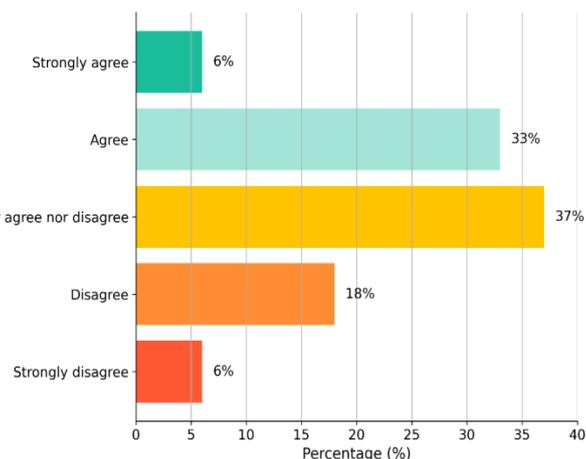


Figure 4: Distribution of the degree of motivation to remain in hybrid learning (n=244)

Fonte: Source: Own authorship

When asked whether they would prefer to continue with the face-to-face teaching method if pandemic restrictions were not in place, 82% of students expressed preference for returning to in-person education.

In addition to environmental and motivational aspects, economic conditions emerged as a significant dimension influencing perceptions of hybrid learning. A substantial proportion of students (77%) reported insufficient financial resources to maintain regular internet access, and 63%

considered that hybrid learning increased their educational costs.

These findings suggest that socioeconomic vulnerability may have acted as a structural constraint in the effective implementation of the hybrid model. (Table 3).

Table 3. Investigated economic factors (n=244), cost perception.

InvestigatedStatement	Category/Response	n	(%)
Face-to-face teaching has lower costs compared to the hybrid learning method	100% face-to-face teaching has higher costs	33	14%
	Blended learning has higher costs	153	63%
	There is no cost difference between the two methods	58	24%
Success with the hybrid learning method depends on financial income	Stronglydisagree	16	7%
	Disagree	28	11%
	Neutral	57	23%
	Agree	90	37%
	Stronglyagree	53	22%
Student's financial income (personal or family) Meticais (Mt)	Below 5,000 Mt	145	59%
	5,000 Mtto 15,000 Mt	67	27%
	15,000 Mtto 25,000 Mt	15	6%
	25,000 Mtto 35,000 Mt	12	5%
	Above 35,000 Mt	5	2%

Source: Own authorship

Discussion

One of the expected results of the study was that the female gender would be the most dissatisfied with online teaching; in many African cultures, the priority for women at home is to care for the family and perform household chores, to the detriment of other activities (Prince-Gibson & Schwartz, 1998). The results of this study showed that the hybrid learning method was unsatisfactory for both men and women, which aligns with the findings of Caspi et al. (2008), who observed that the online environment is apparently not attractive enough for either gender (Caspi, Chajut, & Saporta, 2008).

Authors such as Sullivan (2001) and McSporrán & Young (2001) argued that online courses are of great value to female students with children or family responsibilities, overcoming the stereotype that computing or digitalization is gender-based, where women might opt not to engage with ICT and consequently be disadvantaged in online courses (McSporrán & Young, 2001; Sullivan, 2001).

Perceptions of Pedagogical Factors

The data reveal varied perceptions among students regarding the effectiveness and organization of the educational practice components in hybrid learning. Students positively evaluated practices such as the presentation of the analytical plan and the submission of virtual activities accompanied by

discussions. However, they pointed out limitations regarding the realism of online classes and the insufficiency of face-to-face time. In-person exams were the most frequently used assessment methods. There were divergent perceptions regarding the ability of these assessments to reflect academic performance.

It is well known that instructors must address information regarding course content, textbooks, course design, bibliographic references, and other relevant information necessary for success in class, such as policies related to academic dishonesty (Surahman & Wang, 2022) and campus policies (Linder, 2023). This fact was evidenced by the respondents in our study.

Regardless of the field of study, to obtain satisfactory results in hybrid learning, some authors propose that instructors utilize a variety of learning methodologies, such as project-based learning, the use of gamification, the flipped classroom, and peer-to-peer learning, and include personal information about the instructor to make the classes enjoyable and exciting, allowing students to build connections with their instructors (Hosseini-Mohand et al., 2021; Larmer, Mergendoller, & Boss, 2015; Pérez & Rubio, 2020; Wang, 2020).

These methodologies are useful for motivating, increasing activity, and retaining students' attention to achieve success in the implementation of hybrid learning (Li et al., 2023). Thus,

material covered remotely should be subsequently consolidated in the classroom where assimilation can occur (Jaffee, 1997).

Our findings suggest the probability that instructors did not make full use of diverse distance learning methodologies, a fact that may have contributed to the relative dissatisfaction with the new modality among students, or perhaps the fact that the methodology is still being implemented, which requires time for consolidation and refinement.

In this context, regarding technological aspects, the use of smartphones, although widely available and providing internet access, cannot be considered a suitable electronic device for the teaching-learning process, especially in health sciences. These devices feature small screens, do not allow for advanced functionalities (such as editing texts or spreadsheets), and do not support accessing multiple applications simultaneously, among other limitations. These facts can make it difficult for students to follow online classes.

Given the reality shown in this study, it is imperative that adequate technological resources are available to all students to achieve satisfactory results within the hybrid learning methodology. Regarding internet access, 45% of students reported difficulties, while only 12% (31/244) considered accessing the network easy or very easy. In this sense, it is observed that the students' ability to develop patience is essential, as they may face connectivity issues, problems with the electronic device in use, or other inevitable problems during online classes (Linder, 2023).

It should be noted that, in several cases involving African educational institutions, classes were canceled because various professors faced technical difficulties, Wi-Fi issues, or panicked at the prospect of teaching via an online platform (Hadjeris, 2021). Regarding technological infrastructure conditions, records show that Mozambique is a country with a limited internet access percentage, standing at approximately 21% (Tsandzana, 2023). The country is in constant development; however, access to the internet and technological equipment useful for the hybrid learning modality can be inaccessible for students and the general population.

Our findings corroborate the results of the study by Frankfurter et al. (2020), in which most people in Sub-Saharan Africa access the internet through smartphones and mobile phones rather than a home computer (Frankfurter et al., 2020). However, while this fact may facilitate access to some extent, it may not be the most appropriate form for the teaching and learning process. In Africa, internet expansion has improved over the last decade (Aker & Mbiti, 2010); nevertheless, its integration into the teaching and learning system is still in its early stages and is not yet fully rooted in universities (Bubou & Job, 2021).

In this context, although all African countries have legal provisions recognizing the right to education, there are still no corresponding laws regarding internet access. Furthermore, educational institutions are not mandated to provide internet access on campus, as policies concerning internet access function in parallel and not as a component of the educational offering (Faturoti, 2022).

Regarding this matter, an article published in a Democratic Republic of Congo newspaper on August 25, 2020, stated: "Internet connection remains a luxury for Congolese students. How to organize distance learning when many students lack the necessary equipment to attend online classes?" it questioned. "They may have a computer, but they have no electricity or internet. It is difficult at the moment to think about distance and online learning" (University World News, 2020).

In the present study, individual and environmental factors, as pointed out by the findings of this study and other authors, suggest that it is the student's responsibility to actively take ownership of the knowledge construction process, respecting their own learning pace, organizing their study time to perform the proposed pedagogical activities, and maintaining, whenever necessary, connectivity with the educational institution, whether through social media or in person, according to their place of residence (Carvalho, Carvalho, & Barbosa, 2021).

Just over a third of the students agreed on the need for training to learn how to study through the hybrid learning method. In this sense, most African educational systems were not prepared for the sudden shift to online learning (Faturoti, 2022).

For this reason, it is understandable that students felt disoriented by the abrupt change in the teaching method and, therefore, required training for adaptation and understanding of the new dynamic. The authors Singh et al. (2021) suggest in their article that online orientations should be included in blended and semi-presential courses (Singh, Steele, & Singh, 2021).

Following this line of thought, according to Ramani (2021), successful distance students are self-disciplined, self-motivated, prepared, good readers, good organizers, and possess strong time management skills for self-learning, completing tasks, preparing for tests, and avoiding procrastination (Ramani, 2021). Thus, it is understood that conceptualizing blended learning requires emphasizing student protagonism and autonomy while expanding reflective participation (Camacho & Souza, 2021).

Furthermore, online learning provides students with the freedom to choose their place of study (which is not possible during face-to-face classes), but it can also be a trap, as the learning space must be free from external distractions (Ramani, 2021).

In this study, approximately 42% of the students agreed that the physical presence of the professor facilitates the understanding of the subject matter. Additionally, Waha & Davis (2014) highlighted the importance of face-to-face interaction for building learning networks (Waha & Davis, 2014), which could explain part of the students' dissatisfaction with blended learning reported in this study.

However, it is important to emphasize that during online learning, students had to find new ways to engage in discussions. In the face-to-face classroom, students have their own discussion groups; this fact could contribute to the perception that this method helps improve learning, as they receive direct, real-time support and guidance from their peers and professors face-to-face.

The majority of students (55.3%) responded that they disagreed or strongly disagreed with the hybrid learning method implemented during the pandemic. Regarding this, a study concluded that asynchronous online interaction was a significant change for students accustomed to in-person classes and discussions, as discussions often became written, causing students to spend more time drafting their responses (Ramani, 2021).

Considering that satisfying students' needs is crucial for increasing their motivation (Nehme, 2020), the Keller ARCS model presents four concepts, attention (A), relevance (R), confidence (C), and satisfaction (S), as necessary conditions for a student to be fully motivated (Keller, 2000). Another author, Collor (2019), reports that when the professor chooses the most appropriate methodology for the teaching-learning process, they can generate greater engagement, motivate action, promote learning, or solve problems creatively.

Thus, the diversified use of creative methodologies in hybrid learning can further attract students to participate actively in the instructional process (Poon, 2013). The development of social relationships among students and between students and professors can not only reduce student anxiety but also help the professor leverage connections between students by building activities around them (Nehme, 2020).

It is crucial to understand the role of student motivation in education involving practical skills in the health field (Diwakar et al., 2023). Inman et al. (2010) explain in their study that there is a perception that online learning is of inferior quality compared to face-to-face learning. Since competency-based health education requires rigorous standards to ensure professional proficiency, it is understandable that students may disbelieve that the hybrid learning method is capable of training high-quality health professionals, as competencies involve effective preparation, knowledge, and practical experience (Kay, Goulding, & Li, 2018).

The results of the study by Serrano-Pérez et al. (2023) showed that students had more positive attitudes toward face-

to-face practical classes in health sciences compared to virtual ones, thus emphasizing the importance of conducting in-person practical classes to increase student motivation and performance (Serrano-Pérez et al., 2023). Silva et al. (2021) noted that the blended modality may promote some educational loss, such as the impossibility of training for physical examinations and better interacting with the health team and patients; however, technological resources can generate opportunities for change, refinement, and the development of new teaching methodologies (Silva et al., 2021).

Some authors argue that changes in healthcare delivery methods serve as a catalyst for considering best practices in virtual learning, as they can provide skills more easily and quickly, and assist in preparing for laboratory practical sessions (Anksorus et al., 2021; Kay, Goulding, & Li, 2018).

This fact may indicate that, regarding access to quality learning, one of the consequences of the pandemic was the amplification of inequities and the exposure of societal fragility (Faturoti, 2022). This reality has been reported not only in developing countries but also in developed ones, which may have increased digital exclusion within the educational sphere (Coleman, 2021; Faturoti, 2022).

The African continent will only achieve its Sustainable Development Goal (SDG) for universal broadband when it brings 1.1 billion inhabitants online, an aspiration with a price tag of 100 billion US dollars (USD) (Hadjeris, 2021). Otherwise, the dissatisfaction rate among students from economically poor communities may increase in the post-COVID-19 era (Le Grange, 2021).

In Mozambique, there are still no clear legal resolutions enabling the practice of hybrid learning, a factor that could provide better conditions and make it more satisfactory. Although norms for the implementation of hybrid learning already exist in some countries (Guimarães et al., 2023), several higher education institutions have not put them into execution for the following reasons: resistance from students and faculty, lack of physical and technological infrastructure, lack of interest from management, or even lack of knowledge regarding the legislation (Oliveira et al., 2021).

Final Considerations

The COVID-19 pandemic tested the resilience of FCS/UniLúrio's educational system. The findings indicate a predominance of dissatisfaction; however, perceptions were not uniformly negative. A significant proportion of students adopted neutral positions, suggesting ambivalence and adaptation challenges rather than categorical rejection.

Strengthening faculty training, improving technological infrastructure, reducing digital vulnerability, and developing institutional readiness indicators are recommended.

Further research should explore long-term impacts on academic progression, professional training, and student well-being.

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