# Blended learning studies to address student isolation: lessons from the literature

## Las enseñanzas híbridas (blended learning) ante el aislamiento del estudiantado: lecciones de la literatura.

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**Abstract**
Distance education can lead to feelings of isolation, disconnection and depersonalisation on the part of the learner. The objective of this study is to analyze whether the literature on blended learning addresses student isolation and what lessons it provides. A systematic critical review of the literature was conducted following the PRISMA 2020 protocol. Eighty-four articles from the Web of Science were selected and analysed, and a cluster analysis was performed using VOSviewer. The results show that the sense of isolation resulting from the pandemic somewhat hides the isolation that blended methodology can provoke. Isolation is still attributed to the online part of the hybrid teaching and especially to the asynchronous part, but little is said in the literature about blended learning as a whole. We must move beyond the focus on the pandemic and encourage studies that assess this phenomenon, studying the appropriate design of hybrid courses to address isolation holistically. This study itself makes some recommendations and suggestions for further work to lessen the isolation that students may feel in blended learning, and in distance learning in general.
**Keywords:** isolation, blended learning, hybrid learning, distance education, online learning.

**Resumen**

La educación a distancia puede provocar sentimientos de aislamiento, desconexión y despersonalización por parte del estudiante. El objetivo de este trabajo persigue analizar si la literatura sobre enseñanza híbrida (blended learning) aborda el aislamiento del estudiante y qué lecciones aporta. Se realizó una revisión sistemática de la literatura con enfoque crítico (systematic critical review) siguiendo el protocolo PRISMA 2020. Se seleccionaron y analizaron 84 artículos de la Web of Science y se realizó un análisis clúster con VOSviewer. Los resultados muestran que el aislamiento fruto de la pandemia enmascara de algún modo la sensación que puede provocar la metodología híbrida. El aislamiento sigue atribuyéndose a la parte en línea y especialmente a su parte asíncrona, pero poco dice la literatura sobre la enseñanza híbrida en su conjunto. Se debe superar el enfoque en la pandemia y fomentar estudios que valoren de forma comprensiva este fenómeno, y queda mucha

investigación pendiente respecto al diseño adecuado de estos cursos para que aborden el aislamiento de forma holística. Este trabajo hace, a sí mismo, algunas recomendaciones y sugerencias para seguir trabajando en aminorar el aislamiento que puede sentir el estudiante en las enseñanzas mixtas y a distancia en general.
**Palabras clave:** aislamiento, blended learning, enseñanza híbrida, educación a distancia, enseñanza en línea.

## 1. Introduction

So-called 'distance' learning introduces multiple advantages for the learner, especially related to the flexibility it introduces (Aretio, 2021), but it also provokes multiple disadvantages, mainly due to the remoteness of the learner. In particular, distance learning has often been accompanied by perceptions of isolation, disconnection, and depersonalization on the part of many students (Essa et al., 2023; Møgelvang et al., 2023). As Uygur and Erdoğmuş (2025) state, the inability of students to establish effective social bonds with other classmates and instructors contributes to feelings of loneliness and a sense of being a stranger to their peers.

As part of distance education, research on online learning particularly echoes this problem (Erichsen & Bolliger, 2011; Kaufmann & Vallade, 2022), which has been magnified by the COVID-19 pandemic (Luo & Zhou, 2024; Heider, 2021). Certainly, the pandemic has increased interest in the subject, although during the lock-out the student was isolated per se, which may hide in some way the relationship between the feeling of isolation and the specific learning methodology.

The academic literature on the subject has grown considerably (Anthony et al., 2022), but to a lesser extent when it comes to analyzing the feeling of isolation among students in so-called hybrid or blended learning programs. Its blended nature, including a personal component of closeness, seems likely to remedy or at least reduce this isolation, but at the same time, there is a lack of holistic studies on the relationship between blended learning and isolation (Rasheed, Kamsin, and Abdullah, 2020). Thus, blended learning has been applied particularly to help ameliorate the psychological distress some students are facing from a full online learning experience (Thomas, 2021), and reduce the students' feelings of isolation. But at the same time many authors generally 'attribute' the difficulties of its online component to it. This is why the particular relationship between blended learning and perceived student isolation is unclear, and it is worth looking closely at what the research tells us about it.

The aim of this research is therefore to explore what the research to date tells us about the relationship between hybrid teaching and perceived student isolation, whether it is prevalent despite its blended nature, and whether it has features or drives strategies that help to mitigate this feeling. In this sense, we could pose as a research question whether studies on hybrid teaching are addressing student isolation, and what lessons the literature conveys.

To this end, from a formal methodological point of view, we have opted to carry out a systematic review of the literature with a critical approach. We are more interested in using PRISMA as a rigorous search tool, due to its instrumental capacity to provide us with an abundant corpus of literature on the subject, than in its formal or bibliometric aspects, as the analysis is critical-interpretative. In this sense, this work could be

considered as a critical/narrative review, according to the five review typologies defined by Grant & Booth (2009). A critical/narrative review aims (Kim et al., 2018) to study the widely established literature and make a critical appraisal. It aims, therefore, to determine significant aspects in the field of study, not aiming for a formal evaluation but rather a typically conceptual review. This method is most commonly used to analyse and integrate work in order to establish a comprehensive theory that brings together the findings of each previous study. In short, it is a mixed research with a certain hermeneutic approach, a succinct review of the state of the art with the purpose of compiling in a holistic manner the existing knowledge, currently little researched, making a diagnosis and recommendations for the educational community.

The rest of the article is structured as follows: after a brief introduction, the methodology to be applied to carry out the research is detailed and the results extracted from the literature review itself are included, as well as a cluster analysis. Finally, the last section includes the conclusions drawn from the analysis and sets out the difficulties of the research and the lines of future work.

## 2. Methodology

### Conceptual framework: towards a systematic literature review

In order to meet the objectives of the paper, the authors first chose to delimit the conceptual and methodological framework of the paper. The SALSA (Search, Appraisal, Synthesis and Analysis) analysis developed by Grant & Booth (2009) was considered appropriate for a first mapping of possible systematic literature review structures. Having analysed the advantages and disadvantages of each of the possible analyses, and with the aim of rigorously guaranteeing the scientific evidence on the isolation of students who study using hybrid methodology, a critical review of the literature was chosen.

The critical review allows us not only to investigate the literature and evaluate the quality of the work carried out to date, but also to propose a hypothesis and/or identify a model that sheds light on the study question posed in this paper: Are blended learning studies addressing student isolation?

We are witnessing how knowledge generation is intensifying and also diversifying (Snyder, 2019), which is why systematic literature reviews are becoming increasingly important (Mosaad et al., 2023). As this is a work that aims to answer a specific question, this kind of review allows the object of study to be collected, critically analysed and also synthesised (Cook et al., 1997).

### PRISMA protocol

PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) is a protocol widely used in works with similar characteristics to the present one and in multiple disciplines (Cala et al., 2023; Pasayat et al., 2023; Wells-Beede et al., 2023) to guarantee the quality of the evidence and facilitate the reproducibility of the data. The authors have followed the PRISMA 2020 guidelines as well as the inclusion and exclusion criteria of the protocol (see Figure 1).

*Stage 1. Identification of the literature*

In August 2024, an exploratory analysis was carried out using the Web of Science (WoS) Core Collection to identify the keywords of the papers related to the object of study. The results obtained are detailed below:

- The search "isolation" AND "blended learning" ("Isolat*" AND "blended learning") yielded 203 results of which only 101 were related to the object of study. Of the 101 papers, 77 belong to the category Education/Educational Research and 24 records belong to the category Education Scientific Discipline. The rest were automatically eliminated because they belonged to categories not related to the object of study.

- With the search "isolation" AND hybrid learning' ("Isolat*" AND "hybrid learning") 704 results were obtained, of which only 48 belonged to the category Education/Educational Research. The rest of the works refer to engineering, artificial intelligence, telecommunications, etc. and did not belong to topics related to this work.

Therefore, results excluded in both searches in this first phase were automatically removed by WOS's own results analysis tool.

*Stage 2. Screening*

In this stage 149 records related to the object of study were kept, from any language, whether they were peer-reviewed articles or conference papers.

*Stage 3. Eligibility*

At this point, each of the selected papers was analysed, duplications were eliminated and, having read the abstracts of the 149, keywords and keywords plus, those papers that did not meet the requirements were withdrawn as they did not deal specifically with the isolation of students in the blended learning modality. The final result obtained, which was the subject of research and analysis, was 84 articles. The 65 papers eliminated in this phase were papers on the evaluation of waste in satellite systems, cognitive behavioural therapies (CBT) in disorders diagnosed in a different way to the object of study, failures in engineering process control models, hybrid schemes for the detection of failures in reaction wheel motors of satellite control systems, etc.

*Stage 4. Inclusion*

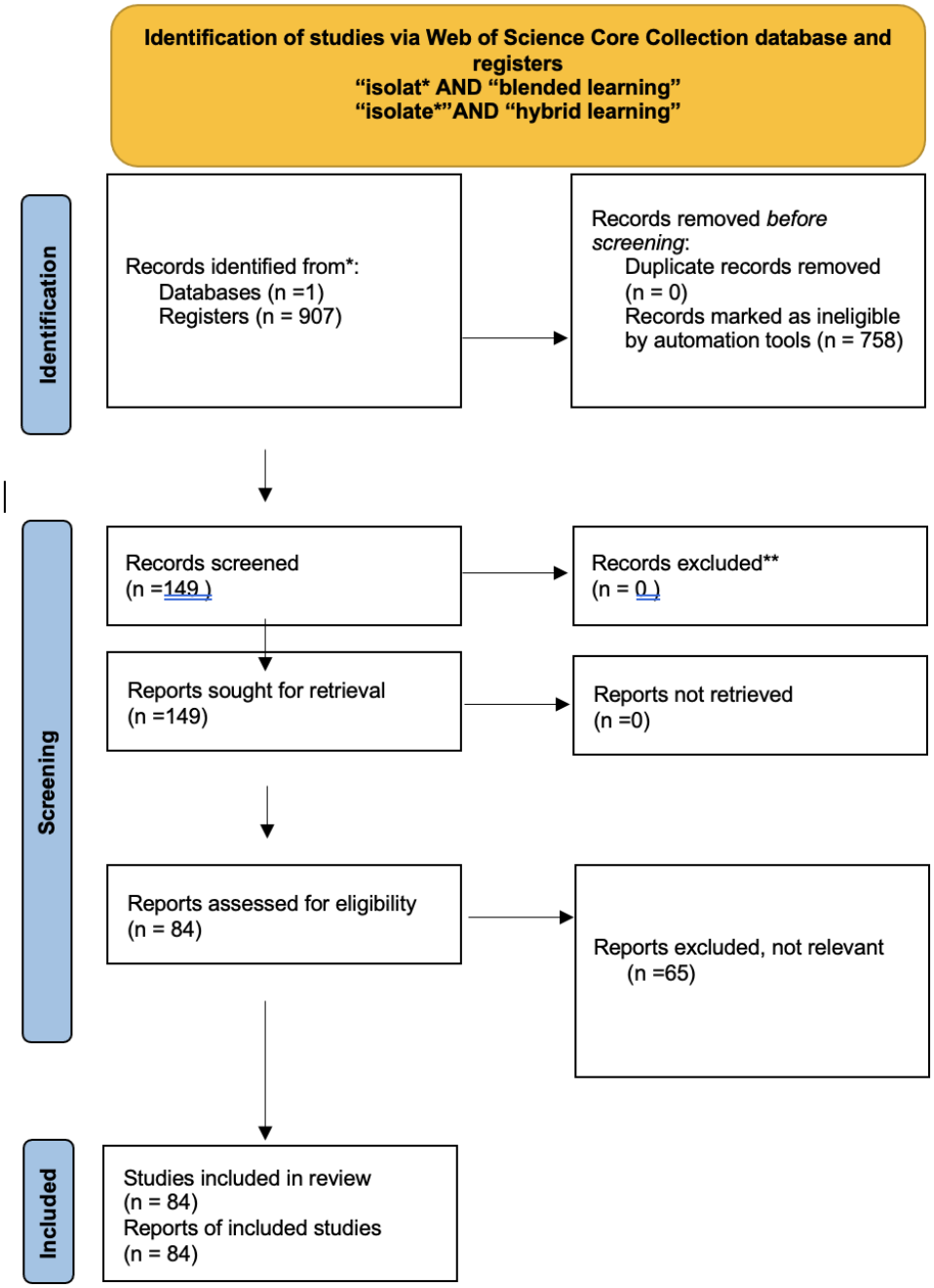
The final result of the search allowed 84 papers to be read and metadata retrieved, including authors' names, year of publication, journal, keywords, keywords plus, and abstracts.

*Stage 5. Analysis*

The clustering method used in the bibliometric literature (van Eck & Waltman, 2019; Waltman et al., 2010; Sevilla-Sevilla et al., 2024) was chosen to quantitatively analyse

the result. This method allows purely qualitative data to be analysed quantitatively without the introduction of bias. Being aware of the possible subjective interpretation when analysing quantitative data, the authors opted, following Zupic & Čater (2015), to interpret the findings following the approach that focuses on the specific research question and, therefore, focusing the discussion on the relationship of the question and the statements with the existing literature.

**Figure 1.**
*Data collection and analysis process. PRISMA method.*




*Source:* Adapted from Page et al. (2021)

### Cluster analysis

The selected sample was analyzed using VOSviewer_1.6.10 (Van Eck and Waltman, 2010) to identify the most relevant research areas and their interconnections. The main purpose was to determine the main lines of research and their relationships. The keyword study approach helps to identify links, discover relationships, and establish a conceptual structure for the field of study (Koseoglu et al., 2016). This semantic map reveals the cognitive structure (Börner et al., 2003). Three clusters were identified (as shown in Figure 2).

The characterisation of the clusters allows the identification of the most relevant areas of interest in the research, which relates hybrid teaching and student isolation.

## 3. Results

When looking at related research, the study of the effects and implications of the pandemic on student learning emerges prominently. There are many research studies that refer to the effect that the pandemic had on isolating students, from different perspectives (Alam et al., 2023; Cannavo et al., 2022; Downey & Long, 2021; Esteban Rivera et al., 2020; Luburic et al., 2021; Stewart & Lowenthal, 2022; Wolff-Boenisch, 2021, etc.).

There are also numerous references related to the situation of the learner's own context, e.g. learning from rural areas (Ghosh, 2019) or developing countries (van Dijk et al., 2015). Or even conditions of the learners themselves (e.g. the isolation of deaf learners in De Monte & Groves, 2011). On the other hand, new types of students are appearing who already incorporate digital competences compared to previous generations: they are digital natives, who are much more accustomed to this type of environment, and who feel more comfortable in such virtual environments (Gillett-Swan, 2017; Orlando & Attard, 2015; Prensky, 2001).

Although much more limited, multiple research addresses learner isolation in relation to hybrid learning, focusing on enabling or mitigating technologies (Cai, 2018), challenges (Ferratt & Hall, 2009; Wang et al., 2023), effects (Munir, 2022) or their relation to theoretical frameworks such as CoI or CoP (Vaghjee & Panchoo, 2016; List et al., 2013). Methodologies for personalisation (Thompson & McDowell, 2019; Xiao & Jiang, 2023) or collaborative learning (Mali et al., 2023) also appear.

Special mention should be made of research related to the role of the teacher in their energising role (Boulos et al., 2005) and also in observing their own isolation as teachers (Joubert et al., 2020). Thus, these authors investigating a blended teaching format to support isolated teachers identify different aspects that are key in this process and put forward a theoretical framework for dealing with such isolation.

As we can see, these issues do not refer specifically to the isolating effect that the methodology or the learning environment may have but refer more to contextual or situational factors of the learner. But there are indeed other studies that focus specifically on aspects more related to the way of learning, and in particular hybrid teaching. The most repeated themes are summarised in the table below.

**Table 2.**
*Results of the most relevant areas of interest from the literature*

| | |
|---|---|
| Pandemic | Alam et al. (2023).<br>Bautista-Zuniga et al. (2022).<br>Cannavo et al. (2022).<br>Delabary et al. (2024).<br>Downey & Long (2021).<br>Durand et al. (2023).<br>Esteban Rivera et al. (2020).<br>Junn (2023).<br>Lautenbach & Randell (2020).<br>List et al. (2013).<br>Luburic et al. (2021).<br>O'Brien et al. (2023).<br>Onoral & Kurtulmus-Yilmaz (2020).<br>Stewart & Lowenthal (2022).<br>Toprak & Tunc (2022).<br>Ucar & Kararti (2021).<br>Westerlund et al. (2023).<br>Wolff-Boenisch (2021).<br>Zahid & Agou (2024). |
| Socio-economic conditions of the student | De Monte & Groves (2011).<br>Ghosh (2019).<br>van Dijk et al. (2015). |
| Relationship to methodology | Cai (2018).<br>Ferratt & Hall (2009).<br>Mali et al. (2023).<br>Munir (2022).<br>Thompson & McDowell (2019).<br>Vaghjee & Panchoo (2016).<br>Wang et al. (2023).<br>Xiao & Jiang (2023). |

Arslan (2021) notes that a sense of belonging and connectedness can moderate the feeling of loneliness and isolation. Thus, in the face of isolation, a sense of belonging to a learning

community is one of the factors that can mitigate it. Learners feel a sense of permanence when they perceive that they have truly contributed to and benefited from the achievement of the common goal (Henri & Lundgren-Cayrol, 2001). According to these authors the sense of permanence is stimulated by the social aspects of collaboration, the collaborative nature of the cognitive task, the cognitive needs related to the task, as well as the common space and the sharing of resources. By pressing on these four springs, the learner becomes involved with learning, the task and their peers, reducing the perception of isolation. In any case, the degree of cohesion may vary and boundary-less groups may emerge, as Jaques & Salmon (2007) point out, where different modes and patterns of group formation and outcomes are possible. The medium may simply be the means of facilitating interaction between students to help develop a sense of community.

Another relevant aspect is the dilemma of the role of synchronous online components (which could be considered an extended form of face-to-face versus asynchronous access to resources and communications). Some authors do not place much value on it and insist on its drawbacks: Rasheed, Kamsin and Abdullah (2020) studying the online component of blended learning, in their systematic review, consider that with the synchronous part of blended learning students feel uncomfortable using videos, microphones and speakers, and being the centre of attention. According to these authors, students may suffer from isolation due to their own reluctance to participate in online communities. This may be due to a variety of reasons, such as personality, a sense of distance in online environments, lack of trust in participants, lack of communication cues (facial expressions, tone of voice, etc.), connection difficulties (such as poor internet speed), poor writing skills or language barriers. In contrast, the immediacy of the teacher's responses contributes to the learner's sense of connection (Hehir et al., 2021).

While the literature acknowledges the role that connection between students, and particularly peers, plays in reducing isolation and loneliness in studies (Rawson & Rhodes, 2022), previous research also asserts that in many cases it is the student themselves who choose isolation as a vehicle in learning to achieve the flexibility needed to address other commitments and priorities in career, travel, childcare (or other care responsibilities) as well as other tasks they wish to be compatible (Gillett-Swan, 2017). In this regard, Hussain, Leinonen & Millar, (2018) echo the paradox of students requesting more face-to-face interaction on these courses, when the very reason they selected these courses is the possibility of distance learning.

The literature is sparse relating student motivation and self-regulation strategies in blended higher education settings (Luo & Zhou, 2024). Eggers et al. (2021) point out that while most studies focus on metacognitive and cognitive strategies, motivational and management strategies are given less attention despite their great potential.

Morgan-Thomas & Dudau (2019) insist that more passive learner behaviours on the learning platform do not necessarily imply a cognitive or emotional disconnection with the learning content, or with learning in general. This implies valuing the learner's autonomy to choose and engage with the learning activities they find relevant, which is not to be confused with isolation. From a practical point of view, there seems to be a certain contradiction between articulating and promoting interaction, versus developing autonomy skills, such as self-directed learning (Ben-Eliyahu & Bernacki, 2015; Reeve &

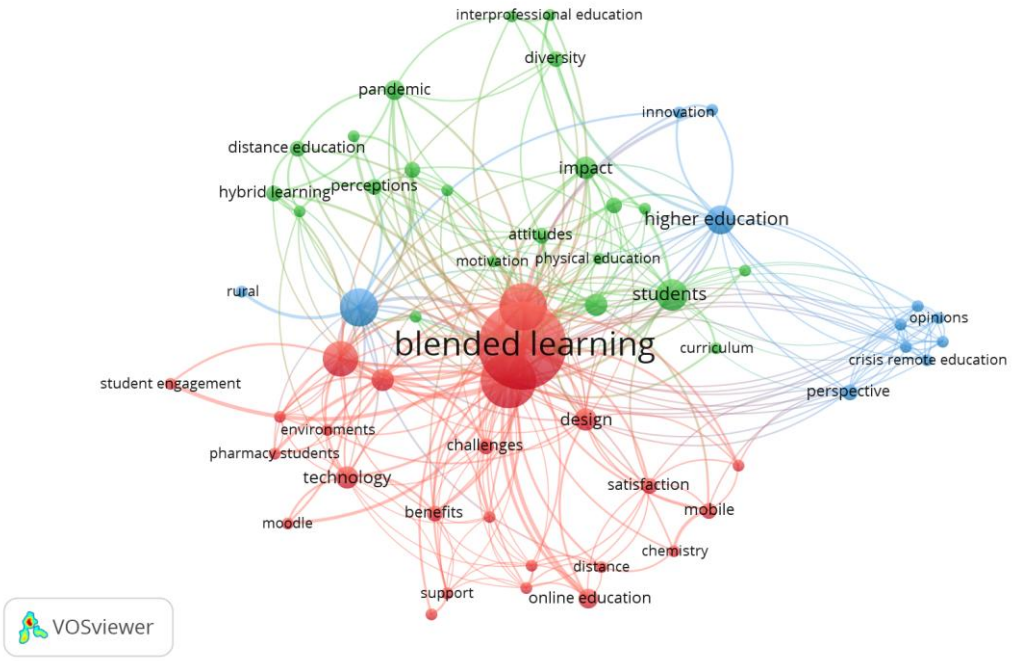
Tseng, 2011), encouraging active learning and avoiding pushing the learner to engage in activities that they may consider redundant.

## Cluster analysis

The analysis of the keywords contained in the articles in the sample leads to the formation of three clusters, as shown in Figure 2. Each cluster focuses on one of the fundamental general concepts of the subject matter: blended learning education, higher education at university and the student himself/herself.

The higher education cluster incorporates very general concepts on the current problems of higher education (crisis, innovation, curriculum, among other aspects). More interesting is the cluster specifically related to blended learning, including concepts related to its design, benefits, support, environments, technology or some disciplines where it has been studied. Finally, the cluster focused on the student may be the most relevant as it affects concepts such as motivation, perceptions and attitudes, and abounds in topics such as the pandemic, diversity or interprofessional education, some of which have already been mentioned in the literature review as items closely linked to student isolation.

**Figure 2.**
*Cluster analysis*




## 4. Conclusions

The pandemic has clearly exacerbated feelings of isolation, loneliness and loss of a sense of belonging and integration in the learning group or community among distance learners, as observed in the literature reviewed. The sheer number of studies that reflect this clearly hinders a more specific understanding of the implications of hybrid learning for student

isolation, which is overshadowed by the isolation inherent in confinement. This fact undoubtedly masks the feeling of isolation that is generated by the learning methodology. The very nature of intermingling or blending also makes it difficult to attribute or understand the reasons, motives and implications of the isolation of this model, as it brings together face-to-face and online teaching, which can also be synchronous or asynchronous in nature. No studies have been found that provide an in-depth analysis with a holistic view of this type of teaching, but rather, in general, isolation is attributed to one of its parts, and in particular to the asynchronous online part. In this sense, more research is needed on the different components of hybrid learning and the role they play in students' sense of isolation.

This gives rise to interesting lines of future research that work on the components, and on the balance of these components as a whole, as elements related to isolation. Specifically, 1) There is no evidence on the positive role of the face-to-face part of hybrid teaching as the first element that could reduce this isolation, 2) in the synchronous part, some research highlights that, if well planned, it can reduce the feeling of isolation because it can have an important cohesive factor in the creation of the learning community (Hogan & Devi, 2019), 3) the asynchronous part is perceived to be largely responsible for student isolation, but recent research (García-Hirschfeld, Rodríguez-Santos & López-Martín, 2025) shows that certain asynchronous actions can help to involve and motivate students, and even improve their perception of integration and community. 4) there is no research that in a complete design allows us to comprehensively assess hybrid teaching, as a whole, as a form of learning that, if well designed in all its components, could help students to reduce their isolation.

In this respect, there remains much work to be done on appropriate instructional design of activities that can make the best of each part of hybrid learning to address the sense of isolation. Thus, we agree with Miles, Mensinga & Zuchowski (2018): in many courses, blended learning approaches are still used in an ad hoc manner, so their strengths and possibilities are not fully exploited. The value of tailor-made approaches needs to be emphasised as already indicated by Kitano & Lane (2024).

In this context, the concept of Hyflex learning emerges, which, in the interest of greater flexibility, would allow students to attend classes face-to-face, synchronously online or asynchronously online (Mentzer et al, 2023; Detyna et al, 2023; Mahrishi et al, 2025). Such flexibility can help connect students to decrease their isolation but it also requires designing the course and its activities in a way that encourages participation by promoting activities that engage students in their interaction with peers, teachers and course contents. Along these lines, Müller et al. (2023) indicate that when implementing flexible curricula in a blended learning design, particular emphasis should be placed on certain aspects of the instructional design: appropriate course structure and orientation for students, activating learning tasks, stimulation of teacher interaction and social presence, and timely feedback on the learning process as well as its outcomes.

Alongside the course design itself, more immersive technologies can be tested, as well as the creative use of technology (beyond its instrumental role as a “virtual classroom” or “video lessons”). For example, Cai (2017) believes that the use of augmented reality can reduce feelings of isolation. Other practical proposals for universities to address this challenge would be to rely on university guidance and tutoring systems (which reinforce

the idea of community), implement isolation measures (which opens up a relevant line of research on measurement in this area), or present teacher training plans that, among other things, focus on actions to address this problem.

The important thing is to establish relationships (Rasheed, Kamsin & Abdullah, 2020), to create affective engagement, to have the feeling of human presence, as Parker et al. (2021) assert, following the postulates of humanistic pedagogy. And by building social presence, using face-to-face but also online as part of the three elements of the community of inquiry, building relevant relationships is key, as anticipated by Garrison (2012), especially in technology-mediated learning such as hybrid teaching. Anderson (2022) stresses the critical importance of exploring participatory opportunities that foster meaningful, respectful, and caring relationships where students feel recognized.

In short, it is about engaging through contents (which can be more interactive and immersive), connecting with peers and teachers (Valtonen et al., 2021), and this is a new challenge in addition to the challenge of course design itself. Approaches such as assigning a mentor or tutor to the learner can also help to mitigate the sense of isolation and loneliness that some distance learners may perceive.

On the other hand, there are different types of students. A 'one-size-fits-all menu' is not adequate. There are digital natives who may need more digital social connection, but also learners who prefer to engage only in activities that are truly meaningful for their learning. Digital literacy is also a relevant factor as Getenet et al. (2024) point out. The nature of the students is a crucial element to consider and understand when designing resources, also incorporating their differences. Some of the student characteristics/background are relevant predictors of their learning outcomes in blended learning (Kintu, et al. 2017).

Together with the limitations already indicated, mainly referring to the omnipresence of the pandemic in the literature on the subject and the mixed character, integrating different forms of learning, of hybrid teaching, it might seem a shortcoming of this work that it does not fully conform to a more canonical study of a bibliometric nature. This approach is deliberate on the part of the authors, as already indicated, trying to determine significant aspects, but not aiming at a formal evaluation but rather a typically conceptual review, providing practical intuitions that may be useful to lessen the sense of isolation of our students. Ultimately, at a time when blended learning is becoming particularly relevant in the face of phenomena such as lifelong learning, helping to reduce the perception of isolation is important, but it is also relevant to help manage it. As students with friends and healthy social connections are happier, healthier, safer, more likely to experience positive communication, behavioural, academic, and career outcomes (Brown et al., 2025).

This is an initial and exploratory study on the subject, which serves as a wake-up call to address the study of isolation in mixed education in a more decisive way, given the few works dedicated to its analysis, and the fragmentary approach of the literature. In any case, despite its limitations, it is a modest contribution to initiate studies on the subject and an invitation to address a problem, isolation, which plagues students and, in general, the citizens of the 21st century.

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**Declaration of Authors' Contributions**

Conceptualization, J.N.-M.; data curation, C.S.-S.; software, C.S.-S.; formal analysis, J.N.-M., M.J.J.-J.; investigation, J.N.-M., C.S.-S., M.J.J.-J., M.B.-C.; metodology, C.S.-S.; supervision, J.N.-M.; validation, M.J.J.-J., M.B.-C.; visualization, M.B.-C.; writing – original draft, J.N.-M, M.J.J.-J., M.B.-C.; writing – review & editing, J.N.-M. C.S.-S., M.J.J.-J., M.B.-C.

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