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ARTICLE / ARTÍCULO

Hybrid Methods and E-Methods in Educational Research: An Analysis of Master's and Doctoral Theses

Métodos híbridos y e-métodos en investigación educativa: análisis de tesis de maestría y doctorado

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Abstract: People increasingly move across online and offline contexts, and these flows shape their educational practices, interactions, and forms of participation. This complexity calls for flexible, creative, and situated methodological approaches capable of documenting social and educational phenomena that unfold across physical and digital environments. This study explores the characteristics of hybrid methodological designs that combine traditional research methods with e-methods. To this end, a textual analysis was conducted of nineteen master's and doctoral theses from the Institute of Education Sciences at the Autonomous University of the State of Morelos, Mexico. Methodological sections and research design-related findings were extracted from each document, organized in a hermeneutic unit, and analyzed through coding and categorization. The analysis identified three types of research scenarios in hybrid methodological designs: natural scenarios, where online spaces and practices existed before the research process; generated scenarios, where digital spaces or activities were created or guided by the researcher; and dual scenarios, where both logics converged. These findings also reveal recurring challenges related to access to participants, privacy, ethical safeguards, digital competencies, researcher control over online settings, identity verification, and multimodal data. The study provides a useful typology to guide methodological decision-making in educational research that integrates both face-to-face and digital practices.

Keywords: Hybrid Methods, E-Methods, Educational Research, Research Design, Virtual Environments, Educational Technology.

Resumen: Las prácticas educativas contemporáneas se desarrollan en continuidad entre contextos presenciales y digitales, lo que exige diseños metodológicos capaces de registrar fenómenos que no pueden comprenderse únicamente desde lo presencial ni desde lo virtual. Este artículo analiza las características de los diseños metodológicos híbridos que combinan métodos tradicionales y e-métodos en investigación educativa. Para ello, se realizó un análisis textual de 19 tesis de maestría y doctorado del Instituto de Ciencias de la Educación de la Universidad Autónoma del Estado de Morelos, en México, seleccionadas por incorporar estrategias de recogida de datos en línea y fuera de línea. Se extrajeron los fragmentos relativos al diseño metodológico y a los procedimientos de obtención de información, se organizaron en una unidad hermenéutica y se analizaron mediante codificación y categorización. Los resultados permiten distinguir tres tipos de escenarios en los diseños metodológicos híbridos: naturales, cuando los espacios y prácticas digitales existen antes de la investigación; generados, cuando son creados o guiados por quien investiga; y duales, cuando convergen ambas lógicas. Asimismo, se identifican desafíos vinculados al acceso a participantes, la privacidad, el consentimiento, las competencias digitales, el control del escenario, la verificación de identidad y el análisis de datos multimodales. El estudio aporta una tipología útil para orientar decisiones metodológicas en investigaciones educativas que integran prácticas presenciales y digitales.

Palabras-clave: Métodos Híbridos, E-Métodos, Investigación Educativa, Diseños de Investigación, Ambientes Virtuales, Tecnología Educativa.

1. Introduction

Up until recently, the methodological designs within Social Sciences used to be classified in one of the following three approaches: quantitative, qualitative or mixed, the last one being the combination of the previous two. Since the emergence of the so-called e-methods, an additional option is available, which interacts with the previous ones: the hybrid design. The 'hybrid' adjective is applied to refer to a design which combines offline and online data collection techniques—that is, traditional methods and e-methods.

It's important to point out that the offline and online distinction doesn't intend to draw a line between these methods, but to point out their necessary convergence through hybrid designs, taking into account that today many human beings move fluidly between these two realities, making it more complex for researchers to address these domains as separate entities

Thus, the methods and the e-methods are combined into hybrid designs when we address phenomena which flows between offline and online contexts. An important distinction is that the use of e-methods applies within research projects in which internet is our field and/or medium of study (Castillo and Zorrilla, 2021).

This study distinguishes between the methodological approach of a research project and the contextual or technical conditions under which the data are collected. The quantitative, qualitative and mixed approaches relate to the logic of evidence generation, analysis, and integration. In contrast, the concept of a hybrid design refers to the combination of contexts, techniques, or methods for collecting data—both online and offline. Therefore, a hybrid study can be qualitative, quantitative, or mixed, depending on the nature of its research questions, data, and analytical procedures.

The present complexity of the research designs in areas such as communication and education requires the combination of e-methods and traditional methods, meaning, hybrid designs, a relatively new approach which implies multiple challenges for the researchers and occasionally for the participants as well.

Among the pioneers in the use of e-methods is Howard Rheingold (1993), who drew on his experience as a user to study virtual communities. Another pioneer is Sherry Turkle (1995), who studied 'life on the screen' and how through technological mediation people transformed their identities, their relationships, their ways of doing politics and even getting emotionally involved.

Three decades after these early forays into the online social world, e-methods have become an established component of the researcher's methodological toolkit, and several authoritative handbooks documents and discuss their use, notably those by Fielding, Lee & Blank (2008 and 2017), the one by Consalvo & Ess (2011), the one by Lupton (2015), and the one by Minocha & Petre (2012). Hine's (2000, 2004, and 2008) proposals on virtual ethnography are also frequently cited.

There are numerous studies on e-methodologies and Internet research, including Archibald et al. (2019) on the use of Zoom for qualitative data collection; Ardèvol, Estalella & Domínguez (2008) on Internet ethnographies; Frączkowska (2020)

and Latkovikj & Popovska (2019), who examine the advantages and disadvantages of online research; Holt (2020) evaluates traditional and non-traditional methods for studying online phenomena; Quintana-Pujalte & Ramos-Serrano (2023) report on an Ibero-American study of digital ethnography; and Wright (2023) examines various online research methods, as well as related challenges and best practices that have been reported by various authors across a range of disciplines.

Since the methodological approach explored in this article is hybrid in nature, we chose to revisit and adapt Bruhn Jensen's (2011, p. 48) classification of the most commonly used methods in Internet studies, which are detailed in Table 1. This table summarizes a classification of methods used in Internet studies, allowing us to observe how some traditional procedures find equivalents in digital formats, while other e-methods emerge specifically in online environments.

Table 1. Basic methods used in Internet studies.

	Quantitative	Qualitative
Discourse/language/writing	Survey and e-survey	Interview and e-interview Focal group and e-focal group
Behavior/action	Experiment (online)	Observation and e- observation (participant and non-participant)
Texts/documents/artifacts	Content analysis (online)	Discourse analysis; textual and multimedia analysis; diary and digital journal

Source: Adapted by the authors from Bruhn Jensen (2011, p. 48)

This classification provides the basis for the analysis of the reviewed theses, not for the purpose of cataloging techniques in isolation, but rather to identify how they come together in specific hybrid designs.

As can be seen, some of the so-called e-methods are online digital adaptations of tools which are used offline, such as surveys, interviews, or observations. Their digitization and transition to an online format often provide added value, such as the incorporation of automated features, but it can also mean that the researcher has less control over the context in which they are applied.

It's important to clarify that not all e-methods are adaptations of the traditional ones. They can be devices created specifically to explore an online phenomenon, such as an online multiplatform diary or a group within a digital social media which responds to specific dynamics designed by whoever is in charge of the research project. According to Mujica-Sequera (2022) the e-methods can include experimentation, a research panel, analytical processing and focal groups, all of them online.

Although the e-methods most frequently mentioned in the literature are e-observation, e-interviews, and e-surveys, the use of Web 2.0 applications has made it increasingly common to systematically collect user information from various services—such as digital social media and virtual learning environments—which provide access to large volumes of data, better known as big data. Peng et al. (2012) refer to this as “web content mining” and “user traffic logs,” the collection and analysis of which are becoming increasingly streamlined thanks to artificial intelligence tools (Lopezosa & Codina, 2023; Mellon, Bailey, Scott, Breckwoldt, Miori & Schmedeman, 2023).

Although literature centered on online research, digital ethnography and e-methods has increased significantly, the studies which analyze how these resources are integrated with traditional methods in specific educational research projects are still in short supply. In particular, it is necessary to understand what types of methodological scenarios arise when research combines face-to-face and digital settings, what role e-methods play within the design, and what challenges their implementation poses. From this perspective, the objective of this study is to analyze the characteristics of hybrid methodological designs found in master's and doctoral theses at ICE-UAEM, identify common and divergent patterns, and propose a typology of scenarios that can guide future educational research.

2. Methodology

This study is conceived as a qualitative literature review of a "meta-methodological" nature. Its purpose was to examine how the research designs of the reviewed theses were structured when they combined traditional methods and e-methods. The corpus consisted of 19 master's and doctoral theses. It stems from the direct guidance provided by the authors and other researchers to students in the Master's Program in Educational Research and the PhD in Education at the Institute of Educational Sciences (ICE) of the Autonomous University of the State of Morelos (UAEM) in Mexico. It also derives from the authors' own research work. To reduce potential familiarity bias, the classification of the theses was based on documentary evidence found in the final texts and not on external information not recorded in the theses.

For this study, a review was conducted of 19 theses by ICE graduates—eleven doctoral theses and eight master's theses—developed using hybrid designs. The method employed was a textual review of the completed theses. All UAEM theses are open access, as both educational programs are part of the National Postgraduate System (SNP) of Mexico's Secretariat of Science, Humanities, Technology, and Innovation (SECIHTI). For this reason, it was not necessary to request access from the authors or seek their authorization to analyze and report the results. The analysis was limited to published methodological information and did not involve contact with participants, access to primary data, or the processing of personal information not available in the documents. The identifying information for the theses has been retained because they are publicly available academic works that may be cited; however, the analysis focuses on methodological designs rather than on the individual assessment of their authors or participants.

Information regarding the methodological approaches of the 19 selected theses (design and results) was collected and organized, and then analyzed through coding and categorization. This process made it possible to identify certain characteristics of hybrid methodological designs associated with their purposes and contexts of application, as well as some common challenges and practices in their implementation.

2.1. Document Corpus Selection

The theses were chosen through the following criteria:

- a) have been defended as part of a master's or doctoral program at ICE-UAEM;

- b) be available for public consultation in institutional repositories or open-access academic archives;
- c) include in their methodological design at least one offline data collection technique and one technique that is facilitated by digital technologies or conducted online;
- d) contain sufficient information on the design, instruments, participants, context, and data collection procedure;
- e) cover the 2013–2024 period, according to the theses ultimately included.

The units of analysis were the sections of each thesis that addressed methodological design, the research context, the participants, data collection techniques, the instruments used, online and offline interaction strategies, the types of data generated, and the methodological challenges reported by the researchers.

2.2. Analysis Procedure

The analysis was conducted in several phases. In the first phase, the sections of each thesis relating to methodological design were identified and extracted. In the second phase, these excerpts were organized into a hermeneutic unit to facilitate cross-comparison. In the third phase, an initial coding was performed, focusing on traditional methods, e-methods, contexts of application, the role of each technique within the design, and the challenges described. In the fourth phase, the codes were grouped into analytical categories that allowed to distinguish three types of methodological scenarios: natural, generated, and dual. These categories were compared with the literature on online research and with the characteristics observed in the analyzed theses.

Table 2. Classification criteria and roles within the different scenarios.

Type of scenario	Main criteria	Role of the researcher
Natural	The digital space or practice existed before the research	Observe, access, or analyze practices not developed through research
Generated	The digital space, activity, or dynamic is created, guided, or controlled by the researcher	Designs the environment, suggests activities, or regulates interaction
Dual	Natural and generated scenarios come together in a single design	Combines observation of pre-existing practices with designed or adapted activities

3. Results

The analysis of the studies began by identifying the various combinations of data collection techniques employed by the researchers, with the aim of determining the most frequently used e-methods and their role within the methodological designs. Table 3 provides an initial overview of the 19 degree theses reviewed in this study.

Table 3. Analyzed degree theses which include hybrid methodological designs.

Author (Year)	EP	Approach	Research design	Traditional methods	e-methods
Chin Shuang (2013)	PhDE	Mixed	Educational design	Survey Interview Observation	e-Observation
Castillo (2014)	PhDE	Qualitative	Case study	Documentary review Interview Focus group	e-Observation
Cruz (2016)	MER	Qualitative	Educational design	Observation Interview Survey Text analysis	e-Observation Multimedia analysis
Soto (2018)	PhDE	Qualitative	Case study	Documentary review Observation Interview	e-Survey e-Observation
García Luna (2018)	MER	Qualitative	Case study	Interview	e-Observation e-Interview
Jaimes (2018)	PhDE	Qualitative	Case study	Text analysis	Social Media Analysis (SMA)
Cuenca (2019)	PhDE	Qualitative	Narratives	Interview	e-Interview Digital diary e-Focus group
Sosa (2019)	PhDE	Mixed	Case study	Survey Interview Field journal	e-Observation e-Interview (digital rally)
Lira (2019)	MER	Qualitative	Educational design	Documentary revision Observation Survey Interview	e-Observation
Ibarra (2019)	MER	Qualitative	Ethnography	Documentary revision Interview	e-Observation
Flores (2020)	MER	Qualitative	Ethnography	Interview	e-Survey Online journal
Medina (2020)	PhDE	Qualitative	Educational design	Observation Field journal	Checklist Rubric Digital diary
Cruz (2020)	PhDE	Mixed	Case study	Interview	e-Survey Digital diary
Hernández Lemus (2020)	MER	Qualitative	Case study	Observation Content analysis Focal group	e-Survey
Arellano (2021)	PhDE	Qualitative	Case study	Documentary revision	e-Survey
García Viveros (2022)	MER	Qualitative	Case study	Documentary revision	e-Interview
García Luna (2023)	PhDE	Qualitative	Case study	Documentary revision	e-Interview

Author (Year)	EP	Approach	Research design	Traditional methods	e-methods
Hernández-Levi (2023)	PhDE	Qualitative	Educational design	Interview	e-Survey e-Observation Multimedia analysis Online focus group
García Díaz Infante (2024)	MER	Qualitative	Case study	Interview	e-Interview e-Survey e-Observation

EP= Educational Program, PhDE=PhD in Education, MER=Master in Educational Research

Of the 19 theses analyzed, 10 were classified as natural settings, 4 as generated settings, and 5 as dual settings. This distribution shows the predominance of research that draws on preexisting digital environments, although it also highlights the importance of designs in which the researcher creates, adapts, or regulates digital spaces to develop educational interventions or specific data-collection methods.

Although all designs are hybrid, this study focuses in particular on the incorporation of e-methods, their contributions to research, and the challenges of their implementation, given that the literature on traditional methods is extensive.

What we consider to be our main finding in this exploration of the selected studies was the identification of at least three research scenarios associated with hybrid methodologies:

- Natural. When the online spaces and practices under study occur naturally—that is, they existed before the researcher's arrival and are not under the researcher's control.
- Generated. When online spaces and practices have been created, modified, or manipulated by the researcher so that participants will perform certain activities or engage in interactions within a controlled environment.
- Dual. When a researcher explores both natural and artificial settings.

These distinctions—at least the first two—have been identified in different, though equivalent, terms by authors such as Beninger et al. (2014). Hine (2008) raises the question of the extent to which the research site is constructed by the ethnographer and the extent to which it is a pre-existing entity. Similarly, MRS (2010, cited by Woodfield, Morrell & Metzler, 2013) proposes a distinction between naturally-occurring data on digital social media and data generated through the researcher's intervention.

3.1. Natural scenarios

Natural scenarios are characterized by access to existing digital environments that are not controlled by the researcher. Case studies and ethnographic approaches predominate in this group, especially in institutional virtual environments, digital social media, and communication platforms. E-methods primarily serve to observe, capture interactions, analyze digital content, and complement face-to-face interviews or focus groups.

The studies by Castillo (2014), Flores (2020), García Díaz Infante (2024), García Luna (2018, 2023), García Viveros (2022), Hernández Lemus (2020), Ibarra (2019), Jaimes (2018), and Soto (2018) were conducted in natural settings, following the classification proposed above. All of them (except for Flores's thesis) were case studies: in the first four, data were collected from virtual environments created and managed by third parties as part of the construction of their respective cases. These were virtual learning environments (Moodle and Teams). In all four projects, adults were observed: teachers, tutors, and undergraduate students.

In Hernández Lemus's (2020) thesis, an e-survey was used to explore note-taking and its characteristics in mathematics classes among UAEM students. The studies by García Viveros (2022) and García Luna (2018, 2023) used e-interviews via Zoom to analyze the practices and identities of UAEM faculty members with experience in online teaching, as well as those who, as a result of the pandemic, had to use communication tools to continue their teaching activities.

In the study by Flores (2020), technology-mediated e-observation—which will be explained shortly—was conducted to explore the participants' everyday use of social media.

Castillo (2014) conducted structured non-participant e-observation in two online training courses in which faculty members from the case institution under study had participated. The platforms and their users were inactive, as the courses had ended, and the researcher's task was to collect data on the various activities carried out by the participants. All of the contributions and interactions reviewed were based on texts written by the participants as part of assignments, in forums, or in other activities.

Soto (2018) conducted non-participant e-observation in virtual tutoring rooms with the aim of recording and analyzing interactions between tutors and tutees. The spaces and users observed in this case were also already inactive when the researcher accessed them and retrieved the records of all interactions that had taken place there. It is important to note that following the e-observation, the researcher administered an e-survey to the tutees consisting of open-ended questions to learn more about their opinions regarding their experience in the virtual tutoring rooms. The information gathered through both e-methods provided the researcher with a more comprehensive view of what took place during the virtual tutoring process, which constitutes one of the advantages of using e-methods, as noted by Díaz de Rada (2012).

Ibarra (2019) used non-participant e-observation in online courses hosted on the UAEM's Moodle platform, with the aim of recording and analyzing the communication interactions (synchronous and asynchronous) between students and faculty, as well as the products of the formational (instructional) design based on the use of various technological tools available in the virtual environment. In line with his objectives, the researcher was able to observe online the formal, technical, and content elements of the concept maps created by the students.

Flores (2020), who was interested in the use of digital social media for learning among non-college-aged youth, invited her participants—all adults—to keep an online journal in which they recorded their activity on digital social media. In this case, we are dealing with e-observation mediated by technology and by the participants

themselves, since the researcher did not observe them directly on social media but rather asked them to engage in a process of self-observation, which they in turn shared with her.

In the case of Flores (2020), one might think that this is a generated scenario, given that the researcher asked participants to keep a digital log; however, the fact that this log was used only to record the participants' natural social media activities brings this research context closer to the premises of a natural scenario than a generated one. One aspect to consider in this hybrid research is that the face-to-face interviews with participants helped "fill in the gaps" of e-observation and allowed for further exploration and deeper analysis of the topics raised in the online component of the study.

Jaimes (2018) also conducted a study of social media through a Facebook group called "Science for Mexico—We Are CONACYT Scholars". The purpose of the research was to analyze the academic uses present in the Facebook group of CONACYT scholarship recipients, identifying the predominant themes in information exchanges, the types of uses developed, the patterns of interaction among participants, and the elements of social cohesion that regulate the group's functioning. To this end, she employed an online social media analysis methodology, which allowed her to map social interactions and identify behavioral patterns within the network.

Hernández Lemus (2020) used an exploratory e-survey to analyze note-taking and its characteristics in mathematics classes among UAEM students. The survey was administered using Google Forms, with invitations sent via email. This approach had several advantages: it was low-cost, quick to administer, and did not require transcribing the information. The online method complemented the use of traditional methods (focus groups, observation, content analysis).

García Díaz Infante (2024) used e-interviews, e-observation, and e-surveys in her study on the habits and challenges faced by teachers in searching for, selecting, and evaluating open educational resources (OER) to integrate them into chemistry teaching and learning processes at the upper secondary level.

García Viveros (2022) conducted semi-structured e-interviews with faculty members to learn about their academic practices during the COVID-19 lockdown. The interviews were conducted via Zoom, with audio and video recordings made for transcription and analysis. Unlike other studies reviewed in this article, which incorporated hybrid methods from the outset, in this case, due to the pandemic, the student decided to change her research topic and had to collect data via videoconference (e-interviews), given the prevailing conditions.

García Luna (2023) conducted semi-structured online interviews with higher education faculty members who had experience in online teaching and with instructors who, as a result of the COVID-19 pandemic, had to use ICT to continue their academic activities. Although this research initially focused on online teaching, with the onset of the pandemic, it was decided to include in the study faculty who had to implement emergency remote teaching, in order to broaden the scope of the research.

Since the data collection took place during the pandemic, it was also necessary to conduct e-interviews via Zoom, with audio and video recordings for later analysis.

The cases of García Viveros (2022) and García Luna (2023) are typical examples of research projects that had to be conducted online or were completed in a hybrid format due to the extraordinary circumstances surrounding the pandemic. In both cases, thanks to e-methods, the researchers were able to continue their respective projects without interruption and complete their research on time and in accordance with established procedures.

3.2. Generated scenarios

The generated scenarios are primarily associated with educational designs, interventions, or research activities created to elicit specific practices, interactions, or digital outputs. In these cases, the researcher has greater control over the environment, the activities, and the conditions of participation, although he/she also assumes greater ethical and technical responsibilities.

The works by Arellano (2021), Cruz (2016), Cuenca (2019), and Medina (2020) fall into the category of generated scenarios. Both Cruz (2016) and Medina (2020) involve educational designs; Cuenca's (2019) approach is from the perspective of narratives, and Arellano's work is a case study.

Cruz's master's thesis (2016) was an educational intervention titled "Enriched Reading Circle," consisting of a social reading experience of a transmedia novel. It was conducted at a middle school in the city of Cuernavaca, in the state of Morelos (Mexico). A closed Facebook (FB) group was created for the virtual component of the reading circle, which also included a face-to-face component.

Both the closed Facebook group and the mirror space on Moodle (for participants who did not use Facebook) were used to promote activities related to reading the transmedia novel. As a closed space created specifically for participants to publish predetermined content, it constitutes a setting generated and controlled by the researcher. In this case, this was necessary as part of the educational design tested in the intervention and also to protect the participating minors. Participants posted content in various formats that often combined text and images. Analyzing multimedia data—beyond the written word—presented an additional challenge for the researcher.

Medina's (2020) case was similar, as she developed an educational intervention in which a virtual environment served as a digital repository—both for the resources made available to participants and for the submission of the various products generated during the process—although the main interaction with the group took place face-to-face in a physical classroom. The platform used was also the UAEM's LMS, Moodle. The virtual space was used as a tool for collecting information. All data—both that collected during offline sessions and that from the platform—were treated equally as "intercontextual in practice" (Leander, 2003, p. 224). The researcher drew on the perspective of Orgad (2009), who asserts that the medium from which the data originate is irrelevant. This view reflects the current reality, in which the boundaries between online and offline are becoming increasingly blurred.

The activities carried out by the online participants included a forum for sharing assignments and a digital diary. Adult undergraduate students participated in this study, and the data generated were multimedia.

Arellano (2021) conducted a study focusing on internet cafes as environments that facilitate internet access and their role in promoting digital skills among the population of the state of Morelos. The study used an online survey, which was administered in person but via computers available at the internet cafes. The research presented challenges, such as difficulty accessing the locations, the condition of the equipment, and connectivity issues.

A final example of the generated scenarios is the case of Cuenca (2019), who used two online spaces: the UAEM 's Moodle platform, where participants kept a digital diary, and a closed Facebook group that served as an e-focus group. The objective of this research was to gather participants' narratives regarding the conceptions of creativity held by professor-researchers from different universities and how these concepts relate to their academic work as teachers and researchers. The digital diary served as a space for reflection and introspection for the participants. At the same time, they were invited to participate in an e-focus group on Facebook, where the researcher served as administrator and facilitator, providing "triggers" for discussion. This space allowed for interaction among the participants, even though they were affiliated with different, geographically dispersed universities, which in turn made it possible to identify commonalities and differences across their various institutional contexts.

As some members refrained from posting, the researcher scheduled three synchronous events to encourage active conversation among everyone, so they could discuss their research contexts and practices.

Both methods—the online diary and the e-focus group (asynchronous and synchronous)—were tools that contributed to the research on three levels: a) allowed the researcher to gradually approach the participants, so that she could conduct the interviews with a broader and deeper understanding of their conceptions and opinions regarding the topic of study; b) they facilitated rapport; and c) they served as an ideal medium for capturing the participants' authentic voices, which were subsequently incorporated into narrative vignettes in the body of the thesis.

In this study, the researcher also conducted online interviews, particularly with participants who were geographically distant, which were carried out via videoconferencing.

One of the challenges of this methodological approach, given the participants' background, was, in some cases, a lack of digital skills needed to participate in the spaces that were provided.

3.3. Dual scenarios

Dual scenarios combine the observation of preexisting digital practices with activities designed or adapted by the researcher. This category is not defined by the mere accumulation of techniques, but rather by the coexistence of two methodological approaches: one aimed at recording natural practices and the other aimed at creating specific conditions for participation, intervention, or data production.

Finally, we analyzed studies conducted in dual scenarios—that is, where researchers used both natural and generated scenarios, or where they established specific dynamics for participants while allowing them the freedom to use the media of

their choice. Examples of such studies include those by Chin Shuang (2013), Cruz (2020), Hernández-Levi (2023), Lira (2019), and Sosa (2019).

The theses of Chin Shuang (2013) and Lira (2019) are examples of the combination of natural and researcher-generated scenarios. Chin Shuang (2013) combined classroom observation in Mandarin classes with e-observation on an educational platform where she hosted multimedia materials she had created to complement traditional teaching. She gathered data on the experience of using these materials through student surveys, interviews with teaching staff, as well as classroom observation and e-observation on the educational platform.

In the case of Lira (2019), an initial exploratory approach to the subjects was carried out through participant observation by the researcher in closed Facebook groups created by third parties, where most of the members belonged to the hearing-impaired community. The researcher was interested in observing how hearing-impaired people communicated online, a phase that allowed him to discover common practices in their communicative exchanges, the mediated use of LSM (Mexican Sign Language), as well as the prevalent use of images and emojis.

To develop the intervention—which aimed to determine whether an online course designed according to the principles of Universal Design for Learning (UDL) met the needs of hearing-impaired students—the researcher worked with students enrolled in a technical high school program that was inclusive and provided the participation of LSM interpreters. The researcher had to create the online course in Moodle and implement it with the participants.

Unlike other implementations that used spaces created in Moodle, in this intervention—even though this LMS was also used—it was necessary to observe the participants in person, since some did not have their own devices or an internet connection at home, or required the assistance of interpreters provided by the institution due to their limited Spanish literacy skills. Thus, it can be said that the processes of observation and participatory e-observation overlapped in both space and time, since while the young people were accessing the online platform, they were receiving in-person instructions and assistance from the researcher and the interpreters.

The main challenge identified in Lira's (2019) study was the low level of Spanish literacy skills among the hearing-impaired community in Mexico and the still-prevalent reliance on written or spoken text as the primary forms of instructional design in online courses, which limits the use of certain e-methods.

Sosa (2019) used e-interviews and non-participant e-observation. In both cases, she used Facebook for different purposes and employing various strategies, which required the participants—students at a public high school in Temixco, Morelos—to accept her friendship requests on the social media platform. The e-interview was conducted using guided questions framed as a “digital rally.” Participants answered the questions individually via private messages and as a group on the wall. In this case, Facebook was used so that participants could carry out activities designed and directed by the researcher; therefore, it is considered a generated scenario, even though a group was not created specifically for this purpose.

Non-participant e-observation was used to monitor their informal interactions on Facebook, with a particular focus on issues related to sexuality and gender. In this case, the setting was natural, as the researcher did not intervene in or control the participants' practices and interactions.

In this study, a major challenge was to ensure, during the face-to-face phase of the research, that the participants trusted the researcher enough to accept her as a "friend" on Facebook and allow her to observe them.

Cruz (2020) invited his participants—all adult college students—to keep a digital diary using the medium of their choice, in which he asked them to share screenshots and reflections on their various online activities throughout the day, as the research objective was to explore manifestations of their digital culture, with a particular focus on their practices related to non-academic learning. This constitutes a form of e-observation mediated by technology and by the subject of the observation themselves. Although participants were free to choose their medium, the activities were designed by the researcher; therefore, this is considered a generated scenario.

Concurrently, the researcher conducted direct e-observation in natural settings, as the participants granted him access to various social media platforms and online spaces they frequented.

Following the e-observation, the researcher conducted face-to-face interviews, as did Flores (2020), which allowed him to delve deeper into the various aspects observed.

A fourth and final case that illustrates the dual scenario is the research on educational design conducted by Hernández-Levi (2023). From its original design, this project incorporated a combination of observation and participant e-observation, based on a hybrid intervention focused on building transliteracy competencies through a participatory reading model. One of the central research interests was to observe readers' co-creation practices through their production of remixed and original content on social media platforms of their own choosing. However, the pandemic struck during the initial phase of fieldwork, and the author had to adapt his design.

The only in-person activity that could be carried out were interviews with teachers, but all work with students had to be conducted in the virtual environments provided by the educational institutions (not on social media, as originally planned). Since the research was conducted at two schools, Google Classroom was used at one and Microsoft Teams at the other. The researcher had to adapt his strategies to the environments established by each educational institution.

We classified this study as a dual scenario, since its original design incorporated social media—which might seem like a natural setting—but under guidelines established by the researcher, which gave it the character of a generated scenario. However, the design shifted toward a more natural setting (the virtual classroom) when the researcher was forced to adapt his intervention strategies to institutional spaces and dynamics that both he and the participants were required to adhere to.

From these spaces, the researcher collected cultural works in a variety of formats. Hernández-Levi (2023) also used e-surveys and e-interviews to gather additional information from the participating students.

This final case is of particular interest because, in addition to using a hybrid methodology, the researcher submitted a hybrid thesis in which most of the appendices—since they consisted of multimedia material—were presented as links to content hosted in the cloud (Google Drive). This reflects a growing trend toward multimodal, multimedia, and transmedia theses that go beyond the traditional document.

Table 4. Methodological challenges.

Challenge	Description	Scenarios where it is most prominent
Access to Participants	Difficulty accessing digital spaces, obtaining permits, or achieving sustained participation	Natural and dual
Privacy and Consent	The need to protect identity, data, and digital traces	All the scenarios
Digital Literacy	Limitations on participants' or researchers' ability to use platforms, diaries, or online tools	Generated and dual
Scenario Control	The researcher's greater or lesser ability to regulate interactions and data collection conditions	Natural and dual
Identity Verification	Difficulty in determining who actually participates in certain online spaces	Natural
Multimodal Data	Inclusion of text, images, videos, screenshots, hyperlinks, and transmedia productions	All the scenarios
Limited Choice of Platforms	Technical, regulatory, social, or institutional conditioning for the use of Moodle, Facebook, Teams, Google Classroom, Zoom, etc.	All the scenarios
Research Involving Minors	Necessity for reinforced protective measures and the utilization of closed or institutional spaces	Generated and dual

4. Discussion and Conclusions

The analysis of the 19 theses reveals three main findings. First, hybrid methodological designs are not equivalent to qualitative, quantitative, or mixed-methods approaches, but rather a way of articulating contexts, techniques, and means of collecting data both online and offline. Second, the distinction between natural, generated, and dual scenarios helps us understand the degree of control researchers have over digital spaces and the role that e-methods play within the design. Third, the main methodological challenges center on access to participants, privacy, consent, identity verification, digital literacy, and the handling of multimodal data.

Reality is complex, and our being, communicating, and acting constantly shift between in-person and online contexts, between the public and the private, which requires social researchers to exercise greater creativity and flexibility in their methodological designs so they can capture the different dimensions of their research subjects' practices in various contexts. Lévy (1999) analyzes various forms of hybridization from the perspective of the "Moebius effect" as the blurring of boundaries between various dichotomies; similarly, García Canclini defines hybridization as "sociocultural processes in which discrete structures or practices, which previously existed separately, combine to generate new structures, objects, and practices" (2009, p. 14).

The value of hybrid methodological designs lies in the ability to combine the best of both worlds—that is, to take advantage of the novelty and added value of e-methods without abandoning traditional, proven methods. The reviewed theses confirmed how researchers use combinations of methods and e-methods to complement, triangulate, and delve deeper into the dynamics of data collection and analysis. Some designs begin with an online approach and then conclude with a face-to-face approach, or vice versa: first, the offline dimension is explored, and then the analysis is deepened through e-methods. There are also cases in which e-methods are used as a means of obtaining information about the issue under study.

One consistent finding was that case studies and ethnographic studies explore natural online scenarios that existed prior to the research. In contrast, educational designs, in this case mostly associated with various manifestations of transmedia, require the design and controlled management of online spaces and activities to observe and evaluate specific aspects of the educational intervention itself and its outcomes. This necessarily involves the use of researcher-generated scenarios, although, as we saw in the case of Hernández-Levi (2023), reality sometimes dictates adjustments to the research design. This is consistent with the findings of Beninger et al. (2014), Hine (2008), and Woodfield, Morrell & Metzler (2013).

Similarly, challenges associated with e-methods were confirmed, such as sampling limited to individuals with internet access, the difficulty of verifying participants' identities, and the researcher's limited control in various situations—findings that are consistent with the arguments put forward by Díaz de Rada (2012); Frączkowska (2020); Holt (2020); and Latkovikj & Popovska (2019). Conversely, a promising aspect of e-methods is their ability to reach hard-to-reach populations, as demonstrated, for example, by studies conducted with people with disabilities (Sunderland, Chenoweth, Matthews & Ellem, 2015) or with criminal groups (Holt, 2020).

It is also evident that the flow of people between in-person and virtual environments, especially on digital social media, makes real-time or even delayed e-observation practically impossible due to the variety and dynamism of these spaces. This increasingly requires that the subjects being observed record their own online practices through digital diaries and logs, thereby transforming e-observation into e-self-observation. This requires a participant with a high degree of involvement in the research and a willingness to keep a record of their activities or practices, which is not easy to achieve. Conversely, it avoids the difficulty of asking participants for permission to track their online activities, which constitutes an invasion of privacy that not many are willing to accept.

As with traditional methods, it is essential to consider ethical issues, such as protecting participants' identity and privacy—especially in the case of minors—as noted by Machado da Costa & Francisco (2021). The involvement of minors also poses a challenge regarding the use of certain tools, which—despite having age restrictions—are used by many adolescents under the stipulated minimum age. Likewise, the use of digital social media poses a risk to minors, which the researcher must minimize through strategies such as creating closed, non-public groups. Another aspect to consider—which was identified by Hernández-Levi (2023)—is the need to use educational resources with the necessary security credentials to avoid exposing participants to unnecessary cyber risks.

An additional challenge posed by the hybrid methodological design is the volume and variety of formats of the collected data (multimedia, multimodal, transmedia), which complicates its processing and analysis; in this context, artificial intelligence tools emerge as a promising alternative (Lopezosa & Codina, 2023; Mellon et al., 2023).

Finally, it is important to recognize that, during the COVID-19 pandemic, many novice and experienced researchers were forced to adopt e-methods, suggesting that hybrid research designs will become more common in recent years and in the years to come.

This study has some limitations that should be taken into account when interpreting its results. First, the corpus comes from a single university, so the proposed typology needs to be compared with theses, articles, and projects developed in other institutional and national contexts. Second, the analysis is based on completed academic documents and not on interviews with their authors or on a review of the primary data generated by each research project. Third, the authors' proximity to part of the analyzed context may have facilitated their understanding of the research designs, but it also required a reflective reading based exclusively on documentary evidence.

Based on the analysis conducted, it is recommended that educational research using hybrid designs specify from the outset: a) the role each method plays within the design; b) whether the digital spaces are natural, generated, or dual; c) the degree of control the researcher has over the platforms and interactions; d) what ethical measures are adopted to protect privacy, consent, and identity; e) how multimodal or transmedia data will be managed; and f) what digital literacy skills are required of both the research team and the participants.

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