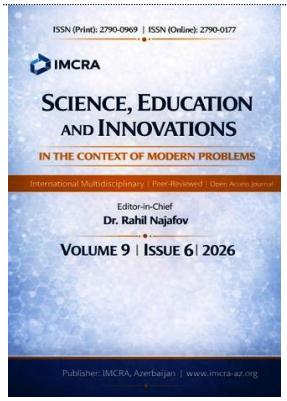

Science, Education and Innovations in the Context of Modern Problems
Issue 6, Vol. 9, 2026

RESEARCH ARTICLE

Exploring Distance Education During the COVID-19 Pandemic: A Comparative Metaphor-Based Analysis of Teacher and Student Perceptions

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Keywords Distance education; COVID-19; metaphor analysis; online learning; digital pedagogy; educational perception

Abstract

The COVID-19 pandemic has triggered an unprecedented transformation in global education systems, accelerating the transition from conventional face-to-face instruction to digitally mediated learning environments. While distance education has ensured the continuity of educational processes, it has also redefined the cognitive, pedagogical, and emotional dimensions of teaching and learning. This study aims to critically examine and comparatively analyze the metaphorical perceptions of teachers and students regarding the concept of distance education during the pandemic period. Adopting a qualitative phenomenological research design, the study was conducted during the second semester of the 2019–2020 academic year in Baku, Azerbaijan, involving 36 teachers and 74 students from two private educational institutions. Data were collected using a structured metaphor elicitation instrument and analyzed through qualitative content analysis. Following a rigorous data screening process, 35 teacher-generated metaphors were categorized into four conceptual themes, while 59 student-generated metaphors were classified into six distinct categories. The findings indicate that distance education is perceived as a multidimensional and paradoxical construct, simultaneously encompassing functional attributes such as necessity, knowledge acquisition, communication, and technological mediation, while also reflecting affective dimensions including emotional distance, disengagement, and perceived incompleteness. Notably, teachers tend to emphasize the limitations and pedagogical constraints of remote learning, whereas students demonstrate a more adaptive and technology-oriented perspective, often associating distance education with flexibility and accessibility. By integrating these findings, the study proposes a dual-dimensional conceptualization of distance education, highlighting the interaction between functional and affective components in shaping learning experiences. This research contributes to the literature by offering a comparative, metaphor-based framework that deepens the understanding of how distance education is cognitively and emotionally constructed across different stakeholder groups. The findings provide important implications for the design of more interactive, inclusive, and human-centered digital learning environments in the post-pandemic era.

Citation

Abasli K., Jafarova S. (2026). Exploring Distance Education During the COVID-19 Pandemic: A Comparative Metaphor-Based Analysis of Teacher and Student Perceptions. *Science, Education and Innovations in the Context of Modern Problems, 9*(6), 1–22. https://doi.org/10.56334/sei/9.6.4

Received: August 17, 2025 **Accepted**: March 29, 2026 **Published** Online: April 22, 2026

INTRODUCTION

The early decades of the twenty-first century have been marked by unprecedented global disruptions, among which the COVID-19 pandemic stands as one of the most significant crises affecting modern societies. First identified in late 2019 in

Wuhan, China, and subsequently declared a global pandemic by the World Health Organization on March 11, 2020, COVID-19 has profoundly impacted multiple sectors, including healthcare, economy, and education.

One of the most immediate and widespread consequences of the pandemic was the closure of educational institutions worldwide. According to reports by UNESCO, more than 1.5 billion learners and over 60 million educators were affected by the suspension of face-to-face instruction across 184 countries. This disruption necessitated the rapid adoption of alternative educational delivery models, leading to the large-scale implementation of distance education systems.

In response to these challenges, many countries, including Azerbaijan, introduced a combination of televised lessons, online platforms, and virtual classroom environments to ensure the continuity of education. Initiatives such as televised instructional programs and digital learning platforms became essential tools in maintaining the educational process under conditions of social distancing and restricted mobility. Consequently, traditional pedagogical structures were replaced, or at least supplemented, by technology-mediated learning environments.

Despite the effectiveness of these measures in ensuring educational continuity, the sudden transition to distance education has raised critical questions regarding its quality, accessibility, and psychological implications. Beyond infrastructural and technological considerations, the perceptions and experiences of students and teachers have emerged as central factors influencing the effectiveness of remote learning. Understanding how individuals interpret and internalize the concept of distance education is therefore essential for evaluating its broader impact.

In this regard, metaphors provide a powerful analytical lens for exploring subjective experiences and cognitive representations. As conceptual tools, metaphors enable individuals to express complex and abstract phenomena through familiar and relatable imagery, thereby revealing underlying beliefs, attitudes, and emotional responses. Within educational research, metaphor analysis has been widely employed to examine perceptions related to teaching, learning, and institutional structures.

Although previous studies have investigated metaphorical perceptions in various educational contexts, there remains a notable gap in the literature concerning the metaphorical conceptualization of distance education during the COVID-19 pandemic, particularly within the Azerbaijani context. Furthermore, limited attention has been given to comparative analyses of both teacher and student perspectives within the same study framework.

Therefore, this research seeks to address this gap by examining how teachers and students construct and interpret the concept of distance education through metaphorical expressions. By doing so, the study aims to provide a deeper and more nuanced understanding of the cognitive and emotional dimensions of remote learning, contributing to the development of more effective and human-centered digital education strategies in the post-pandemic era.

METHODOLOGY

2.1 Research Design

This study adopts a qualitative research design aimed at exploring the metaphorical perceptions of secondary school students and teachers regarding the concept of distance education. Qualitative research is particularly suitable for investigating how individuals interpret and construct meaning around a given phenomenon (Merriam, 2013).

Within this framework, the study is grounded in a phenomenological approach, which focuses on understanding participants' lived experiences and subjective interpretations. In this context, metaphorical expressions are treated as cognitive tools that reflect deeper conceptualizations of distance education.

While the primary orientation of the study is qualitative, selected findings—such as frequencies and percentages of metaphor categories—are also presented quantitatively to enhance interpretive clarity and analytical depth.

2.2 Participants

The study sample consists of students and teachers from two private secondary schools operating in Baku, Azerbaijan, during the second semester of the 2019–2020 academic year. The student participants were enrolled in grades 5 through 8, and all participants took part in the study on a voluntary basis.

A total of 110 individuals participated in the research, including:

- 36 teachers (32.7%)
- 74 students (67.3%)

In terms of gender distribution:

- Among teachers, 32 (88.9%) were female and 4 (11.1%) were male
- Among students, 51 (68.9%) were male and 23 (31.1%) were female

This composition provides a diverse perspective on distance education experiences from both instructional and learner viewpoints.

2.3 Data Collection Instrument and Procedure

Data were collected using a structured instrument titled "Metaphorical Perception Form for Distance Education." Participants were asked to complete the prompt:

"Distance education is like ... because ..."

This widely used format in metaphor analysis enables participants to articulate both the source domain ("like") and the justification or reasoning ("because"), thereby revealing the underlying cognitive associations (Saban, 2008).

The data collection process was conducted electronically via Google Forms, ensuring accessibility and compliance with pandemic-related restrictions. Participants completed the form individually, and all responses were collected anonymously. The data were used exclusively for research purposes and were not shared with any third parties, ensuring confidentiality and ethical compliance.

2.4 Data Analysis

The collected responses were subjected to a systematic qualitative content analysis. Initially, all responses were carefully reviewed to assess their relevance and completeness. A total of 45 responses were excluded from further analysis due to insufficient alignment with the research objectives or lack of clear metaphorical structure.

Subsequently, valid responses were analyzed in terms of:

- Metaphor subject (target concept)
- Metaphor source (comparative image)
- The relationship between source and target

Following this process, metaphors were grouped into conceptual categories based on shared characteristics and underlying meanings. To ensure analytical rigor, participant responses were coded as follows:

- Students: Ş1, Ş2, Ş3, etc.
- Teachers: M1, M2, M3, etc.

As a result of the categorization process:

- Teacher-generated metaphors were classified into four conceptual categories
- Student-generated metaphors were grouped into six categories

To enhance the reliability of the analysis, two independent experts in the field reviewed the categorization process. Inter-rater reliability was calculated using the formula proposed by Miles and Huberman (1994):

Reliability = Agreement / (Agreement + Disagreement)

The resulting reliability coefficient was 0.89, indicating a high level of consistency and credibility in the coding process.

Finally, the categorized metaphors were organized into tabular form, and their frequency (f) and percentage (%) distributions were calculated to support the interpretation of findings.

3. LITERATURE REVIEW

The rapid transition to distance education during the COVID-19 pandemic has generated a substantial body of interdisciplinary research examining its pedagogical, technological, and psychological implications. Existing literature reveals that distance education is not merely a technological shift but a complex socio-cognitive phenomenon shaped by users' perceptions, experiences, and emotional responses.

Distance Education in the Context of COVID-19

The COVID-19 pandemic has been widely recognized as a catalyst for the global transformation of education systems. Scholars emphasize that the abrupt shift to online learning constituted what has been termed "emergency remote teaching," distinguishing it from systematically designed online education environments (Hodges et al., 2020). Studies by Bao (2020) and Dhawan (2020) highlight that while digital platforms enabled the continuity of education, they also exposed structural inequalities, technological limitations, and pedagogical gaps.

Empirical research further demonstrates that students' experiences with distance learning during the pandemic were highly heterogeneous. For instance, Aristovnik et al. (2020) found that students reported both flexibility and accessibility as advantages, while simultaneously expressing concerns related to reduced motivation, lack of interaction, and psychological stress. Similarly, Bond (2021) and Coman et al. (2020) argue that the effectiveness of remote education depends not only on technological infrastructure but also on students' engagement and teachers' adaptability.

From a broader perspective, Zhao (2020) and Murphy (2020) suggest that the pandemic has accelerated long-term educational transformations, pushing institutions toward more flexible, hybrid, and technology-integrated learning models. However, these

transformations also require a deeper understanding of how learners and educators perceive and internalize distance education as a concept.

Metaphor Analysis in Educational Research

Metaphors have long been recognized as powerful cognitive and analytical tools for understanding how individuals conceptualize complex phenomena. According to Forceville (2002), metaphors function as mechanisms that map abstract concepts onto more concrete and familiar domains, thereby revealing underlying cognitive structures. In educational research, metaphor analysis has been extensively used to explore perceptions of teaching, learning, and institutional environments.

Early studies, such as those by Levine (2005) and Morgan (1998), emphasize that metaphors are not merely linguistic expressions but fundamental representations of how individuals interpret reality. Within this framework, metaphor analysis provides insights into both the cognitive and emotional dimensions of educational experiences.

A significant body of research has applied metaphor analysis to various educational constructs. For example, Saban (2008, 2009) examined how teachers and students conceptualize knowledge and the student role, identifying diverse metaphorical patterns that reflect different educational philosophies. Similarly, Karadağ and Gültekin (2012) and Koçak (2013) explored metaphorical perceptions related to teachers and schools, demonstrating that metaphors can reveal implicit beliefs and attitudes that are not easily captured through traditional survey methods.

More recent studies have extended this approach to subject-specific contexts. Çetinkaya et al. (2018) and Çalışıcı and Sümen (2018) investigated metaphorical perceptions in mathematics and STEM education, highlighting how metaphors shape learners' understanding of abstract disciplines. These studies collectively confirm that metaphor analysis is a robust methodological tool for uncovering deeper layers of meaning in educational settings.

The application of metaphor analysis to distance education has gained increasing attention, particularly in light of the digital transformation of learning environments. Research indicates that individuals often conceptualize distance education through dual or even contradictory metaphors, reflecting both its advantages and limitations.

For instance, Fidan (2017) found that students perceive distance education as both a flexible learning opportunity and a potentially isolating experience. Similarly, Çivril et al. (2018) identified a wide range of metaphorical categories, including "freedom," "constraint," and "artificiality," suggesting that distance education is experienced as a multidimensional phenomenon.

Studies conducted in different cultural contexts further support these findings. Bekdaş (2017) and Abaslı and Akman (2018) demonstrate that students' metaphorical perceptions are influenced by their socio-cultural backgrounds and prior educational experiences. Nikitina and Furuoka (2008) also emphasize that metaphorical constructions reflect not only cognitive understanding but also emotional and attitudinal dimensions.

In the specific context of distance education, Yılmaz and Güven (2015) show that learners frequently use metaphors associated with technology, distance, and control, indicating both empowerment and detachment. These findings are consistent with broader research suggesting that digital learning environments simultaneously enhance access to knowledge while reducing interpersonal interaction.

Emerging Trends and Research Gaps

Although the existing literature provides valuable insights into distance education and metaphor analysis, several gaps remain. First, much of the research has focused either on students or teachers, with limited studies offering a comparative analysis of both groups within the same framework. Second, while pandemic-related studies have examined technological and pedagogical challenges, fewer studies have explored the cognitive and metaphorical representations of distance education during this period.

Moreover, the majority of studies have been conducted in Western or large-scale international contexts, leaving underrepresented regions such as Azerbaijan relatively unexplored. This gap is particularly significant given the unique socio-cultural and educational dynamics that may influence perceptions of distance learning.

Recent studies (e.g., Rapanta et al., 2020; König et al., 2020; Means & Neisler, 2021) emphasize the importance of integrating both functional and emotional dimensions in understanding online education. However, there remains a need for research that systematically captures these dimensions through qualitative and interpretive approaches such as metaphor analysis.

Contribution of the Present Study

Building on the existing literature, the present study contributes to the field in three key ways:

(1) It provides a comparative analysis of teachers' and students' metaphorical perceptions of distance education within the same empirical framework.
(2) It situates these perceptions within the extraordinary context of the COVID-19 pandemic, offering insights into how crisis conditions shape educational experiences.
(3) It extends the literature by focusing on Azerbaijan, thereby addressing a significant geographical and contextual research gap.

By integrating metaphor analysis with contemporary research on distance education, this study offers a more comprehensive understanding of how digital learning environments are cognitively and emotionally constructed by their primary stakeholders.

DISCUSSION

This study examined the metaphorical perceptions of teachers and students regarding the concept of distance education within the context of the COVID-19 pandemic, based on data collected from two private schools in Baku, Azerbaijan. A total of 110 participants contributed to the study, generating 35 teacher-based metaphors categorized into four conceptual groups (*necessity, communication, abstract/uncertain reality, and despair*) and 59 student-based metaphors classified into six categories (*technology, knowledge, entertainment, despair, transportation, and value*). These findings provide important insights into how distance education is cognitively and emotionally constructed by its primary stakeholders.

Dual Nature of Distance Education: Necessity vs. Limitation

The findings clearly demonstrate that teachers perceive distance education as a necessary yet incomplete educational substitute. On the one hand, metaphors categorized under "necessity" suggest that teachers recognize distance education as an essential mechanism for ensuring continuity during crisis conditions. This aligns with prior studies emphasizing that online education during the pandemic functioned primarily as an emergency response rather than a fully developed pedagogical system (Bao, 2020; Hodges et al., 2020; Murphy, 2020).

On the other hand, the strong presence of metaphors within the "despair" category indicates that teachers also associate distance education with pedagogical insufficiency, emotional detachment, and reduced instructional quality. This ambivalence reflects the broader tension identified in the literature between technological adaptability and educational effectiveness (Bozkurt & Sharma, 2020; Bond, 2021). In particular, the metaphorical framing of distance education as a "stepmother" highlights the perception of remote learning as an inferior substitute for traditional face-to-face education, a finding consistent with previous research emphasizing dissatisfaction with online teaching environments (Coman et al., 2020; König et al., 2020).

The categorization of teacher metaphors under "communication" further reveals that distance education is frequently perceived as a mediated and constrained interactional process. Metaphors such as "screen" and "subtitle-free film" indicate that, although information transmission occurs, meaningful interaction and feedback are often limited.

This observation is strongly supported by existing literature, which identifies reduced interaction, delayed feedback, and diminished social presence as key challenges of online learning environments (Rapanta et al., 2020; Means & Neisler, 2021). Moreover, the absence of physical co-presence appears to weaken relational dynamics between teachers and students, thereby affecting engagement and learning outcomes (Dhawan, 2020).

In contrast to teachers, students predominantly conceptualize distance education as a technology-based system, as evidenced by the high frequency of metaphors within the "technology" category. This suggests that students adopt a more instrumental and adaptive perspective, viewing digital tools as integral to the learning process.

This finding aligns with research indicating that younger generations are more comfortable with and receptive to digital technologies in educational contexts (Coman et al., 2020; Selwyn, 2020). The use of metaphors such as "remote control," "drone," and "internet shopping" further reflects students' perception of flexibility, accessibility, and autonomy in online learning environments.

At the same time, students' metaphorical association of distance education with "knowledge" (e.g., *book, library, light*) suggests that they continue to recognize its educational value. This supports the argument that online learning can effectively facilitate knowledge acquisition when appropriately implemented (Bao, 2020; Means & Neisler, 2021).

A notable finding of this study is the presence of an "entertainment" category among student metaphors, which is absent in teachers' responses. This indicates that students often perceive distance education as a more flexible, informal, and even enjoyable experience, characterized by reduced institutional control.

Metaphors such as "game," "holiday," and "comfort life" suggest that students associate remote learning with increased autonomy and decreased academic pressure. While this may enhance motivation in certain contexts, it may also contribute to reduced discipline and diminished academic rigor, a concern widely discussed in the literature (Selwyn, 2020; Zhao, 2020).

Emotional Disconnection and Shared Negative Experiences

Despite differences in overall perception, both teachers and students associate distance education with feelings of disconnection and emotional distance, as reflected in the "despair" category. Students' metaphors such as "withered tree" and "blind person" indicate reduced engagement, uncertainty, and lack of control.

These findings are consistent with empirical studies demonstrating that online learning environments can lead to social isolation, decreased motivation, and psychological stress (Aristovnik et al., 2020; Bond, 2021). However, it is noteworthy that the proportion of negative metaphors is higher among teachers than students, suggesting that teachers may experience greater challenges in adapting to remote teaching conditions.

The findings of this study are broadly consistent with prior metaphor-based research on distance education. For example, Yılmaz and Güven (2015) identified categories such as "necessity," "limitation," and "usefulness," which parallel the "necessity"

and "despair" categories identified in the present study. Similarly, Fidan (2017) reported categories such as "technology," "usefulness," and "negative perception," which closely align with the student-based categories identified here.

Additionally, Çivril et al. (2018) found that students conceptualize distance education through a wide range of metaphors, including both positive and negative representations. The recurrence of metaphors such as *book, library, game, and technology* across different studies suggests a degree of conceptual consistency in how distance education is perceived across contexts.

However, the present study contributes to the literature by offering a comparative analysis of both teachers and students within the same framework, thereby providing a more comprehensive understanding of the phenomenon.

Implications and Limitations

The findings of this study highlight the need for holistic and human-centered approaches to distance education, integrating not only technological infrastructure but also emotional, social, and pedagogical dimensions. The coexistence of positive and negative perceptions suggests that future educational models should aim to balance flexibility with interaction, and efficiency with engagement.

At the same time, the study is limited by its focus on participants from two private schools in Baku. Future research could expand the sample to include public schools and different socio-economic contexts, thereby enhancing the generalizability of findings.

Theoretical Contribution

First, the study advances the literature by proposing a dual-dimensional conceptual framework for understanding distance education perceptions. Unlike prior studies that predominantly focus on either technological or pedagogical aspects, this research integrates both functional dimensions (necessity, knowledge acquisition, communication, and technological mediation) and affective dimensions (engagement, emotional disconnection, and perceived inadequacy).

By doing so, the study contributes to the conceptualization of distance education as a hybrid socio-technical phenomenon, where learning effectiveness emerges from the interaction between structural functionality and emotional experience. This integrative perspective extends existing metaphor-based educational research and provides a more comprehensive theoretical lens for analyzing digital learning environments.

Methodological Contribution

Second, the study contributes methodologically by employing a metaphor-based phenomenological approach combined with systematic content analysis. While metaphor analysis has been widely used in educational research, this study enhances its application by:

- Conducting a comparative analysis of both teachers' and students' perceptions within the same research framework
- Integrating qualitative interpretation with quantitative indicators (frequency and percentage distributions)
- Ensuring analytical rigor through high inter-rater reliability (0.89)

This methodological design provides a robust and replicable framework for future studies investigating cognitive and emotional representations of educational phenomena.

Empirical Contribution

Third, the study offers an important empirical contribution by providing evidence from the context of Azerbaijan, which remains underrepresented in the international literature on distance education. The findings reveal that:

- Teachers tend to emphasize pedagogical limitations and emotional challenges
- Students demonstrate a more adaptive and technology-oriented perspective
- Both groups share perceptions related to emotional disconnection and reduced interaction

These insights enrich the global understanding of distance education by incorporating perspectives from a developing educational context.

Practical Contribution

Finally, the study provides practical implications for policymakers, educators, and educational institutions. The findings suggest that effective distance education systems should:

- Move beyond purely technological solutions and incorporate interactive and student-centered pedagogies
- Address the emotional and psychological dimensions of online learning
- Enhance communication quality and engagement mechanisms

By highlighting the coexistence of functional efficiency and affective challenges, the study supports the development of more balanced, inclusive, and human-centered digital learning environments.

FINDINGS

This section presents a systematic analysis of the metaphorical perceptions of both teachers and students regarding the concept of distance education. The findings are interpreted through a qualitative content analysis framework, with particular attention to the conceptual categories emerging from participants' responses.

In order to examine teachers' conceptualizations of distance education, a total of 35 metaphors generated by 36 teachers were analyzed. The results indicate a high level of diversity in metaphorical expressions, reflecting the multidimensional and often contradictory nature of teachers' experiences with remote learning.

Each metaphor, with the exception of one ("stepmother," used by two participants), was uniquely generated, suggesting that teachers' perceptions are highly individualized and shaped by personal, pedagogical, and emotional factors. This finding is consistent with previous research indicating that metaphorical constructions in educational contexts often reflect subjective and context-dependent interpretations (Saban, 2008; Thomson, 2016).

Following the coding and categorization process, the metaphors were grouped into four major conceptual categories: Necessity, Communication, Abstract/Universal Imagery, and Despair.

Distance Education as a Necessity

The first category, Necessity (f = 9; 25.7%), includes metaphors such as *dream, hope, oxygen, and the path to victory*. These metaphors conceptualize distance education as an essential and indispensable element in sustaining the educational process during crisis conditions.

The metaphor of "oxygen," for instance, reflects a perception of distance education as vital for survival, emphasizing its role in maintaining educational continuity when traditional systems collapse. Similarly, metaphors such as "hope" and "light in darkness" suggest that teachers perceive distance education as a compensatory mechanism that mitigates uncertainty and disruption.

This interpretation aligns with the findings of Bao (2020) and Dhawan (2020), who argue that online learning during the COVID-19 pandemic functioned as a necessary adaptive response rather than a fully developed educational alternative. Moreover, Murphy (2020) emphasizes that emergency remote teaching should be understood as a crisis-driven necessity rather than a pedagogically optimized system.

Distance Education as a Communication Medium

The second category, Communication (f = 8; 22.9%), includes metaphors such as *television, screen, subtitle-free film, and broadcast signal*. These metaphors highlight the mediated nature of interaction in distance education environments.

Teachers frequently described distance education as a one-directional or limited communication channel, where visual and auditory transmission occurs without full interaction or feedback. For example, the metaphor of a "subtitle-free film" reflects incomplete comprehension, while the "screen" metaphor emphasizes physical and emotional distance.

These findings are consistent with the literature indicating that online learning environments often reduce the richness of interpersonal communication and limit immediate feedback mechanisms (Rapanta et al., 2020; König et al., 2020). Similarly, Means and Neisler (2021) highlight that reduced interaction is one of the most significant challenges reported by educators during the pandemic.

The third category, Abstract/Universal Imagery (f = 9; 25.7%), includes metaphors such as *the dark side of the moon, a distant star, a stormy sea, and a magical wand*. These metaphors reflect the uncertainty, ambiguity, and intangible nature of distance education.

Unlike the previous categories, which emphasize functional aspects, this category captures teachers' attempts to make sense of a novel and rapidly evolving educational reality. The metaphor of "the unseen side of the moon," for instance, suggests partial visibility and limited understanding, indicating that teachers perceive distance education as an incomplete or opaque system.

This finding supports the argument of Zhao (2020) that the pandemic introduced a period of educational uncertainty, where traditional assumptions about teaching and learning were fundamentally challenged. It also aligns with Selwyn's (2020) assertion that digital education is often experienced as both transformative and unpredictable.

The fourth category, Despair (f = 9; 25.7%), includes metaphors such as *stepmother, tasteless food, broken rope, and a fatherless child*. These metaphors convey strong negative emotional connotations, reflecting dissatisfaction, frustration, and a perceived lack of completeness.

The metaphor of the "stepmother," which appears more than once, is particularly significant, as it symbolizes an inferior substitute for an authentic and irreplaceable original, namely traditional face-to-face education. Similarly, metaphors such as "tasteless food" and "broken rope" emphasize inefficiency, lack of engagement, and structural inadequacy.

These findings are consistent with studies highlighting the emotional and psychological challenges associated with remote learning, including reduced motivation, social isolation, and perceived ineffectiveness (Aristovnik et al., 2020; Bond, 2021). Additionally, Coman et al. (2020) report that both students and teachers often associate online learning with fatigue, disconnection, and diminished satisfaction.

Overall, the findings suggest that teachers' perceptions of distance education are fundamentally dualistic, encompassing both functional necessity and emotional ambivalence. While distance education is recognized as an essential solution under crisis conditions, it is simultaneously perceived as an incomplete and, at times, unsatisfactory alternative to traditional education.

This duality reflects broader trends in the literature, where distance education is conceptualized as both an opportunity for innovation and a source of pedagogical and emotional challenges (Bozkurt & Sharma, 2020; Hodges et al., 2020). The coexistence of positive and negative metaphors underscores the complexity of teachers' experiences and highlights the need for more holistic and human-centered approaches to digital education.

Table 2. Teachers' Metaphorical Representations of Distance Education

No.	Metaphor	Frequency (f)	Percentage (%)
1	Stepmother	2	5.7
2	Dream	1	2.9
3	Lost loved one	1	2.9
4	Seeing a beautiful flower from afar	1	2.9
5	Appealing apple	1	2.9
6	Path to victory	1	2.9
7	Tasteless food	1	2.9
8	Radiation signal	1	2.9
9	Saltless food	1	2.9
10	Screen	1	2.9
11	Movie trailer	1	2.9
12	Rotten rope	1	2.9
13	Car without fuel	1	2.9
14	Shining object at riverbed	1	2.9
15	Magic wand	1	2.9
16	Light in darkness	1	2.9
17	Fish waiting for crumbs	1	2.9
18	Rose in the garden	1	2.9
19	Hope	1	2.9
20	Willow tree	1	2.9
21	Cold war	1	2.9
22	Headless horseman	1	2.9
23	Dark side of the moon	1	2.9
24	Oxygen	1	2.9
25	Subtitle-free movie	1	2.9
26	Platonic love	1	2.9
27	Stormy sea	1	2.9
28	Reading a book	1	2.9
29	Fatherless child	1	2.9

30	Unreachable dreams	1	2.9
31	Distant star	1	2.9
32	Blindfolded person	1	2.9
33	Chocolate fondue	1	2.9
34	Television	1	2.9
35	Distant strange person	1	2.9
Total		35	100

Table 3. Conceptual Categories of Teachers' Metaphors

Category	Representative Metaphors	Frequency (f)	Percentage (%)	Interpretation
Necessity	Dream, hope, oxygen, path to victory, light in darkness, fish waiting for crumbs, distant person, chocolate fondue	9	25.7	Distance education as essential for continuity and survival
Communication	Television, screen, subtitle-free movie, movie trailer, blindfolded person, headless horseman, radiation signal, reading a book	8	22.9	Distance education as mediated and limited interaction
Abstract / Ambiguous Reality	Dark side of the moon, distant star, magic wand, stormy sea, shining river object, rose, apple, willow tree	9	25.7	Distance education as uncertain, complex, and intangible
Despair / Deficiency	Stepmother, fatherless child, tasteless food, saltless food, platonic love, rotten rope, cold war, fuel-less car, unreachable dreams	9	25.7	Distance education as incomplete, ineffective, and emotionally unsatisfying
Total		35	100	

Teachers' Metaphorical Perceptions of Distance Education

To explore teachers' perceptions, a total of 35 metaphors generated by 36 participants were analyzed. The findings reveal that teachers conceptualize distance education through a diverse range of symbolic representations, reflecting both functional and affective dimensions.

The metaphors were categorized into four major conceptual groups: Necessity, Communication, Abstract/Universal Imagery, and Despair.

Distance Education as a Necessity

The Necessity category (f = 9; 25.7%) includes metaphors such as *oxygen, hope, dream, path to victory,* and *light in darkness.* These metaphors suggest that teachers perceive distance education as an essential and unavoidable solution during crisis conditions.

For example, one participant described distance education as "oxygen," emphasizing its indispensable role in sustaining the educational process. Similarly, metaphors such as "hope" and "path to victory" reflect a perception of distance education as a mechanism for overcoming disruption and maintaining continuity.

Importantly, metaphors within this category do not carry negative connotations; rather, they highlight the adaptive and survival-oriented nature of remote education. This finding aligns with prior research indicating that online learning during the pandemic was widely perceived as a necessary response to unprecedented disruption (Bao, 2020; Dhawan, 2020; Murphy, 2020).

Distance Education as a Communication Medium

The Communication category (f = 8; 22.9%) includes metaphors such as *television, screen, subtitle-free film,* and *broadcast signal.* These metaphors emphasize the mediated and often limited nature of interaction in distance education environments.

Teachers frequently described distance education as a one-directional communication process, where information is transmitted but not fully internalized or reciprocated. For instance, the metaphor of a "subtitle-free film" reflects incomplete understanding, while the "screen" metaphor highlights the barrier between teacher and student.

This suggests that distance education is perceived as visually accessible but pedagogically constrained, lacking the immediacy and depth of face-to-face interaction. These findings are consistent with the literature highlighting reduced interaction and feedback in online environments (Rapanta et al., 2020; König et al., 2020; Means & Neisler, 2021).

Distance Education as an Abstract and Uncertain Phenomenon

The Abstract/Universal category (f = 9; 25.7%) includes metaphors such as *the dark side of the moon, a distant star, a stormy sea,* and *a magical object*. These metaphors reflect uncertainty, ambiguity, and the intangible nature of distance education.

Participants in this category attempted to make sense of a new and unfamiliar educational reality, often describing it as something partially visible, difficult to evaluate, or inherently unpredictable. For example, the metaphor "the dark side of the moon" suggests that only certain aspects of distance education are observable, while others remain hidden.

This perception reflects the broader uncertainty associated with rapid digital transformation during the pandemic (Zhao, 2020; Selwyn, 2020). It also indicates that teachers experience distance education not only as a technical system but as a conceptually complex and evolving phenomenon.

Distance Education as a Source of Despair

The Despair category (f = 9; 25.7%) includes metaphors such as *stepmother, tasteless food, broken rope,* and *a fatherless child*. These metaphors convey strong negative emotional responses, emphasizing incompleteness, dissatisfaction, and perceived inefficiency.

The "stepmother" metaphor is particularly significant, as it symbolizes an inferior substitute for an irreplaceable original, namely traditional face-to-face education. Similarly, metaphors such as "tasteless food" and "broken rope" highlight the perceived lack of quality and functionality.

These findings suggest that teachers associate distance education with emotional detachment, reduced engagement, and pedagogical limitations. This aligns with studies indicating that remote learning often leads to frustration, reduced motivation, and perceived ineffectiveness (Aristovnik et al., 2020; Bond, 2021; Coman et al., 2020).

Overall Interpretation of Teachers' Perceptions

Taken together, the findings indicate that teachers' perceptions of distance education are fundamentally ambivalent, combining recognition of its necessity with critical evaluations of its limitations. This dual perception reflects the broader tension between technological adaptation and pedagogical quality in digital learning environments (Bozkurt & Sharma, 2020; Hodges et al., 2020).

Students' Metaphorical Perceptions of Distance Education

To examine students' perspectives, 59 metaphors generated by 74 students were analyzed. Compared to teachers, students demonstrated a broader range of metaphorical expressions, suggesting a more diverse and dynamic conceptualization of distance education.

The metaphors were categorized into six major themes: Technology, Knowledge, Entertainment, Despair, Transportation, and Value (Preciousness).

Distance Education as a Technological System

The largest category, Technology (f = 19; 32.2%), includes metaphors such as *computer, internet, drone, remote control,* and *online communication tools*. These metaphors indicate that students primarily perceive distance education as a technology-driven system.

Students emphasize accessibility, flexibility, and control, often highlighting the ability to learn from any location. This reflects a more instrumental and adaptive perspective, consistent with findings that younger learners tend to be more technologically oriented (Coman et al., 2020; Dhawan, 2020).

Distance Education as Knowledge Acquisition

The Knowledge category (f = 13; 22.1%) includes metaphors such as *book, library, school,* and *light*. These metaphors reflect a traditional understanding of education as a process of acquiring knowledge.

Students in this category perceive distance education as a legitimate educational medium, capable of delivering information and supporting learning outcomes. This aligns with research suggesting that online learning can effectively support knowledge acquisition when properly structured (Bao, 2020).

Distance Education as Entertainment

The Entertainment category (f = 11; 18.9%) includes metaphors such as *game, holiday,* and *comfort life*. These metaphors indicate that some students perceive distance education as less formal and more flexible compared to traditional schooling.

This perception reflects the blurring of boundaries between learning and leisure, which has been widely documented in online education contexts (Selwyn, 2020). While this may enhance engagement, it may also reduce academic seriousness.

Distance Education as a Source of Despair

The Despair category (f = 8; 13.2%) includes metaphors such as *withered tree, blind person,* and *being far from family*. These metaphors reflect feelings of isolation, disconnection, and reduced effectiveness.

Students in this category emphasize the lack of social interaction and emotional engagement, consistent with research highlighting psychological challenges associated with remote learning (Aristovnik et al., 2020).

Distance Education as Movement and Connectivity

The Transportation category (f = 4; 6.8%) includes metaphors such as *airplane, ship,* and *bus*. These metaphors conceptualize distance education as a system that enables movement across space, connecting individuals from different locations.

Distance Education as a Valuable Resource

The Value category (f = 4; 6.8%) includes metaphors such as *precious stone* and *rainbow*. These metaphors reflect positive emotional associations, suggesting that some students view distance education as unique and beneficial.

Overall Interpretation of Students' Perceptions

Overall, students' perceptions are more diverse and adaptive than those of teachers, combining technological optimism with emotional ambivalence. While many students recognize the flexibility and accessibility of distance education, they also acknowledge its limitations in terms of interaction and engagement.

Table 4. Comparative Overview of Teachers' and Students' Metaphorical Perceptions of Distance Education

Dimension	Category	Teachers (f / %)	Students (f / %)	Interpretation
Functional Dimension	Necessity / Knowledge	9 (25.7%)	13 (22.1%)	Distance education is perceived as essential for maintaining learning continuity and knowledge acquisition
Technological Dimension	Communication / Technology	8 (22.9%)	19 (32.2%)	Emphasizes digital mediation; students show stronger technological orientation than teachers
Cognitive-Abstract Dimension	Abstract / Universal Imagery	9 (25.7%)	—	Teachers conceptualize distance education as complex, uncertain, and partially understood
Affective Dimension (Negative)	Despair / Disconnection	9 (25.7%)	8 (13.2%)	Both groups associate distance education with emotional distance, but this is stronger among teachers
Affective Dimension (Positive)	—	—	11 (18.9%)	Students link distance education with comfort, flexibility, and entertainment
Mobility / Flexibility	—	—	4 (6.8%)	Students perceive distance education as enabling spatial flexibility and movement
Symbolic Value	—	—	4 (6.8%)	Some students assign positive symbolic value (e.g., precious, unique, beneficial)
Total		35 (100%)	59 (100%)	

Students' Metaphorical Perceptions of Distance Education

The analysis of students' responses reveals a rich and multidimensional set of metaphorical representations, reflecting both cognitive interpretations and emotional experiences of distance education. A total of 59 metaphors generated by 74 students were systematically categorized into six conceptual themes: Technology, Knowledge, Entertainment, Despair, Transportation, and Value (Preciousness).

Overall, the findings indicate that students' perceptions are more diverse and comparatively more positive than those of teachers, suggesting a higher level of adaptability to digital learning environments.

The Technology category (f = 19; 32.2%) represents the largest proportion of student responses. Metaphors such as *robot, drone, remote control, internet shopping,* and *sunlight* highlight students' tendency to conceptualize distance education as a technology-driven and system-oriented process.

For instance, one student described distance education as a "robot," emphasizing its functional efficiency but lack of emotional depth. Another participant compared it to a "drone," suggesting the ability to access distant knowledge and perspectives. Similarly, metaphors such as "remote control" and "online shopping" reflect a perception of user control, accessibility, and flexibility, where learning can be initiated and managed independently.

These findings align with prior research indicating that students tend to perceive online learning environments primarily through a technological lens (Coman et al., 2020; Dhawan, 2020). Moreover, the metaphor of "radiation" suggests immediacy and simultaneous connectivity, reinforcing the idea that digital education enables rapid and widespread information transmission.

Distance Education as a Source of Knowledge

The Knowledge category (f = 13; 22.1%) includes metaphors such as *book, library, school,* and *light*, reflecting a more traditional and academically grounded understanding of education.

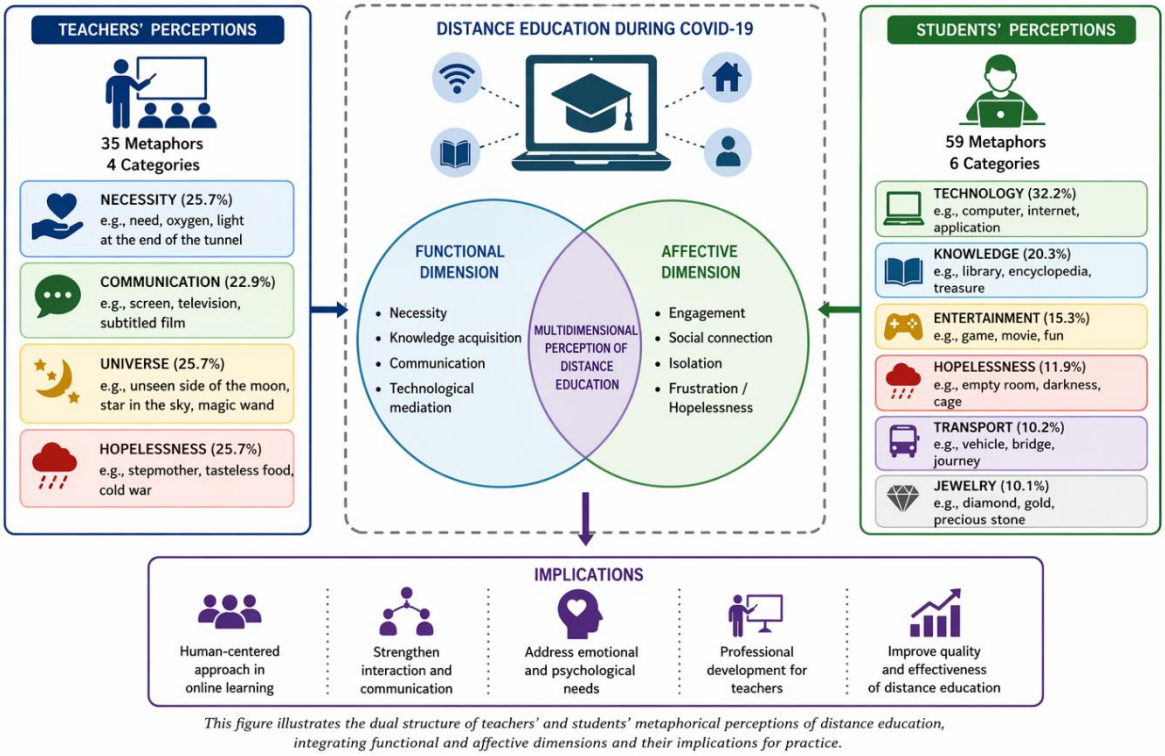

Figure 1. Conceptual Framework of Teachers' and Students' Metaphorical Perceptions of Distance Education During the COVID-19 Pandemic (Source: Authors)

Students in this category perceive distance education as a legitimate medium for acquiring knowledge, comparable to conventional educational institutions. For example, the metaphor of a "library" emphasizes access to information, while the "book" metaphor highlights structured learning and knowledge transfer.

Additionally, metaphors such as "light" symbolize enlightenment and intellectual growth, suggesting that students associate distance education with cognitive development. This interpretation is consistent with findings that online learning environments can effectively support knowledge acquisition when appropriately designed (Bao, 2020; Means & Neisler, 2021).

Distance Education as Entertainment and Comfort

The Entertainment category (f = 11; 18.9%) reflects students' perception of distance education as a flexible, informal, and, in some cases, enjoyable experience. Metaphors such as *game, holiday, comfort life,* and *hide-and-seek* illustrate how students associate remote learning with freedom and reduced academic pressure.

For example, the "hide-and-seek" metaphor highlights the ability to control visibility (e.g., turning the camera on and off), while the "holiday" metaphor suggests a relaxed learning environment. Similarly, the idea of "free goods" reflects a perception of minimal constraints and obligations.

These findings suggest that distance education blurs the boundary between formal education and leisure, a phenomenon widely discussed in the literature on digital learning (Selwyn, 2020). While such perceptions may increase engagement, they may also reduce discipline and academic rigor.

The Despair category (f = 8; 13.2%) includes metaphors such as *withered tree, blind person,* and *floating balloon*. These metaphors convey feelings of isolation, uncertainty, and reduced effectiveness.

For instance, the "withered tree" metaphor reflects a decline in motivation and learning quality, while the "blind person" metaphor highlights the lack of transparency and control in assessment processes. Similarly, the "floating balloon" metaphor emphasizes emotional and social distance from peers and teachers.

These findings are consistent with studies indicating that remote learning environments can lead to reduced engagement, social isolation, and psychological challenges (Aristovnik et al., 2020; Bond, 2021). Compared to teachers, however, students express these negative perceptions less frequently, suggesting a relatively higher level of adaptation.

The Transportation category (f = 4; 6.8%) includes metaphors such as *airplane, ship,* and *bus*, which conceptualize distance education as a system that enables movement and connectivity across space.

Students in this category emphasize the ability to access education regardless of location, highlighting the spatial flexibility of online learning. The metaphor of an "airplane," for example, reflects the idea that learning can occur anytime and anywhere, independent of physical constraints.

Table 5. Integrated Synthesis of Teachers' and Students' Perceptions of Distance Education

Dimension	Category	Teachers' Perception (f / %)	Students' Perception (f / %)	Key Metaphorical Patterns	Analytical Interpretation	Implications for Practice
Functional Dimension	Necessity / Knowledge	9 (25.7%)	13 (22.1%)	Oxygen, hope, light, book, library	Distance education is perceived as an essential mechanism for maintaining learning continuity and knowledge acquisition during crisis conditions	Strengthen structured content delivery and ensure continuity mechanisms in digital education systems
Technological Dimension	Communication / Technology	8 (22.9%)	19 (32.2%)	Screen, television, drone, remote control	Highlights the central role of digital technologies in mediating learning; students demonstrate higher technological adaptability than teachers	Invest in digital infrastructure and enhance digital literacy among educators
Cognitive-Abstract Dimension	Uncertainty / Complexity	9 (25.7%)	–	Dark side of the moon, distant star	Reflects ambiguity, partial understanding, and evolving nature of distance education	Develop clearer pedagogical frameworks and structured digital learning models
Affective Dimension (Negative)	Despair / Disconnection	9 (25.7%)	8 (13.2%)	Stepmother, tasteless food, withered tree	Indicates emotional detachment, reduced engagement, and dissatisfaction with online learning environments	Enhance interaction, feedback, and emotional support mechanisms in online education
Affective Dimension (Positive)	Entertainment / Engagement	–	11 (18.9%)	Game, holiday, comfort life	Students perceive distance education as flexible and less	Balance flexibility with academic rigor

					restrictive, sometimes associating it with enjoyment	and maintain learning discipline
Mobility Dimension	Accessibility / Flexibility	–	4 (6.8%)	Airplane, ship, bus	Distance education enables spatial flexibility and access independent of location	Promote inclusive and accessible education policies
Symbolic Value Dimension	Value / Meaning	–	4 (6.8%)	Rainbow, precious stone	Reflects positive symbolic interpretations and perceived uniqueness of the experience	Leverage positive perceptions to improve motivation and engagement
Overall Model	Dual-Dimensional Framework	✓	✓	Functional vs Affective balance	Distance education operates as a hybrid system combining technological efficiency with emotional and pedagogical challenges	Adopt a human-centered, interactive, and balanced digital education model
Total		35 (100%)	59 (100%)			

This interpretation aligns with broader research emphasizing the accessibility and scalability of digital education systems (Rapanta et al., 2020).

Distance Education as a Valuable and Unique Experience

The Value (Preciousness) category (f = 4; 6.8%) includes metaphors such as *rainbow* and *precious stone*, reflecting positive emotional and symbolic meanings.

Students in this category perceive distance education as a unique and valuable opportunity, particularly in the context of the pandemic. The "rainbow" metaphor, for instance, symbolizes hope and positivity emerging after a difficult period, while the "precious stone" metaphor emphasizes uniqueness and rarity.

These findings suggest that, for some students, distance education is not merely a temporary solution but a meaningful and enriching experience.

Overall Interpretation of Students' Perceptions

In contrast to teachers, students' metaphorical perceptions are more positively oriented and technologically grounded, with a stronger emphasis on flexibility, accessibility, and innovation. However, the presence of negative metaphors related to isolation and disconnection indicates that students are also aware of the limitations of remote learning.

Overall, students conceptualize distance education as a hybrid phenomenon, combining elements of technology, knowledge, and entertainment, while also acknowledging its emotional and social constraints.

Empirical Study Analysis

The empirical component of this study provides a detailed examination of metaphor-based perceptions of distance education through a structured qualitative analysis supported by quantitative indicators.

Empirical Structure and Data Characteristics

The study is based on data collected from 110 participants, including 36 teachers and 74 students. Through a systematic filtering process, valid metaphorical responses were identified and categorized into conceptual themes. A total of 35 teacher-generated metaphors and 59 student-generated metaphors were analyzed.

The high inter-rater reliability coefficient (0.89) indicates a strong level of consistency in the coding and categorization process, confirming the robustness of the analytical framework (Miles & Huberman, 1994).

Comparative Empirical Insights

The empirical findings demonstrate clear differences between teachers' and students' perceptions:

- Teachers tend to construct distance education within a functional–critical framework, emphasizing necessity alongside structural and emotional limitations.
- Students, in contrast, adopt a more technological–adaptive framework, highlighting flexibility, accessibility, and usability.

This divergence suggests that professional experience and pedagogical responsibility significantly influence how distance education is perceived and evaluated.

Distribution of Conceptual Categories

From an empirical standpoint, the distribution of metaphor categories reveals important trends:

- Teachers' responses are balanced across categories, indicating a relatively uniform perception of distance education across functional and emotional dimensions.
- Students' responses are concentrated in the technology category (32.2%), demonstrating a strong digital orientation.

At the same time, both groups exhibit notable representation in negative emotional categories, confirming that distance education is not perceived as a fully satisfactory alternative to traditional learning environments.

Empirical Model Interpretation

Based on the empirical findings, distance education can be conceptualized as a hybrid system operating across three core dimensions:

1. Technological Dimension – reflecting digital infrastructure and accessibility
2. Pedagogical Dimension – representing knowledge transmission and learning effectiveness
3. Affective Dimension – capturing emotional engagement, motivation, and social interaction

The interaction of these dimensions forms the basis of a multi-layered empirical model, where the effectiveness of distance education depends on the balance between these components.

Conceptual Framework Description

The conceptual framework developed in this study illustrates the multidimensional structure of distance education perceptions, integrating both teachers' and students' metaphorical representations. The model is grounded in a dual-dimensional approach, consisting of:

1. Functional Dimension

This dimension reflects the instrumental and operational aspects of distance education, including:

- Necessity (continuity during crisis)
- Knowledge Acquisition (learning outcomes)
- Communication (instructional delivery)
- Technology (digital platforms and tools)

These components emphasize that distance education is perceived as a system enabling access, flexibility, and continuity of learning.

Affective Dimension

This dimension captures the emotional and experiential aspects of distance education, including:

- Engagement / Entertainment (motivation, flexibility)
- Disconnection / Despair (isolation, dissatisfaction)
- Symbolic Value (perceived meaning and uniqueness)

This dimension highlights that distance education is not purely technical, but also a psychosocial experience shaped by emotions and perceptions.

Mediating Factors

Between these two dimensions, the model identifies:

- Interaction quality
- Digital literacy

- Pedagogical design

These factors determine how effectively functional and affective dimensions are balanced.

Outcome: Hybrid Learning Experience

The interaction between these dimensions results in a hybrid perception model, where:

- Positive outcomes → flexibility, accessibility, innovation
- Negative outcomes → disengagement, incompleteness, reduced interaction

Implications of Empirical Findings

The empirical analysis highlights several critical implications:

- The overemphasis on technological aspects may lead to the neglect of pedagogical and emotional factors.
- The presence of negative metaphors across both groups indicates the need for improving interaction and engagement mechanisms.

The diversity of metaphorical representations suggests that distance education is experienced as a subjective and context-dependent phenomenon.

Conclusion

This study set out to examine the metaphorical perceptions of teachers and students regarding distance education during the COVID-19 pandemic within the context of Azerbaijan. By employing a qualitative phenomenological design and metaphor analysis, the research provides a nuanced understanding of how distance education is cognitively and emotionally constructed by its primary stakeholders.

The findings reveal that distance education is perceived as a multidimensional and paradoxical phenomenon, simultaneously encompassing elements of necessity, technological mediation, knowledge acquisition, and emotional disconnection. Teachers predominantly conceptualize distance education as a functional necessity that ensures educational continuity under crisis conditions, while also expressing concerns related to its limitations in terms of interaction, engagement, and pedagogical effectiveness. In contrast, students demonstrate a more adaptive and technology-oriented perspective, frequently associating distance education with flexibility, accessibility, and even entertainment, while still acknowledging its emotional and social constraints.

A key contribution of this study lies in identifying the dual-structured nature of distance education perceptions, which can be conceptualized along two intersecting dimensions:

- Functional Dimension (necessity, knowledge, technology
- Affective Dimension (engagement, isolation, dissatisfaction)

This duality highlights the need to move beyond purely technological interpretations of online learning and to adopt a more holistic and human-centered approach that integrates pedagogical, emotional, and social considerations. In particular, the coexistence of positive (e.g., flexibility, accessibility) and negative (e.g., isolation, incompleteness) perceptions suggests that the effectiveness of distance education depends not only on infrastructure but also on the quality of interaction and learner engagement.

From a theoretical perspective, this study extends the existing literature on metaphor analysis in education by proposing a comparative and integrative framework that captures both teacher and student perspectives within a single analytical model. Empirically, it contributes to the relatively underexplored context of Azerbaijan, thereby enriching the global discourse on digital education with insights from a developing educational environment.

From a practical standpoint, the findings suggest that policymakers and educators should prioritize the development of interactive, student-centered, and emotionally supportive digital learning environments. Enhancing communication channels, incorporating active learning strategies, and addressing the psychological dimensions of online education are critical for improving learning outcomes.

However, the study is not without limitations. The sample is restricted to two private schools in Baku, which may limit the generalizability of findings. Future research could expand the scope to include public schools, rural contexts, and cross-cultural comparisons. Additionally, integrating quantitative methods could provide further validation of the identified conceptual patterns.

In conclusion, this study demonstrates that distance education, while indispensable in times of crisis, must evolve into a more balanced, inclusive, and pedagogically robust system that effectively addresses both the functional and affective needs of learners and educators in the post-pandemic era.

DECLARATIONS AND STATEMENTS

Ethical Considerations

This study was conducted in accordance with established ethical standards for research involving human participants. Participation in the study was entirely voluntary, and all participants were informed about the purpose and procedures of the research prior to data collection. Informed consent was obtained from all participants, and for student participants, consent procedures were conducted in line with institutional guidelines.

All data were collected anonymously through an online survey platform, and no personally identifiable information was recorded. The confidentiality and privacy of participants were strictly maintained throughout the research process. The collected data were used exclusively for academic purposes and were not shared with any third parties.

Informed Consent

Informed consent was obtained from all individual participants included in the study. Participants were informed about the nature, purpose, and scope of the research, and their right to withdraw at any stage without any consequences was clearly communicated.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contributions

- Dr. Kenul Abasli: Conceptualization, methodology design, data analysis, supervision, writing – original draft, and final review.
- Suqra Jafarova: Data collection, data curation, initial analysis, writing – original draft, and editing.

All authors have read and approved the final version of the manuscript.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request. Due to ethical and privacy considerations, the data are not publicly available.

AI Use Statement

The authors declare that artificial intelligence (AI) tools were used solely for language editing and academic writing support. All intellectual content, data analysis, and interpretations presented in this study are the original work of the authors.

Acknowledgments

The authors would like to thank all teachers and students who voluntarily participated in this study and contributed valuable insights to the research.

Publication Ethics Statement

This manuscript is an original work and has not been published previously, nor is it under consideration for publication elsewhere. The authors confirm that the study complies with international standards of publication ethics, including those recommended by the Committee on Publication Ethics (COPE).

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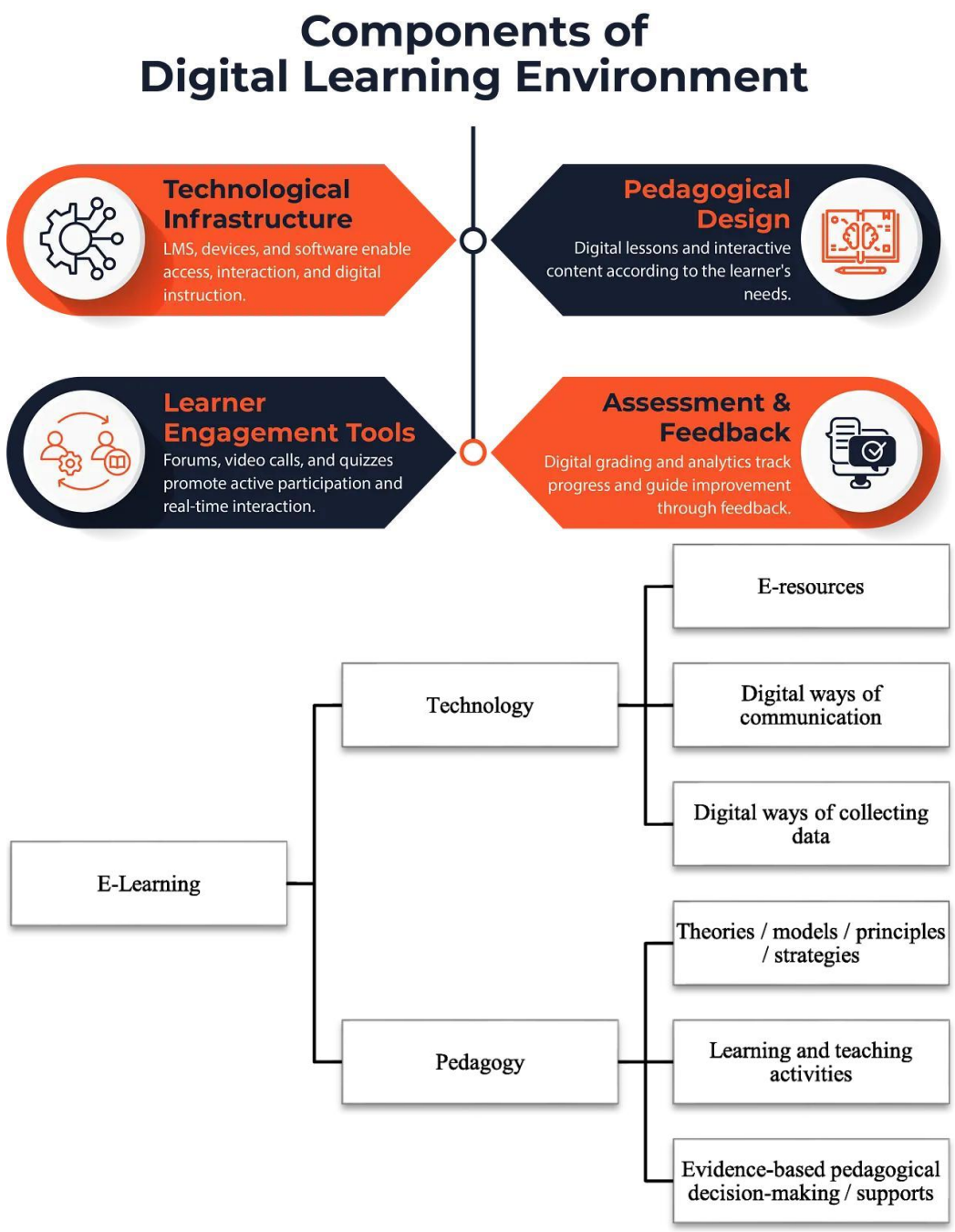
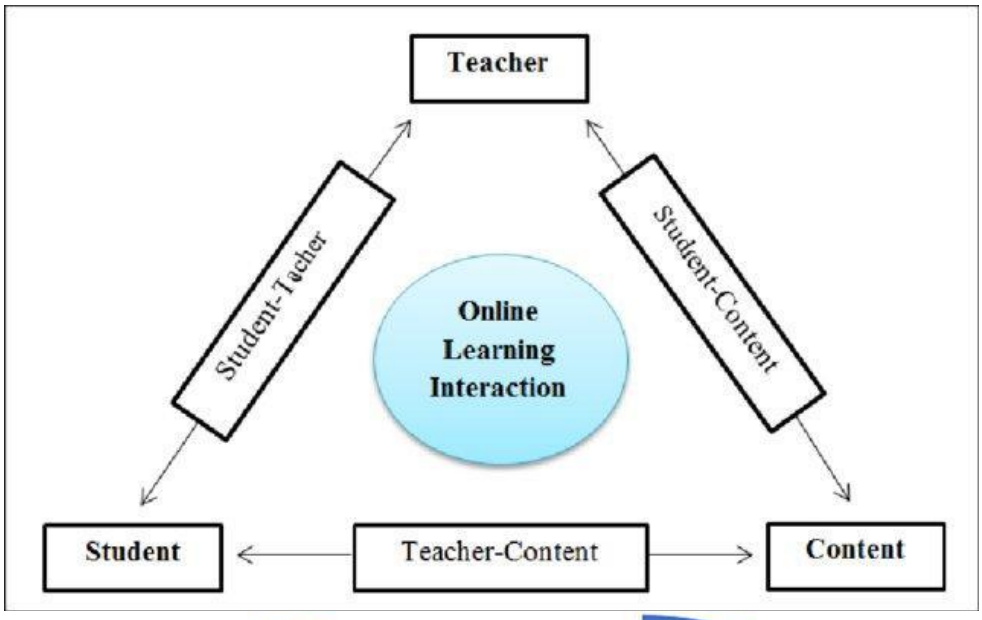
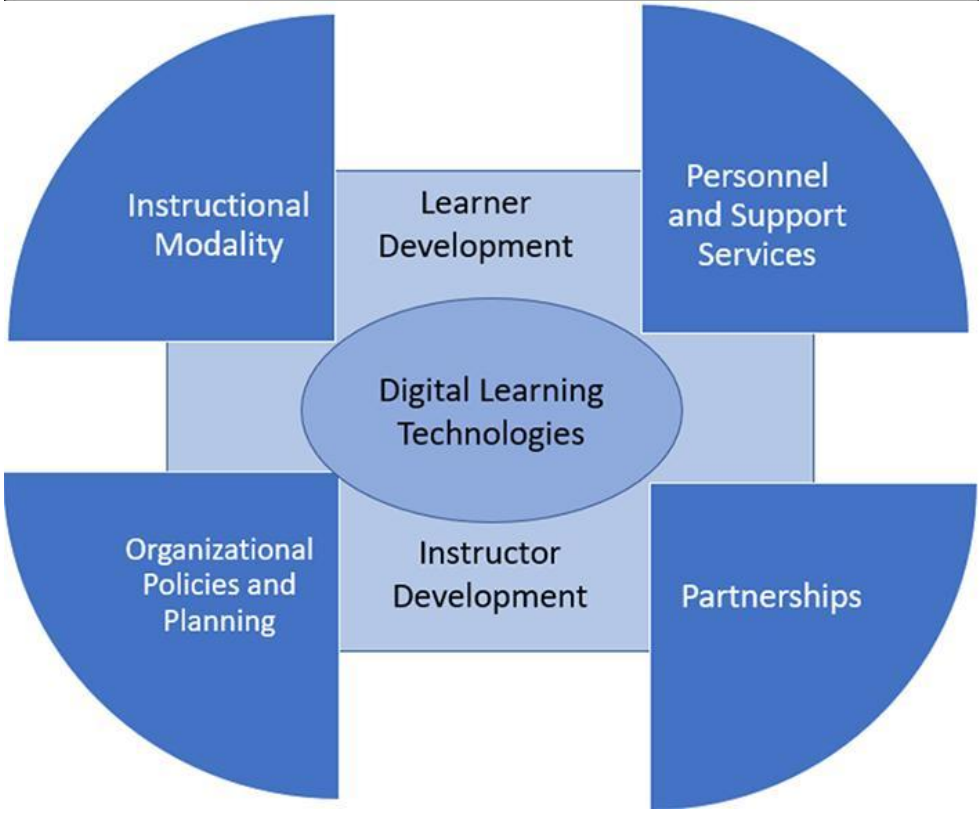
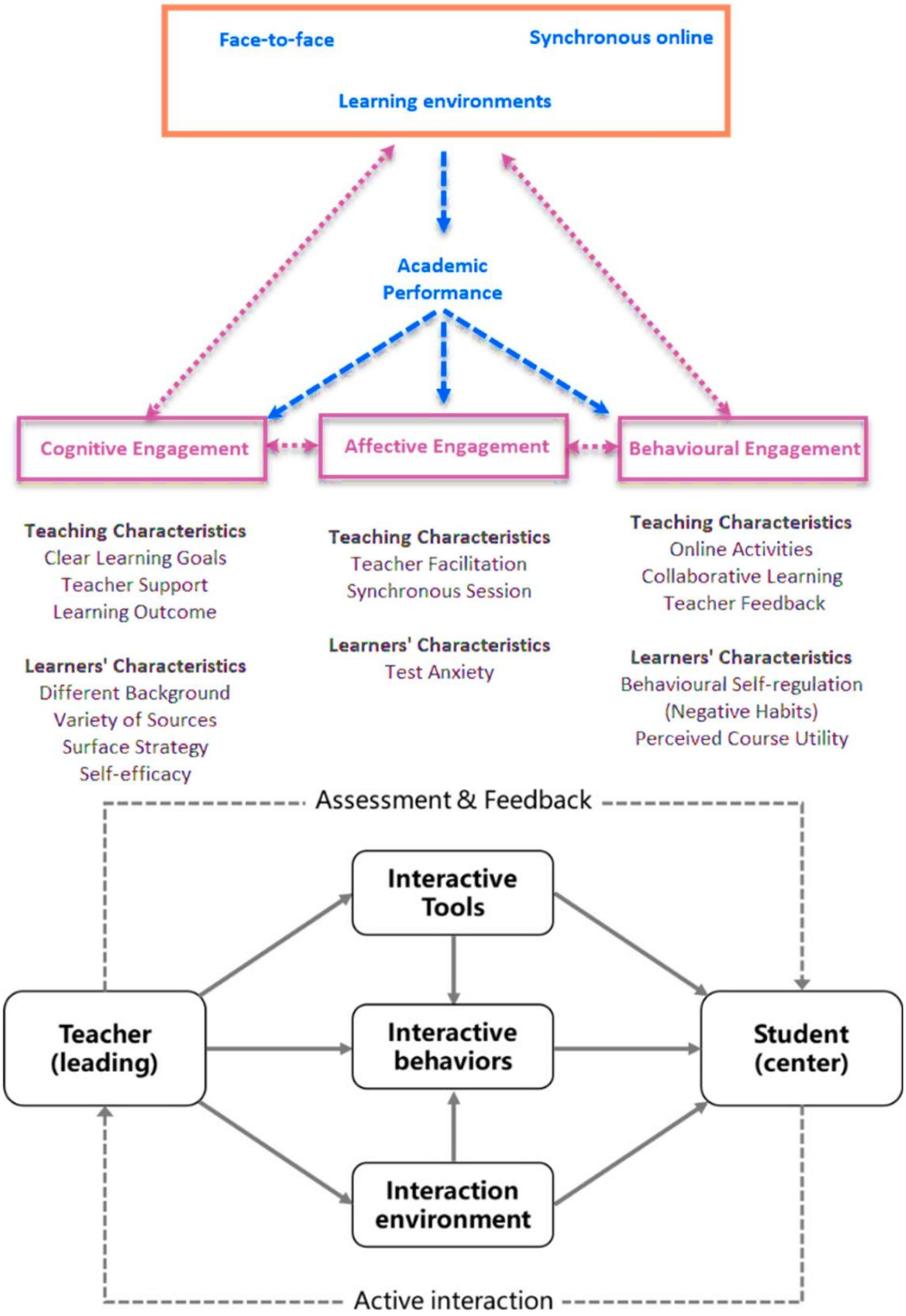
Appendix A: Additional visual representations of conceptual categories (Figures A1–A7)

Figures 2 - 8. Conceptual Framework of Distance Education Perceptions




Teacher
Student-Teacher
Online Learning Interaction
Student-Content
Student
Teacher-Content
Content


Instructional Modality
Learner Development
Personnel and Support Services
Digital Learning Technologies
Organizational Policies and Planning
Instructor Development
Partnerships


Face-to-face
Synchronous online
Learning environments
Academic Performance
Cognitive Engagement
Affective Engagement
Behavioural Engagement
Teaching Characteristics
Clear Learning Goals
Teacher Support
Learning Outcome
Learners' Characteristics
Different Background
Variety of Sources
Surface Strategy
Self-efficacy
Teaching Characteristics
Teacher Facilitation
Synchronous Session
Learners' Characteristics
Test Anxiety
Teaching Characteristics
Online Activities
Collaborative Learning
Teacher Feedback
Learners' Characteristics
Behavioural Self-regulation
(Negative Habits)
Perceived Course Utility
Assessment & Feedback
Interactive Tools
Teacher (leading)
Interactive behaviors
Student (center)
Interaction environment
Active interaction