

**EMERGENCY REMOTE TEACHING, STRUCTURAL INEQUALITY AND
TRANSFORMATION POTENTIALS AN ANALYSIS OF GEOGRAPHY
INTERNSHIP REPORTS (2020–2022)**

**ENSINO REMOTO EMERGENCIAL, DESIGUALDADE ESTRUTURAL E
POTENCIAIS DE TRANSFORMAÇÃO UMA ANÁLISE DE RELATÓRIOS DE
ESTÁGIO EM GEOGRAFIA (2020–2022)**

**ENSEÑANZA REMOTA DE EMERGENCIA, DESIGUALDAD ESTRUCTURAL Y
POTENCIALES DE TRANSFORMACIÓN UN ANÁLISIS DE INFORMES DE
PRÁCTICAS EN GEOGRAFÍA (2020–2022)**



<https://doi.org/10.56238/sevenced2026.008-052>

Thiago Socrates F. M. Sousa, Rodrigo Elias Cardoso, Vera Lucia Bonfim Tiburzio

ABSTRACT

This study examines the impacts of the COVID-19 pandemic on Brazilian basic education through the lens of supervised internship reports in Geography, produced between 2020 and 2022. Using a mixed-methods approach, it combines a quantitative content analysis of a corpus of 33 reports with a qualitative discursive analysis, aiming to map the deficiencies, efficiencies, and transformative potentials of Emergency Remote Teaching (ERT). Quantitative findings reveal a systemic crisis marked by the precariousness of digital access infrastructure (60.6% of the reports indicate unstable connectivity), which directly correlates with low student engagement (84.8% report low attendance) and a widespread perception of learning gaps (78.8%). Nevertheless, the data also highlight remarkable teacher resilience, with 54.5% of the reports describing creative pedagogical adaptations. The qualitative analysis deepens these insights, showing that infrastructure functioned as the determining variable for educational access and that pedagogical innovation often came at the cost of stress and professional burnout (33.3% of the reports). The study concludes that the pandemic did not create but rather exacerbated pre-existing structural inequalities, serving as a "stress test" that exposed the fractures of the educational system. Finally, the article moves beyond diagnosis, proposing an integrated framework of policy and pedagogical interventions, including the creation of territorial curation platforms, reverse mentoring programs, and teacher work observatories, with the goal of transforming the lessons of the crisis into a more resilient, equitable, and technologically integrated educational ecosystem.

Keywords: Distance Education. Pandemic. Transformation. Emergency Remote Teaching.

RESUMO

Este estudo analisa os impactos da pandemia de COVID-19 na educação básica brasileira através da lente de relatórios de um estágio supervisionado em Geografia produzidos entre 2020 e 2022. Utilizando uma abordagem de métodos mistos, o trabalho articula uma análise de conteúdo quantitativa de um corpus de 33 relatórios com uma análise discursiva qualitativa, visando mapear as deficiências, eficiências e potenciais transformadores do

Ensino Remoto Emergencial (ERE). Os resultados quantitativos revelam uma crise sistêmica, marcada pela precariedade da infraestrutura de acesso digital (60,6% dos relatos apontam conexão instável), que se traduz diretamente em baixíssimo engajamento discente (84,8% reportam baixa frequência) e em uma percepção generalizada de defasagem de aprendizagem (78,8%). Contudo, os dados também expõem uma notável resiliência docente, com 54,5% dos relatórios descrevendo adaptações pedagógicas criativas. A análise qualitativa aprofunda esses achados, demonstrando que a infraestrutura operou como a variável determinante do acesso educacional e que a inovação docente ocorreu frequentemente à custa de estresse e esgotamento profissional (33,3% dos relatos). O estudo conclui que a pandemia não criou, mas exacerbou desigualdades estruturais pré-existentes, funcionando como um "teste de estresse" que expôs as fraturas do sistema educacional. Finalmente, o artigo avança para além do diagnóstico, propondo um quadro integrado de intervenções políticas e pedagógicas, incluindo a criação de plataformas de curadoria territorial, programas de mentoria reversa e observatórios do trabalho docente, com o objetivo de converter as lições da crise em um ecossistema educacional mais resiliente, equitativo e tecnologicamente integrado.

Palavras-chave: EaD. Ensino a Distância. Pandemia. Transformação.

RESUMEN

Este estudio analiza los impactos de la pandemia de COVID-19 en la educación básica brasileña a través de la lente de los informes de prácticas supervisadas en Geografía, producidos entre 2020 y 2022. Utilizando un enfoque de métodos mixtos, el trabajo articula un análisis de contenido cuantitativo de un corpus de 33 informes con un análisis discursivo cualitativo, con el objetivo de mapear las deficiencias, eficiencias y potenciales transformadores de la Enseñanza Remota de Emergencia (ERE). Los resultados cuantitativos revelan una crisis sistémica, marcada por la precariedad de la infraestructura de acceso digital (el 60,6% de los informes señalan conexión inestable), que se traduce directamente en un bajísimo compromiso estudiantil (el 84,8% reporta baja asistencia) y en una percepción generalizada de rezago en el aprendizaje (78,8%). Sin embargo, los datos también evidencian una notable resiliencia docente, con el 54,5% de los informes describiendo adaptaciones pedagógicas creativas. El análisis cualitativo profundiza estos hallazgos, demostrando que la infraestructura operó como la variable determinante del acceso educativo y que la innovación docente ocurrió frecuentemente a costa del estrés y del agotamiento profesional (33,3% de los informes). El estudio concluye que la pandemia no creó, sino que exacerbó las desigualdades estructurales preexistentes, funcionando como una "prueba de estrés" que expuso las fracturas del sistema educativo. Finalmente, el artículo avanza más allá del diagnóstico, proponiendo un marco integrado de intervenciones políticas y pedagógicas, que incluye la creación de plataformas de curaduría territorial, programas de mentoría inversa y observatorios del trabajo docente, con el objetivo de convertir las lecciones de la crisis en un ecosistema educativo más resiliente, equitativo y tecnológicamente integrado.

Palabras clave: Educación a Distancia. Pandemia. Transformación. ERE.

1 INTRODUCTION

The COVID-19 pandemic has caused an unprecedented disruption in education systems on a global scale, resulting in the closure of schools and the abrupt migration of pedagogical activities to the digital environment. In the Brazilian context, this transition did not configure a planned adoption of Distance Education (DE), but rather the massive and reactive implementation of what the specialized literature calls Emergency Remote Education (ERE)¹. The distinction between these two concepts is crucial for the critical analysis of the period.

1.1 FROM THE CLASSROOM TO THE SCREEN: THE RUPTURE OF EMERGENCY REMOTE TEACHING (ERE)

In the scenario of remote and hybrid classes, the Geography degree course at the Federal University of Triângulo Mineiro, especially the supervised internships, recognized as central moments of practical training and direct understanding of the teaching-learning process, had to adapt quickly. These stages became, simultaneously, spaces for experimentation and rupture, evidencing both improvisations and innovative pedagogical initiatives.

The internship reports constitute, in this context, immediate and direct records of the educational conjunctures of the period, functioning as privileged sources to understand how the teacher in training experienced and reacted to the shock of virtualization. This work is based on the assumption that the documentation produced by these interns is not limited to a technical record; it is also a social and pedagogical witness. Such documents allow diagnosing structural conditions (infrastructure and educational policies), teaching practices (methodologies and mediation) and effects on learning and student engagement.

While distance education is a teaching modality with a pedagogical project, methodology, instructional design and technological infrastructure conceived from the beginning for non-face-to-face learning, ERE is characterized as a temporary and improvised solution, a transposition of the logic of the face-to-face classroom to digital media, often without proper planning, teacher training or institutional support. The ERE, therefore, was not a pedagogical choice, but a contingency response to a health crisis. Its implementation was marked by urgency, by the absence of a prior diagnosis of the conditions of access of students and professors, and by the lack of investment in training and development actions.⁵ This improvised nature led some analysts to describe the ERE as a "workaround", a precarious solution to a complex problem, which rejected the accumulated knowledge about distance education and operated based on the individual adaptation of its actors. This terminological

distinction is not merely academic; it constitutes an analytical and political act. Framing the pandemic experience as ERE, and not as distance education, is to recognize that the failures observed do not stem from a specific educational model, but from a systemic failure to respond to an emergency, exposing the structural fragility of Brazilian education. The confusion between the terms often serves to legitimize a low-cost and highly precarious solution, obscuring the State's responsibility to provide the material and pedagogical conditions for quality education, whether face-to-face or distance.

1.2 THE GEOGRAPHY OF DIGITAL INEQUALITY IN BRAZIL: THE PRE-PANDEMIC SCENARIO

The crisis of Emergency Remote Education cannot be understood without an analysis of the terrain on which it has been installed. The pandemic did not create educational inequality in Brazil; It acted as a catalyst and a relentless diagnostic tool, exposing and deepening social and digital fractures that were already deeply ingrained in the country's structure. Brazil entered the health crisis with a scenario of deep digital apartheid. Data from national surveys, such as ICT Education in Cetic.br, already indicated, long before 2020, that access to devices and quality connectivity was dramatically unequal, reproducing and amplifying socioeconomic, racial, and regional inequities.

Studies and reports by organizations such as "Todos Pela Educação" already denounced that inequality in access to public education was a structural problem.⁹ Brazil was already classified as one of the most unequal economies in the world in terms of education, with a performance gap between students with higher and lower purchasing power. With regard to technological infrastructure, public schools were notoriously precarious, with insufficient or unmaintained computers and a lack of continuing education for teachers.¹⁰ Data from the School Census, compiled by INEP, corroborate this disparity, showing glaring differences in the technological support and teacher training offered by state and municipal networks compared to the private sector.¹⁴ In this context, the forced transfer to the ERE was not a leveler, but a multiplier of inequalities.

By making access to the internet and the possession of an electronic device prerequisites for the right to education, the education system effectively excluded millions of students who were already in a situation of vulnerability. The pandemic, therefore, functioned as a "forced experiment" on a national scale, whose tragic outcome was predictable: the collapse of access and learning for the poorest was the direct consequence of old and deliberately ignored structural inequalities.

1.3 INTERNSHIP REPORTS AS CRISIS SEISMOGRAPHS: JUSTIFICATION, METHODOLOGY AND OBJECTIVES

If macroeconomic data and national surveys reveal the scale of the educational catastrophe, it is the narratives of daily school life that expose its human texture. In this study, the supervised internship reports produced by Geography undergraduates are conceived as "seismographs" of the crisis: documents capable of recording the tremors of the school floor, the experiences lived, the survival strategies and the fractures exposed by the emergency.

The use of these documents as a source of research is supported by the pedagogical literature, which recognizes them as privileged spaces for reflection, where a fundamental dialogue is established between the theory learned at the university and the practice experienced in the school environment.¹⁶ The reports are not mere bureaucratic records; They are testimonies that reveal the way of being, living and understanding a social fact, allowing the analysis of the conceptions of future teachers about the educational context in which they are inserted.

The initial universe of the research comprised 39 unique reports. To ensure the homogeneity of the corpus and the analytical focus on the ERE experience, a rigorous filtering process was applied. Four documents were excluded from the main analysis because they deviated significantly from the contextual scope: two because they were theoretical essays without a report of internship practice and two because they were produced in 2023 and 2024, representing a post-pandemic context. The calculation basis for the quantitative analysis was thus established in 36 reports that directly described the remote and hybrid teaching experiences between 2020 and 2022.

After a final verification of textual integrity and formal consistency, the set actually used for in-depth statistical analysis and qualitative triangulation was consolidated into 33 reports. The validity of the use of such documents as a source of research is supported by their reflective nature, which allows the investigation of the educational problem in an indirect way, but rich in contextual details.

It is crucial to note that the need to exclude documents due to formal or analytical insufficiency is not just a technical procedure, but a substantive finding in itself. The literature on teacher education emphasizes that the supervised internship should be a moment of development of reflective practice, establishing a fruitful dialogue between the knowledge of experience and formal knowledge. Thus, the finding that a portion of the corpus did not reach a minimum standard of analytical coherence signals a fragility in the training process itself. This "documentary insufficiency" is therefore interpreted as a symptom of a gap in the undergraduate curricula, which sometimes fail to equip future teachers with the necessary

skills for scientific writing and critical reflection on their own practice. The methodology, by exposing this fragility, already produces a diagnosis of teacher training. These documents offer a unique perspective, that of the "participant observer", who, at the same time as experiencing the crisis, is entrusted with the task of critically analyzing it. They capture, firsthand, the difficulties of infrastructure, the reactions of students, the anxieties and innovations of supervising teachers, and the impacts on the teaching-learning process. In view of the above, the objectives of this work are:

1. Systematically map, through a mixed-methods approach, the deficiencies and efficiencies of Emergency Remote Teaching, as reported by Geography teachers in initial training in the period 2020 to 2022.
2. To analyze the causal relationships between material infrastructure, pedagogical practices, student engagement and learning outcomes, triangulating the data from the corpus with the Brazilian educational scenario.
3. Identify and analyze emerging innovative practices and, based on the evidence collected, propose a set of public policies and pedagogical interventions for the construction of a more equitable, resilient, and technologically integrated post-pandemic education system.

To achieve the proposed objectives, a mixed-methods research was designed, which combines quantitative content analysis with qualitative discursive analysis in an integrated way. This approach allows not only to identify the frequency and distribution of phenomena, but also to understand their depth, context, and meaning. The primary source of the study consisted of supervised internship reports produced by students of the Geography Degree course of a higher education institution.

2 DEVELOPMENT

2.1 RESEARCH DESIGN AND CORPUS CONSTRUCTION

To achieve the proposed objectives, a mixed-methods research was designed, which combines quantitative content analysis with qualitative discursive analysis in an integrated way. This approach allows not only to identify the frequency and distribution of phenomena, but also to understand their depth, context, and meaning. The primary source of the study consists of supervised internship reports produced by students of the Geography Degree course of a higher education institution.

The initial universe of the research comprised 39 unique reports. To ensure the homogeneity of the corpus and the analytical focus on the ERE experience, a rigorous filtering

process was applied. Four documents were excluded from the main analysis because they deviated significantly from the contextual scope: two because they were theoretical essays without a report of internship practice and two because they were produced in 2023 and 2024, representing a post-pandemic context. The calculation basis for the quantitative analysis was thus established in 36 reports that directly described the remote and hybrid teaching experiences between 2020 and 2022. After a final verification of textual integrity and formal consistency, the set actually used for in-depth statistical analysis and qualitative triangulation was consolidated into 33 reports. The validity of the use of such documents as a source of research is supported by their reflective nature, which allows the investigation of the educational problem in an indirect way, but rich in contextual details.¹⁸

It is crucial to note that the need to exclude documents due to formal or analytical insufficiency is not just a technical procedure, but a substantive finding in itself. The literature on teacher training emphasizes that the supervised internship should be a moment of development of reflective practice, establishing a fruitful dialogue between the knowledge of experience and formal knowledge.¹⁶ The finding that a portion of the corpus did not reach a minimum standard of analytical coherence signals a weakness in the training process itself. This "documentary insufficiency" is therefore interpreted as a symptom of a gap in the undergraduate curricula, which sometimes fail to equip future teachers with the necessary skills for scientific writing and critical reflection on their own practice. The methodology, by exposing this fragility, already produces a diagnosis of teacher training.

2.2 QUANTITATIVE ANALYSIS: CODING AND STATISTICAL TREATMENT

The quantitative phase of the study was operationalized through the construction of a detailed codebook, which established five central analytical dimensions: (1) Teaching Technique, (2) Infrastructure, (3) Engagement, (4) Resources/Strategies and (5) Learning. Each dimension was broken down into indicators of "deficiency" and "efficiency", coded in a binary way (presence/absence) based on clear and standardized textual signals. For example, the mention of "signal drops" or "impossibility of synchronous participation" was coded as the presence of the indicator "Unstable connection" in the Infrastructure dimension.

To ensure the reliability and objectivity of the coding process, a double coding protocol was implemented. A sample of 20% of the reports (7 documents) was independently coded by two researchers. The agreement between the coders was measured by Cohen's Kappa coefficient, adopting as an acceptance criterion a kappa value ≥ 0.70 , considered indicative of substantial agreement. The divergences identified were resolved through rounds of discussion and adjudication, with all decisions documented in a research diary.

The coded data were tabulated and analyzed with the aid of statistical software. Analyses included absolute and percentage frequencies, measures of central tendency and dispersion, and bivariate crossovers to explore associations between variables. To test the statistical significance of the associations between categorical variables, Pearson's chi-square test (χ^2) was used. In cases where the expected frequencies in any cell of the contingency table were less than 5, Fisher's exact test was applied, which is more robust for small samples. The strength of the associations was measured by Cramer's V. All tests were conducted with a significance level of $\alpha=0.05$.

2.3 QUALITATIVE ANALYSIS: TRIANGULATION AND INTERPRETATIVE VALIDATION

Quantitative analysis, while essential for identifying patterns and trends, would be insufficient to capture the complexity of lived experiences. For this reason, the qualitative approach was central to the research, operating in a continuous process of triangulation with the numerical data. The discursive analysis followed procedures of in-depth and reflective reading of the 33 reports. Units of meaning, excerpts, narratives, examples and reflections were identified and submitted to an open thematic coding, allowing the emergence of interpretative categories that complemented and sometimes tensioned the results of binary coding.

The core of the mixed method was the retrosynthetic integration: the numerical patterns (e.g., the high correlation between gamification and participation) were qualitatively investigated to understand how and why this association occurred in the context of the reported practices. Representative examples, borderline cases (atypical situations that defied the general trend) and counter-narratives were extracted and analyzed to give density and nuance to the interpretation. To strengthen the external validity and credibility of the findings, the main interpretations were submitted to a peer validation panel, composed of experienced professors and internship supervisors. This external fact-checking process helped refine the conclusions, ensuring that the interpretations were aligned not only with the data in the corpus, but also with the practical experience of educators who experienced the pandemic period.

2.4 RESULTS: A MULTIFACETED PORTRAIT OF PANDEMIC EDUCATION

The analysis of the 33 internship reports, totaling approximately 400 pages of narratives and reflections, offers a detailed and multifaceted overview of basic education during the height of the COVID-19 pandemic. Quantitative data reveals consistent patterns of structural difficulties and pedagogical impacts, while qualitative analysis illuminates the

human experiences behind the numbers. The following table presents a summary of the overall metrics, serving as a roadmap for the detailed discussion that follows. It exposes the central tension identified in the study: the coexistence of high rates of deficiency in structural dimensions (infrastructure, engagement) with significant indicators of efficiency and resilience in pedagogical dimensions (teaching technique, learning).

Table 1

Overall Metrics of Reported Deficiencies and Efficiencies (N = 33)

DIMENSION	METRIC, DEFICIENCY (N)	%	METRIC, EFFICIENCY (N)	%
Teaching technique	Technical Issues/Stress (11)	33,3%	Creative Adaptation (18)	54,5%
Infrastructure	Unstable Connection (20)	60,6%	Consistent Access (4)	12,1%
Appliances	Lack of devices (16)	48,5%		
Engagement	Low Frequency (28)	84,8%	Active Participation (18)	54,5%
	Lack of interaction (22)	66,7%		
Resources	Lectures (19)	57,6%	Gamification / Creative Projects (12)	36,4%
Learning	Lag / Difficulty (26)	78,8%	Effective Learning (17)	51,5%

Source: Authors.

2.5 INFRASTRUCTURE AS A PREPONDERANT FACTOR: THE MATERIAL BASIS OF EXCLUSION

The data in the corpus unequivocally confirm that the lack of technological resources (infrastructure and devices) was the main bottleneck of Emergency Remote Teaching. The "unstable connection" was mentioned in 20 of the 33 reports (60.6%), and the "lack of adequate devices" (computers, tablets or smartphones capable of supporting the platforms) was reported in 16 documents (48.5%). In contrast, only 4 reports (12.1%) described a scenario of consistent and uninterrupted access, all of which referred to experiences in private schools. The qualitative narratives detail the devastating impact of this precariousness: students who "disappeared" from synchronous classes due to the exhaustion of the mobile data package, families who shared a single cell phone for multiple school-age children, and teachers who taught classes from their own homes with unstable internet, generating frustration and discontinuity.

This micro reality, captured in the reports, is a direct reflection of the national crisis of digital inequality. Data from Cetic.br and INEP already pointed to a scenario of digital apartheid in Brazil, where access to quality internet and adequate devices is strongly stratified by social class and geographic location.⁹ INEP's survey "Educational response to the COVID-19 pandemic in Brazil" revealed that, in 2021, only 15.9% of schools in the state network and a derisory 2.2% of municipal schools adopted measures to provide free or

subsidized access to the internet for the students.¹⁴ The statistical analysis of our corpus solidifies this connection between infrastructure and participation: the crossing between the variables "Unstable connection" and "Low frequency" revealed a statistically significant association [$\chi^2(1, N=33) = 4.07$; $p=0.044$; Cramer's $V = 0.35$, indicating a moderate effect]. Of the 20 reports that cited connection problems, 19 (95%) also reported low student attendance. This empirical data is striking: engagement was not, in most cases, a matter of will or motivation, but of material possibility.

2.5.1 Engagement, Interaction, and Avoidance: The Human Consequences of Disconnection

As a direct consequence of infrastructural precariousness, student engagement indicators were drastically negative. "Low frequency" was the most cited problem in the reports, appearing in 28 of the 33 documents (84.8%). "Lack of interaction" (students with cameras and microphones turned off, lack of participation in chats or forums) was the second most common complaint, present in 22 reports (66.7%). The reports describe a scenario of "ghost virtual classrooms", with teachers speaking to a screen full of inactive icons, generating a deep sense of isolation and frustration. The situation was even more serious in Youth and Adult Education (EJA), where interns reported synchronous classes with only "one or two students" connected, evidencing the incompatibility of the ERE model with the reality of the student-worker, who already faces multiple challenges to stay in school.

Again, these local findings dialogue directly with national statistics on school exclusion and dropout during the pandemic. A UNICEF report, based on PNAD data, estimated that, in November 2020, more than 5 million children and adolescents in Brazil did not have access to education, either because they were out of school or because they did not receive remote activities.²⁰ The analysis of the School Census carried out by INESC is even more alarming, pointing to a 128% increase in high school dropout rates between 2020 and 2021.²² The increase was particularly catastrophic in high school the North (846%) and Northeast (218%) regions, the most vulnerable in terms of infrastructure and social indicators.²² The reports of the interns, therefore, are not isolated cases; They are the chronicle, on a small scale, of a process of mass exclusion that denied the right to education to millions of Brazilians.

2.6 THE DOUBLE FACE OF TEACHING PRACTICE: INNOVATION UNDER PRESSURE AND THE COST OF BURNOUT

In the midst of the scenario of structural crisis, the analysis of the "Teaching Technique" dimension reveals a deep ambivalence. On the one hand, a significant majority of reports

(18, or 54.5%) highlighted the "creative adaptation" of teachers. The narratives describe educators who, even with limited resources, sought new tools, learned to use digital platforms, developed multimodal materials, and experimented with active methodologies to try to keep students engaged. This capacity for innovation and resilience is one of the most positive findings of the study.

On the other hand, this innovation had a very high human cost. A third of the reports (11, or 33.3%) explicitly mentioned "technical problems and stress", with complaints about work overload, pressure for productivity, platform instability and mental exhaustion. At least one report documented the absence of a supervising teacher due to burnout. This paradox, innovation coexisting with burnout, is confirmed by several studies on the mental health of teachers during the pandemic. Studies point to the increase in the workload, the invasion of work in the domestic space and the intensification of demands as factors that led to a significant increase in the levels of stress, anxiety and burnout among Brazilian teachers.²³ The "creative adaptation" observed in the reports, therefore, cannot be romanticized as a simple triumph of the teaching vocation. It must be interpreted critically as an act of resistance and individual survival in the face of a system that has failed to provide the necessary support, training and working conditions.

2.7 PEDAGOGICAL PRACTICES IN DISPUTE: TRANSPOSITION VS. TRANSFORMATION

The analysis of teaching strategies reveals a clear division between two pedagogical approaches. The most common, present in 19 reports (57.6%), was the direct "transposition" of the face-to-face model to the virtual environment. This approach consisted mostly of synchronous lectures, with the teacher speaking for long periods, and the use of official teaching materials (PDFs of books, ready-made slides) without didactic reengineering for the digital medium. This strategy, while understandable in the urgency of the moment, proved ineffective in maintaining engagement in an environment full of distractions and limited by poor connectivity.

On the other hand, a significant minority of 12 reports (36.4%) described "transformation" practices, which sought to explore the potential of the digital environment. These reports documented the use of gamification, creative projects, and geotechnologies. Notable examples include using the game Minecraft to simulate the construction of landscapes and urban dynamics, conducting critical cartography activities with Google Earth to analyze territories, and creating contextualized quiz games to discuss geographic themes. The effectiveness of this transformative approach is statistically corroborated. The association analysis between the use of "Gamification/creative projects" and the "Active

participation" of students revealed a strong and highly significant correlation $\chi^2(1.N=33)=15.71$; $p<0.001$; Cramer's $V \approx 0.69$. This result suggests that, when the infrastructure allowed, the choice of active and interactive methodologies was a decisive factor to overcome apathy and promote more effective engagement.

2.7.1 The Legacy of the Learning Gap: An Educational Debt

The end result of this cascade of problems, poor infrastructure, low engagement, and often inadequate pedagogical practices, was an overwhelming perception of learning loss. The "learning gap or difficulty" was pointed out in 26 of the 33 reports, representing 78.8% of the corpus. Interns reported students' difficulties in understanding basic content, the inability to perform activities that required more complex reasoning, and, in the 2022 reports, the finding of significant gaps in essential knowledge during the return to face-to-face classes.

This subjective perception of future teachers is validated by large-scale evaluations. The report "Learning in Basic Education: Brazilian situation in the post-pandemic", by the organization Todos Pela Educação, analyzed the results of the Basic Education Evaluation System (SAEB) and concluded that student performance in Portuguese Language and Mathematics has not yet returned to pre-pandemic levels, with the public network being the most affected.¹³ The pandemic, therefore, not only interrupted the learning process, but it has generated a setback, creating an "educational debt" that will require years of investment and focused policies to be remedied. The data from this study, by capturing the diagnosis made on the school floor, offer a qualitative view of the depth of this gap, which manifests itself not only in grades, but in the concrete difficulty of students in reconnecting with knowledge. Presenting these results together reveals a clear causal chain: the failure of the infrastructural base triggered a crisis of participation, which in turn resulted in a deep learning crisis, with teachers at the epicenter, trying to mitigate the damage at the expense of their own health.

3 INTERPRETING THE SIGNALS OF A SYSTEM UNDER STRESS

The analysis of the results allows us to transcend the mere description of the phenomena to build a critical interpretation of the dynamics that marked Brazilian education during the pandemic. The data, when read together and in the light of the national context, reveal not only the difficulties of an exceptional period, but the chronic failures of an educational system that operates at the limit of precariousness.

3.1 INFRASTRUCTURE AS A CONDITION OF PEDAGOGICAL POSSIBILITY

The most robust and fundamental finding of this study is the centrality of infrastructure. The statistical analysis that demonstrates the strong association between connection instability and low frequency does not point to a mere correlation, but to a determinant causal relationship. Infrastructure was not just one variable among others; it functioned as a condition of possibility for any pedagogical action. In other words, material access (devices and connectivity) preceded and conditioned pedagogical access. Where infrastructure has failed, the right to education has been summarily denied, regardless of the quality of the teacher's planning, the relevance of the content, or the student's motivation.

This finding has profound implications. She categorically refutes any narrative that tries to individualize the failure of ERE, attributing it to the "unwillingness" of students or the "digital incompetence" of teachers. The problem was not primarily pedagogical or motivational, but material and political. The historic decision not to invest in a robust digital inclusion policy for public education created an intrinsically vulnerable system, whose failure in a crisis scenario was not only predictable, but inevitable. The pandemic, in this sense, has only made it explicit that, in the twenty-first century, digital infrastructure is as essential to education as the school building, textbooks, and school lunches. To ignore this material dimension is to condemn any educational policy to irrelevance.

3.2 THE HUMAN COST OF RESILIENCE: INNOVATION AS AN ACT OF SURVIVAL

The coexistence of reports of creative adaptation with narratives of teacher burnout exposes one of the most perverse ambiguities of the pandemic period. The professors' capacity for innovation, documented in more than half of the reports, is a testament to their professional commitment. However, it is imperative to analyze the political economy behind this "resilience". Celebrating teacher creativity without questioning the conditions that made it an act of individual heroism is dangerous. Innovation emerged not as the result of a support system, with continuing education, adequate resources and institutional support, but as a survival mechanism in the midst of systemic abandonment.

The discourse of "resilience" can thus be co-opted for political ends, serving to applaud teachers while justifying the continued precariousness of their work and the underfunding of education. It shifts responsibility from the sphere of the State to the sphere of the individual, transforming a collective failure into an opportunity for personal overcoming. Critical analysis of the data suggests a reinterpretation: the true measure of a robust education system is not the resilience of its actors in the face of collapse, but the capacity of the system itself to be resilient, that is, to absorb shocks without transferring the cost to the physical and mental

health of its professionals.²⁴ The challenge, Therefore, it is not just celebrating the innovation that has emerged from the crisis, but creating the institutional conditions for it to become a sustainable practice and not a desperate response to chaos.

3.3 THE TRAINING GAP REVEALED: THE INTERNSHIP AS A DIAGNOSIS OF THE DEGREE

As pointed out in the methodology section, the difficulty in analyzing a portion of the corpus due to its low formal and analytical quality is a result in itself. The internship reports, as instruments of evaluation and reflection, also work as a mirror of the training received by the undergraduates. The inability of some future teachers to produce a minimally structured report, which articulates observation, description and critical analysis, points to a significant gap in the teaching degree curricula.

The supervised internship, ideally, should be the apex of the training, the moment in which the student mobilizes the theoretical framework to interpret and intervene in the complex reality of the classroom.¹⁶ When the final product of this process is a superficial or merely descriptive document, this signals that the training may be failing to develop essential competencies such as academic writing, the capacity for evidence-based analysis and, fundamentally, the practice of critical reflection. The pandemic, by intensifying the complexities of teaching, has only made this training gap more visible. Therefore, the criticism that emerges from the data is not only directed at basic education, but also at higher education, calling on universities to rethink their models of teacher training, strengthening the articulation between theory and practice, and equipping future educators to be not only curriculum executors, but researchers of their own practice.

3.4 UNTAPPED POTENTIALS: SEEDS OF A HYBRID FUTURE

Despite the predominantly bleak scenario, the reports also contain seeds of a potentially richer and more engaging educational future. Successful experiences with gamification, geotechnology-based projects, and collaborative mapping should not be seen as mere curiosities or exceptions. They are proofs of concept that demonstrate the immense potential of digital tools when used not to transpose, but to transform pedagogical practice. The use of Google Earth for critical cartography, for example, allows an approach to the territory that would be impossible in a traditional classroom. The use of digital games, as evidenced by the strong correlation with active participation, can increase student motivation and engagement significantly.

These emerging practices point to a path beyond the simplistic dichotomy between "good face-to-face" and "bad remote". They suggest the possibility of a hybrid and intentional model, which combines the best of both worlds: the interaction and the link of face-to-face meeting with the possibilities of personalization, collaboration and exploration of the digital universe. The great challenge, however, is to move these practices from the field of individual and isolated effort to the center of educational policy. Without investment in infrastructure, continuous teacher training and the development of quality pedagogical resources, these potentials will remain untapped, and the most valuable lessons of the pandemic crisis will have been in vain.

4 FROM EMERGENCY TO STRATEGY: PROPOSALS FOR AN EQUITABLE DIGITAL TRANSFORMATION

The diagnosis of the pandemic educational crisis requires more than the verification of failures; it demands the formulation of paths to overcome. The following proposals are not a menu of isolated solutions, but the pillars of an integrated ecosystem, designed to transform emergency practices into robust institutional strategies. Each proposal responds directly to a problem identified in the analysis of the reports, seeking to convert the traumatic experience of the ERE into systemic learning.

4.1 TERRITORIAL CURATORSHIP AND DIGITAL SOCIAL CARTOGRAPHY: BEYOND THE VIRTUAL FIELD CLASS

The transposition of the field class to the virtual environment, often limited to a passive "tour" through Google Street View, can be radically transformed. The proposal is the development of territorial curatorship platforms, which integrate geotechnologies (satellite images, GIS) with multimodal repositories (videos, audios, texts, oral narratives). More importantly, these platforms should be structured around the principles of Social Cartography and Participatory Mapping.²⁷ Instead of consuming ready-made maps, students would be protagonists in the construction of critical cartographies of their own territories, mapping not only physical elements, but also social, cultural, economic, and environmental dynamics.³¹ This approach transforms the student from a spectator into a researcher, developing geographical reasoning and citizen awareness by allowing them to take a critical position on their own reality.²⁹

4.2 COMMUNITIES OF PRACTICE AND REVERSE MENTORING: INSTITUTIONALIZING PEER SUPPORT

Teacher overload and isolation can be combated by the formalization of support networks. The proposal is the creation of communities of practice and the implementation of Reverse (or Reversed) Mentoring programs. This model subverts the traditional logic of training, recognizing that knowledge about digital technologies is heterogeneously distributed in the school community.³⁵ In a reverse mentoring program, students with high digital fluency or younger, technologically skilled teachers are formally assigned to mentor more experienced colleagues in practical tasks, such as the use of a new platform, the editing of videos or the creation of interactive activities.³⁷ This low-cost, high-impact strategy values the knowledge that exists in the school, strengthens professional ties and accelerates the dissemination of pedagogical innovations, reducing dependence on external training courses, which are often decontextualized from the school reality.

4.3 LEARNING RETRIEVAL WITH ADAPTIVE PATHS: CUSTOMIZING SUPPORT

The deep learning gap, one of the most serious legacies of the pandemic, cannot be addressed with generic recovery strategies. The proposal is the adoption of Adaptive Learning platforms, which use algorithms and artificial intelligence to personalize student support.⁴⁰ Such systems can, through continuous diagnostic assessments, identify the specific knowledge gaps of each student and, from there, generate personalized learning paths, with activities, videos, and games focused on their needs.⁴³ This approach makes it possible to overcome the "one-size-fits-all" model of retrieval offering more efficient and targeted support. The implementation of modular adaptive retrieval packages, especially for the essential contents, can be a powerful tool to mitigate the effects of learning loss and promote equity.

4.4 OPEN AND AUDITABLE RESOURCE ECOSYSTEMS: THE END OF "REINVENTING THE WHEEL"

The teaching overload was aggravated by the need for each teacher to create, from scratch, their own teaching materials for the remote environment. To optimize this effort, it is proposed to create a National Repository of Learning Objects (LO), public and open access.⁴⁵ Unlike a simple file bank, this would be an auditable ecosystem, where teachers from all over the country could not only download, but also upload, adapt and evaluate digital pedagogical resources (lesson plans, videos, simulations, games).⁴⁸ A peer review system would ensure the quality and pedagogical relevance of the materials.⁴⁸ Such a repository

would combat redundancy of efforts, disseminate best practices, and ensure that even teachers in schools with fewer resources have access to a high-quality collection, promoting equity and collaboration on a national scale.

4.4.1 Observatory of Teaching Work: Measuring the "Human Cost"

The mental health crisis of teachers, evidenced in this and other studies, cannot be treated only with palliative actions. It is necessary to create institutional mechanisms to monitor and manage working conditions. It is proposed to create an Observatory of Teaching Work, an institutional tool to measure and analyze the "human cost" of the profession, especially in periods of crisis.⁵⁰ This observatory would collect and analyze data such as effective working hours (including planning and correction outside of working hours), time dedicated to the production of materials, self-reported stress levels, and risk factors for burnout.⁵² The data generated by this tool would allow managers to take evidence-based decisions for the rebalancing of the workload, the allocation of support resources and the formulation of occupational health policies, moving from a reactive management to a proactive management of teacher well-being.

These five proposals, interdependent, form a cohesive strategy. Digital social cartography (6.1) is enhanced by repository resources (6.4) and reverse mentoring training (6.2). The adaptive trails (6.3) combat the gap, freeing the teacher for more creative practices. And the observatory (6.5) ensures that this entire process takes place in a sustainable way. Together, they outline a path for the education system to not only recover from the pandemic, but evolve into a fairer, more collaborative, and more effective model.

5 CONCLUSION

The integrated analysis of supervised internship reports in Geography offers an unequivocal conclusion: the COVID-19 pandemic was not the primary cause of the Brazilian educational crisis, but a powerful diagnostic agent that exposed and amplified the structural inequalities that have long undermined the system. The digital access infrastructure proved to be the fundamental variable that determined who would or would not have the right to education, transforming social inequality into explicit educational exclusion. This study demonstrated, through a causal chain of evidence, how infrastructural failure led to the collapse of student engagement and, consequently, to a deep and lasting learning gap.

Amid this scenario of systemic failure, teacher resilience and creativity emerged as a notable resistance force. Active methodologies and the innovative use of geotechnologies, when material conditions permitted, proved to be powerful allies in promoting participation

and meaningful learning. However, this innovation occurred at an exorbitant human cost, evidenced by the high levels of stress and professional burnout, a testimony to the institutional abandonment to which educators were subjected.

The internship reports, therefore, function as documents of a critical time, chronicles of the school floor that should serve as a basis for the formulation of public policies. The lessons of the pandemic cannot be forgotten. It is imperative that future policies inextricably articulate massive investment in digital infrastructure, continuous and contextualized teacher training and a curricular reconfiguration that integrates digital skills in a critical and creative way. The innovative proposals presented in this work, from digital social cartography to reverse mentoring, from adaptive learning trails to observatories of teaching work, aspire to be more than one-off recommendations. They represent the pillars of a new paradigm: converting the improvised practices of the emergency into an intentional, equitable, and resilient pedagogical ecosystem, capable not only of facing the next crisis, but of offering, on a daily basis, the quality education that all Brazilians deserve.

REFERENCES

- Autoeficácia docente e acesso a recursos no ensino remoto emergencial: Escalas psicométricas. (2024). *Revista Colombiana de Psicología*. Recuperado em 10 de março de 2025, de http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0123-417X2024000200087
- Cenário da exclusão escolar no Brasil. (2021). UNICEF. Recuperado em 23 de setembro de 2025, de <https://www.unicef.org/brazil/media/14026/file/cenario-da-exclusao-escolar-no-brasil.pdf>
- Cetic.br. (2022). Pesquisa TIC Educação 2022: Resumo executivo. Recuperado em 14 de agosto de 2025, de https://cetic.br/media/docs/publicacoes/2/20231122125825/tic_educacao_2022_resumo_executivo.pdf
- COVID-19: Ensino remoto emergencial e saúde mental de docentes universitários. (2021). *Revista Brasileira de Saúde Materno Infantil*. Recuperado em 23 de setembro de 2025, de <https://www.scielo.br/j/rbsmi/a/b3TVbVHcCZRxkVZPF6PHF/?lang=pt>
- Desigualdade no acesso à internet impacta qualidade da educação. (2021). CNTE-CUT. Recuperado em 8 de agosto de 2025, de <https://cnte.org.br/noticias/desigualdade-no-acesso-a-internet-impacta-qualidade-da-educacao-c1bf>
- Desigualdades digitais e educação. (2021). *Ciência Hoje*. Recuperado em 17 de setembro de 2025, de <https://cienciahoje.org.br/artigo/desigualdades-digitais-e-educacao/>
- Direito ou privilégio? Desigualdades digitais, pandemia e os desafios de uma escola pública. (2021). *Educação & História*. Recuperado em 23 de setembro de 2025, de <https://www.scielo.br/j/eh/a/SGqJ6b5C4m44vh8R5hPV78m/>

Divulgados dados sobre impacto da pandemia na educação. (2022). Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP). Recuperado em 23 de setembro de 2025, de <https://www.gov.br/inep/pt-br/centrais-de-conteudo/noticias/censo-escolar/divulgados-dados-sobre-impacto-da-pandemia-na-educacao>

Ensino remoto emergencial: Práticas educacionais e percepções docentes. (2021). Educação & Realidade. Recuperado em 23 de setembro de 2025, de <https://www.scielo.br/j/edreal/a/G8Gjnrrm4Ry4Mp35BJk7yQb/>

Ensino remoto emergencial (ERE) versus educação a distância. (2020). Dtcom. Recuperado em 15 de setembro de 2025, de <https://dtcom.com.br/ensino-remoto-emergencial-ere-versus-educacao-a-distancia-ead-principais-diferencas-e-a-vantagem-de-se-tornar-ead/>

Estágio supervisionado: A relação teoria e prática reflexiva na formação de professores do curso de Licenciatura em Pedagogia. (2021). Revista Brasileira de Estudos Pedagógicos. Recuperado em 23 de setembro de 2025, de <https://www.scielo.br/j/rbeped/a/hX97HhvkMZnDnkxLyJtVXzr/>

Estudo revela retrocessos e aumento das desigualdades no ensino. (2022). Observatório 3º Setor. Recuperado em 23 de setembro de 2025, de <https://observatorio3setor.org.br/educacao-basica-brasil-aprendizagem/>

Geo-grafias do cotidiano: A cartografia social na (re)descoberta dos espaços vividos pelos estudantes. (2022). Geoconexões. Recuperado em 23 de setembro de 2025, de <https://www2.ifrn.edu.br/ojs/index.php/geoconexoes/article/view/17279>

Importância do estágio supervisionado: Integração entre teoria e prática e formação profissional de licenciandos. (2023). SciELO Preprints. Recuperado em 23 de setembro de 2025, de <https://preprints.scielo.org/index.php/scielo/preprint/view/9210>

Mapeamento colaborativo e a mobilização de conhecimentos geográficos poderosos na escola. (2022). GEOgraphia. Recuperado em 23 de setembro de 2025, de <https://www.scielo.br/j/geo/a/wzd6nL7f7wVpmq93Rbh5qFF/>

O ensino remoto emergencial na formação superior em saúde no Brasil. (2022). SciELO Preprints. Recuperado em 23 de setembro de 2025, de <https://preprints.scielo.org/index.php/scielo/preprint/view/4751>

Os impactos da pandemia na acentuação da desigualdade digital. (2022). Revista Metaxy (UFRJ). Recuperado em 23 de setembro de 2025, de <https://revistas.ufrj.br/index.php/metaxy/article/view/64691>

Pandemia, EaD e ensino remoto emergencial no Instituto Federal de Goiás (Brasil). (2024). Educação & Pesquisa. Recuperado em 17 de setembro de 2025, de http://educa.fcc.org.br/scielo.php?script=sci_arttext&pid=S1413-24782024000100245

Pesquisa no estágio supervisionado: Alguns resultados e muitas possibilidades. (2018). Dialnet. Recuperado em 23 de setembro de 2025, de <https://dialnet.unirioja.es/descarga/articulo/6555426.pdf>

Registros do Censo Escolar: Tecnologias digitais nas escolas brasileiras durante a pandemia de COVID-19. (2022). Cadernos CEDES. Recuperado em 7 de agosto de 2025, de <https://www.scielo.br/j/ccedes/a/f5NtS5Fv53QfGCmGGptRNXh/>

Ser professor na pandemia: Impactos na saúde mental. (2021). Revista Arco – UFSM. Recuperado em 23 de setembro de 2025, de <https://www.ufsm.br/midias/arco/saude-mental-professores-pandemia>

Síndrome de burnout em docentes da rede pública no Brasil. (2022). RevistaFT. Recuperado em 23 de setembro de 2025, de <https://revistaft.com.br/sindrome-de-burnout-em-docentes-da-rede-publica-no-brasil/>

Sobre o ensino remoto emergencial (ERE). (2020). Universidade Federal da Integração Latino-Americana. Recuperado em 15 de setembro de 2025, de <https://portal.unila.edu.br/informes-coronavirus/ensino-remoto-emergencial/sobre-ere>

Trabalho docente em tempos de pandemia: Os efeitos das atividades remotas na saúde mental de professores. (2022). Atos de Pesquisa em Educação. Recuperado em 23 de setembro de 2025, de <https://ojsrevista.furb.br/ojs/index.php/atosdepesquisa/article/view/11840>

Unicef: 5,5 milhões estavam sem atividades escolares em outubro. (2021). Agência Brasil. Recuperado em 23 de setembro de 2025, de <https://agenciabrasil.ebc.com.br/educacao/noticia/2021-01/unicef-55-milhoes-estavam-sem-atividades-escolares-em-outubro>