A DOUBLE-EDGED SWORD: THE PSYCHO-ACADEMIC IMPACT OF ZOOM-BASED LEARNING ON ARAB STUDENTS IN ISRAEL DURING THE COVID-19 PANDEMIC

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ABSTRACT

The COVID-19 pandemic's shift to Emergency Remote Teaching (ERT) via platforms like Zoom created a global, real-world test for digitally mediated learning. This study provides an in-depth exploration of the multifaceted psycho-academic impacts on a particularly vulnerable population: Arab students in Israel, a minority group facing pre-existing socioeconomic and digital disparities. Through in-depth qualitative interviews with 30 students, we analyzed their lived experiences. The findings reveal a "double-edged sword" experience. A subset of students successfully leveraged the flexibility and pedagogical advantages of recorded lectures to enhance their academic performance. However, the majority confronted significant barriers that undermined their learning and well-being. Core challenges included heightened cognitive load ("Zoom fatigue") from managing domestic distractions and technical issues, and a severe deficit in social presence, which fostered profound feelings of isolation. This was exacerbated by technical failures linked to inadequate digital infrastructure in their communities. Crucially, the experience amplified a perceived resource gap with Jewish peers, contributing to psychological distress and a sense that existing educational inequalities were being deepened. We conclude that remote learning's effects are profoundly shaped by the user's psychological and socioeconomic context, highlighting the urgent need for policies that prioritize digital equity and targeted psycho-social support.

KEYWORDS

Digital Divide, Social Justice, Higher Education, COVID-19, Socio-technical Studies, *Emergency Remote Teaching (ERT), online learning, Zoom.*

1. INTRODUCTION

The outbreak of the COVID-19 pandemic in early 2020 represents arguably the single largest disruption to global education in modern history. In a matter of weeks, a public health crisis catalyzed a worldwide educational experiment on an unprecedented scale. Responding to lockdown mandates, institutions of higher education across the globe shuttered their physical campuses, compelling millions of students and instructors into an abrupt and often disorienting migration to what Hodges et al. [1] have carefully termed Emergency Remote Teaching (ERT). This was not planned, pedagogically driven online learning; it was a crisis response. Within this new reality, synchronous video conferencing technologies, most notably Zoom, transitioned from being peripheral business tools to the central nervous system of educational delivery. This rapid, unplanned pivot moved long-standing theoretical debates about the efficacy, equity, and

psychological toll of digitally mediated learning from the academic fringe into the urgent, lived experience of an entire generation of students (Cignelaub & Stolper, [2]).

This study provides a critical socio-technical analysis of this global phenomenon through the specific, and uniquely complex, lens of Arab students in Israel. While the transition to online learning was a national mandate, its impact was far from uniform across Israel's diverse and deeply stratified society. The Arab Palestinian citizens of Israel, comprising approximately 21% of the population, constitute a national minority that has historically navigated a landscape of systemic and structural inequality. This is starkly evident within the education system, a key site for the reproduction of social hierarchies. Decades of state policy have resulted in significant and well-documented disparities in resource allocation, funding, physical infrastructure, teacher training, and, consequently, academic outcomes when compared to the Jewish majority (Abu Asbah, [3]; Jabareen, [4]). Research consistently shows that the Arab education system receives lower per-capita budgets, suffers from a chronic shortage of classrooms and psycho-pedagogical support staff, and contends with a persistent achievement gap in standardized testing (Ballas, [5]; Knesset Research and Information Centre, [6]).

The pandemic-induced shift to remote learning thus arrived not on a level playing field, but on one already tilted by historical disadvantage. The very prerequisites for successful online education—access to a reliable fiber-optic internet connection, ownership of a personal computer suitable for academic work, a quiet and stable home environment conducive to study, and a high degree of digital literacy—are deeply intertwined with socioeconomic status and geography (Weissblai, [7];Van Dijk, [24]). For many Arab students, particularly those residing in peripheral towns and so-called "unrecognized villages" with poor state infrastructure, these prerequisites were not a given. This created the conditions for a "digital divide" to exacerbate the pre-existing "educational divide," placing these students in a position of double jeopardy where the universal disruption of the pandemic was compounded by localized, systemic barriers (State Comptroller, [8]; Fadila, [9]).

This context makes the Arab student population in Israel a critical case study for interrogating the politics of educational technology. It allows us to move beyond simplistic questions of whether online learning "works" and instead ask more critical questions: For whom does it work? Under what conditions? And how might seemingly neutral technological platforms inadvertently reproduce or even deepen existing social inequalities? This paper seeks to answer these questions by exploring the lived experiences of these students, providing a rich, narrative-based account of the period. We begin by outlining a multi-layered theoretical framework, followed by a detailed methodology. We then present the core findings, organized thematically, before concluding with a discussion of the study's implications for building more resilient, equitable, and psychologically aware educational systems in a post-pandemic world.

2. THEORETICAL FRAMEWORK

To unpack the complex psycho-academic effects of the transition to Zoom, this study draws upon a combination of socio-technical and psychological theories, woven together to create a multi-scalar analytical model. We begin with the Social Shaping of Technology (SST) as our guiding macro-level perspective. We then integrate Bourdieu's theories of capital, habitus, and symbolic violence to provide a rich sociological explanation for the inequities observed. Finally, we use Social Presence Theory and Cognitive Load Theory to understand the micro-level psychological experience of the individual student.

2.1. The Social Shaping of Technology (SST): Contextualizing the Tool

Our primary framework is the Social Shaping of Technology (SST) perspective, which offers a powerful, nuanced alternative to the simplistic logic of technological determinism. Whereas a deterministic view might suggest that Zoom's features inherently dictate specific outcomes, SST posits a reciprocal, co-constitutive relationship between technology and society (MacKenzie & Wajcman, [10]). Technology is not an external force that 'impacts' society; it is a product of that society, imbued with its values, power relations, and assumptions.

SST directs our attention to several key concepts. First is the idea of interpretive flexibility, which suggests that new technology means different things to different social groups (Pinch & Bijker, [11]). For university administrators, Zoom was a tool for institutional survival. For an affluent student, it was a convenience. For a student in a crowded home with poor internet, it was a source of stress and exclusion. SST helps us see that there is no single "Zoom experience." Second, SST highlights the concept of the seamless web, which posits that the "technical," "social," "economic," and "political" aspects of a technology are not separate domains but are inextricably interwoven (Hughes, [12]). The "technical" problem of a student's poor internet connection is inseparable from the "political" history of state underinvestment in their community's infrastructure and the "economic" reality of their family's income.

Furthermore, we can apply the concept of technological momentum (Hughes, [13]). Once a large system like a national university network becomes invested in a particular technology (like Zoom), it develops momentum. It becomes deeply embedded in institutional structures, procedures, and budgets, making it difficult to change course or adopt alternatives, even when its shortcomings and inequitable effects become apparent. The rapid, widespread adoption of Zoom during the pandemic created precisely this kind of momentum, solidifying its role as the default medium for instruction.

This framework directs our inquiry toward understanding how the pre-existing social context of Arab students in Israel—their socioeconomic status, housing conditions, digital infrastructure, and position as a minority—shaped their engagement with and experience of Zoom. It allows us to see Zoom not as a neutral platform, but as a socio-technical artefact whose meaning and consequences were actively constructed at the intersection of its design and the stratified social world it entered.

2.2. Bourdieu: Capital, Habitus, and Symbolic Violence in the Digital Classroom

To provide a more robust sociological explanation for the inequities we observed, we draw upon the theoretical toolkit of Pierre Bourdieu [14]. Bourdieu's framework is exceptionally useful for understanding how social structures and power relations are reproduced, often invisibly, within social arenas he calls fields. The university is a classic example of a field, a site of struggle where agents compete for valued resources, or capital. Bourdieu identifies three key types:

• Economic Capital: Material assets and financial resources (money, property). In our study, this manifests as ownership of a high-quality laptop, a paid Zoom account, and, most critically, access to a fast, reliable internet connection.

• Social Capital: The network of relationships and group memberships one can mobilize for support. For students, this includes peer study groups, access to mentors, and supportive, low-stakes relationships with faculty.

• Cultural Capital: The knowledge, skills, dispositions, and credentials that are valued by the dominant culture within a specific field. In the academic field, this traditionally includes linguistic fluency, familiarity with academic norms, and certain study habits. The shift to ERT reconfigured what counted as valuable cultural capital, suddenly privileging digital literacy, tech-savviness, and, crucially, access to a home environment that conformed to the norms of a quiet, private, academic workspace.

Crucially, Bourdieu's concept of habitus links these external structures to the individual. Habitus refers to the system of durable, transposable dispositions—the embodied, often unconscious ways of thinking, feeling, and acting that are shaped by our life experiences and position in the social world (Bourdieu, [15]). A student from a privileged background often develops a "scholarly habitus" that is pre-adapted to the expectations of the traditional university field; they feel "at home" there. The sudden shift to remote learning created a radical habitus field mismatch for many students. Their habitus, adapted for on-campus learning, was ill-suited to the new demands of the digital field, leading to feelings of disorientation and alienation.

This mismatch can lead to what Bourdieu calls symbolic violence. This is a form of non-physical violence enacted upon individuals when they are forced to recognize the legitimacy of a system that devalues their own capital and habitus. When a university implicitly defines "successful remote learning" in a way that requires significant economic and cultural capital (a fast computer, a private room), it subtly communicates to students who lack these resources that their inability to cope is a personal failing rather than a systemic one. The feelings of shame, humiliation, and inadequacy expressed by students in our study can be understood as the psychological effects of this symbolic violence.

2.3. The Psychology of Mediated Learning: Social Presence and Cognitive Load

While SST and Bourdieu provide the macro-social context, media psychology theories are essential for understanding the micro-level individual experience.

First, "Social Presence" Theory posits that a medium's capacity to transmit the feeling of "being with" others is crucial for effective communication (Short et al., [16]). This is not a monolithic concept; it comprises affective presence (emotional connection), interactive presence (reciprocity), and cohesive presence (group identity) (Sung & Mayer, [17]). Low social presence, common in ERT environments with grids of muted, non-visible participants, can lead to profound feelings of disconnection and alienation.

Second, "Cognitive Load" Theory (CLT) provides a framework for understanding the mental effort of learning (Sweller, [18]). CLT posits that working memory is limited and that effective instruction must minimize extraneous cognitive load—the mental effort wasted on things unrelated to the learning task itself. Video conferencing can impose a remarkably high extraneous load. Bailenson [19] argues that "Zoom fatigue" results from the brain working harder to process incomplete non-verbal cues, manage one's on-screen appearance, and filter out physical distractions. For the students in our study, this was compounded by the cognitive load of technical failures and the stress of a non-private environment. This overload directly impairs the capacity for germane learning, the deep cognitive processing required for true understanding.

By weaving these theories together, we can analyze the students' experiences on multiple levels: from the broad socio-political forces shaping technology (SST), to the distribution of

resources and power in the academic field (Bourdieu), to the immediate psychological experience of the individual learner.

3. METHODS

To capture the rich, subjective, and multifaceted nature of the student experience, this study employed a qualitative research design centered on in-depth, semi-structured interviews. This methodology was chosen for its unparalleled ability to explore personal perspectives, uncover nuanced meanings, and understand complex social phenomena from the viewpoint of those who lived them (Creswell & Poth, [20]; Shkedi, [21]). A quantitative survey might have measured satisfaction levels, but it could not have captured the texture of Yasmin's loneliness, the humiliation of Khaled's technical failures, or the complex mix of relief and guilt in Salma's financial savings.

3.1. Participants

The study involved 30 participants, recruited through a combination of purposive and snowball sampling. This non-probability sampling strategy was deliberately chosen to ensure that participants met the specific inclusion criteria and to gain access to a community that can be hard to reach through formal channels. All participants were: (a) self-identified as Arab citizens of Israel; (b) residents of a single, predominantly Arab city in northern Israel, known to have variable levels of infrastructure; (c) enrolled as undergraduate or graduate students in an Israeli college or university; and (d) had experienced at least one full academic semester of mandatory remote learning via Zoom during the COVID-19 pandemic (between 2020 and 2022).

The final sample consisted of 16 male and 14 female students, with an age range of 20 to 28, providing a balanced representation across genders (see Table 1). The sample included 23 undergraduate students and 7 graduate students, reflecting different stages of academic life and levels of academic enculturation. Participants were drawn from a wide array of disciplines, including Science, Technology, Engineering, and Mathematics (STEM) fields (such as engineering), medical fields (Medicine, Pharmacy, Dentistry), social sciences (economics, law, communication), and humanities (architecture, design), ensuring a diversity of academic contexts. All participants identified Arabic as their mother tongue and were pursuing their studies in Hebrew-language institutions, a key factor adding to the potential cognitive and linguistic load of their studies. To protect their identities, all participants have been assigned pseudonyms.While this sample size allows for in-depth qualitative analysis, it is limited in scope and future research should aim to include a larger and more diverse subject pool.

Table 1. Participant Demographics (N=30)

Pseudonym	Age	Gender	Degree Level	Field of Study
Ahmad	22	Male	Undergraduate	Economics & Management
Noor	25	Female	Undergraduate	Architecture & Design
Khaled	21	Male	Undergraduate	Economics & Management
Marwa	24	Female	Graduate (Master's)	Business Administration (MBA)
Yasmin	23	Female	Undergraduate	Tourism & Communication
Mahmoud	25	Male	Undergraduate	Law
Omar	22	Male	Undergraduate	Law
Majdi	20	Male	Undergraduate	Accounting
Mohammed	26	Male	Undergraduate	Medicine
Abd	27	Male	Graduate (MD)	Medicine
Layla	21	Female	Undergraduate	Social Work

Tariq	23	Male	Undergraduate	Computer Science
Fatima	26	Female	Graduate (Master's)	Educational Counselling
Yousef	24	Male	Undergraduate	Mechanical Engineering
Hiba	22	Female	Undergraduate	Nursing
Sami	28	Male	Graduate (Master's)	Public Policy
Rania	20	Female	Undergraduate	Psychology
Fadi	25	Male	Undergraduate	Civil Engineering
Dana	23	Female	Undergraduate	Pharmacy
Ibrahim	26	Male	Graduate (Master's)	English Literature
Samira	22	Female	Undergraduate	Occupational Therapy
Ali	24	Male	Undergraduate	Electrical Engineering
Nadia	21	Female	Undergraduate	Political Science
Kareem	27	Male	Graduate (Master's)	Urban Planning
Amal	23	Female	Undergraduate	Biology
Hasan	25	Male	Undergraduate	Business & IT
Salma	24	Female	Graduate (Master's)	Clinical Nutrition
Ziad	22	Male	Undergraduate	Industrial Engineering
Reem	26	Female	Undergraduate	Dentistry
Bassam	28	Male	Graduate (Master's)	History

3.2. Data Collection

The primary instrument for data collection was the semi-structured interview. An interview guide was developed to ensure consistency across key topics while allowing the flexibility for participants to elaborate on issues they found most salient (Patton, [22]). The guide was designed to elicit narrative responses, covering areas such as: the initial experience of transitioning to Zoom; specific technical and environmental challenges; learning preferences; perceived impact on academic grades and the quality of learning; effects on social and psychological well-being; coping strategies; and, crucially, perceptions of equity and the digital divide in relation to their Jewish peers.

Data was collected through 30 in-person interviews between May and July 2024. Conducting the interviews in person allowed for greater rapport and the observation of non-verbal cues. Participants were given the choice of speaking in Arabic, Hebrew, or a mix of both (code-switching), which allowed them to express themselves in the most comfortable and precise way. Each interview lasted approximately 45 to 60 minutes. With explicit permission from each participant, all interviews were audio-recorded to ensure accurate transcription and a full record of the narrative data.

3.3. Data Analysis

The data were analyzed using a rigorous thematic analysis approach, closely following the six-phase process outlined by Braun and Clarke [23], which provides a transparent and systematic method for interpreting qualitative data.

1. Familiarization: The researchers transcribed all audio recordings verbatim. This crucial first step involved deep immersion in the data, reading and re-reading the transcripts to gain a holistic sense of the participants' narratives and the emotional tenor of their experiences.
2. Generating Initial Codes: The transcripts were systematically coded line-by-line. This involved an open coding process, where descriptive labels were attached to segments of text that were relevant to the research question. Codes included "internet

disconnection," "family noise," "feeling of isolation," "grade improvement," and "unfair advantage."

3. Searching for Themes: The initial codes were collated and organized into potential themes. This involved an interpretive process of grouping related codes to identify broader patterns of meaning. For example, codes like "lonely," "no friends," and "miss campus" were grouped under a potential theme of "Social Isolation."
4. Reviewing Themes: The potential themes were reviewed and refined in a two-level process. First, themes were checked against the coded extracts to ensure they were representative. Second, they were checked against the entire dataset to ensure they accurately captured the overall narrative. A thematic map was developed and iteratively refined to visualize the relationships between themes.
5. Defining and Naming Themes: Once refined, each theme was clearly defined and given a concise, evocative name (e.g., "The Double Burden"). The researchers articulated the "story" that each theme told and how it related to the overarching research question.
6. Producing the Report: The final phase involved weaving the analyzed themes into a coherent and persuasive narrative, supported by rich, illustrative quotes from the participants to ensure the voices of the students remained central to the analysis.

3.4. Ethical Considerations

The study adhered to strict ethical protocols. Written informed consent was obtained from all 30 participants after a detailed explanation of the study's purpose, the voluntary nature of their participation, and their right to withdraw at any time. Anonymity and confidentiality were paramount; pseudonyms were assigned, and any identifying details in the transcripts were removed. Audio recordings were stored securely and were deleted upon completion of transcription. Given the sensitive nature of the topic, which touches on minority status and inequality, the researchers fostered a rapport of trust and empathy, creating a safe space for participants to share their experiences openly.

3.5. Findings

The thematic analysis of the 30 interviews yielded a rich and nuanced picture of the students' experiences. Eight major themes emerged, which collectively illustrate the complex and often paradoxical impact of the shift to Zoom-based learning.

3.5.1. Theme 1: The Shock of Transition: A Disorienting New Reality

For virtually all participants, the sudden pivot to remote learning was an unsettling and jarring experience. It represented a radical break from the established norms and rhythms of academic life. The initial phase was characterized by confusion, anxiety, and a sense of being adrift. Layla, a social work student, captured this widespread feeling:

It was a shock. One day we were on campus, planning our semester, and the next, everything was cancelled, and we were told to log into something called Zoom. We had no training, no preparation. It felt chaotic and unprofessional. I was genuinely worried about how I would learn anything.

However, following this initial shock, student experiences began to diverge significantly, often influenced by their personal circumstances. For some, the new model quickly revealed unexpected advantages. Ahmad, an economics student who needed to work, saw an immediate opportunity:

Honestly, after the first weird week, it was an excellent decision by the college for someone like me. It meant I could take on more shifts at my job. I could connect to a lecture from my workplace or listen to the recording later. True, I wasn't always 100% focused during the live session, but I managed to save money and help my family at a time when unemployment was high. It gave me a kind of freedom I never had.

In stark contrast, many others found the transition to be overwhelmingly negative, particularly due to the blurring of boundaries between home and school. The domestic space, once a refuge, became a source of constant stress. Noor, an architecture student whose work required space and concentration, described this struggle:

It was incredibly difficult for me. My mood plummeted. At home, there were constant interruptions—my parents, my younger siblings who were also learning from home, the neighbors... I couldn't find a quiet moment to concentrate. I spent most of the day isolated in my small room, and it gave me this heavy, unpleasant feeling of being trapped. The commute I used to hate suddenly seemed like a luxury.

3.5.2. Theme 2: The Double Burden: Technological Failures and Environmental Distractions

A near-universal theme was the frustration with technical and environmental barriers, which created a "double burden" on students' ability to learn. Technical failures were a constant source of anxiety. The most frequently cited problem was unreliable internet, a significant issue in many Arab towns. Khaled, an economics student, articulated this frustration vividly:

I'll tell you the truth, I didn't have a new, fast computer like some students. And our internet at home is terrible. Every lecture, I would disconnect two or three times. Each time, I ran into a new technical problem that took 15 minutes of the lecture to fix. There were times I was marked absent even though I was present, just because my camera froze. It was humiliating.

Tariq, a computer science student, added another layer, pointing out the inequality in equipment:
People think because I study computers I have the best setup. But my family has one good laptop that my sister and I had to share. So for some classes, I had to use my phone. Trying to follow complex code on a tiny phone screen is impossible. It's not a fair starting line.

Beyond technology, the home environment itself emerged as a major impediment to deep learning. The structured, focused setting of a classroom was replaced by a chaotic domestic sphere filled with distractions. Marwa, a graduate student in business, noted:

The biggest difficulty for me was concentration. There was always something to distract me, like the smell of food my mom was cooking, my little brothers running around the room... The microphone on Zoom was a constant source of stress. Sometimes I'd forget to mute it, and the whole class would hear my family arguing in the background. It was mortifying.

3.5.3. Theme 3: A Deeply Divided Preference for Learning Modality

When asked about their preferred mode of learning post-pandemic, a stark polarization emerged. A significant minority of students became strong advocates for online or hybrid learning, primarily due to its convenience and economic benefits. Omar, a law student, was unequivocal:

I prefer to continue my studies via Zoom, and it's a shame they brought us back full-time. Studying on Zoom was perfect for me. I could work, I could travel, I could sit at home and rest. I ate delicious home-cooked meals instead of expensive, bad food on campus. It saved me so much money on gas and rent. It was genuinely a more comfortable and efficient way to live.

However, the majority of participants expressed a strong preference for returning to traditional, face-to-face instruction. They felt the online format was a pale, unengaging imitation of real learning. Yasmin, a tourism student, was blunt:

Studying on Zoom is boring. It completely drained my motivation. It didn't suit me at all. I definitely prefer learning at the college, getting ready in the morning, sitting in a classroom without distractions. For me, real learning is about the energy in the room, the small conversations with the professor after class. Zoom is just a flat screen.

Mahmoud, a fellow law student, elaborated on the pedagogical shortcomings:
I always prefer studying at the college. The preference comes from a learning perspective. Yes, the Zoom lectures are recorded, which is a plus. But in the college, I can speak with the lecturer more comfortably, I can ask a quick question, I can read their body language and my classmates' reactions. On Zoom, that's not possible because not everyone is focused... it's a very passive experience.

3.5.4. Theme 4: A Polarized Impact on Academic Achievement

The central question of the study—the effect on academic performance and excellence—revealed a deeply polarized reality. A substantial group of students, approximately one-third of the participants, reported a noticeable improvement in their grades during the remote learning period. This was consistently attributed to two main factors: the availability of recorded lectures for repeated viewing and the increased flexibility and accommodations offered by their institutions. Abd, a medical student, explained this phenomenon:

I saw a significant rise in my grades, especially in the theoretical courses. My studying method changed completely. I would re-watch the recorded lectures two or three times, pausing to take detailed notes. The material was all organized in the Moodle... Plus, the lecturers gave us accommodations, like open-book exams or an extra exam date for those who were sick. As a result, my grades improved significantly.
Fatima, an educational counselling graduate student, added:

For me, it was about managing anxiety. The pressure of in-class exams was gone. With at-home exams, I felt calmer, I could think more clearly. The ability to review lectures right before the test was a game-changer. I finally got grades that I felt reflected my actual understanding.

However, this was far from a universal experience. An equal, if not larger, group of students reported that their grades either stagnated or declined. They struggled to maintain their previous standards of excellence in an environment they found unmotivating and distracting. Majdi, a high-achieving accounting student, articulated this perspective:

I always worked hard to maintain high grades, over 85. I didn't let the Corona period affect me, but it was a fight. The motivation wasn't there. It's hard to be 'excellent' when you're just staring at a screen in your bedroom. I passed everything well, but I don't feel like I learned as deeply. I can tell you that for me, studying on Zoom did not enhance my excellence; it was an obstacle to it.

3.5.5. Theme 5: Adaptation and Agency: Developing Coping Strategies

Faced with these challenges, students were not merely passive victims; they actively developed a range of coping strategies. The most successful students demonstrated a high degree of agency and self-regulation. Meticulous planning was a common strategy. Ahmad explained:

I had a system... I believe that planning a daily schedule—with practice times, classes, lecture times, exam dates, everything—is the most effective method... This is how I managed my time effectively and avoided getting overwhelmed.

Collaborative learning also adapted to the new medium, moving from library study groups to virtual ones. Noor mentioned:
It was hard, but we found ways. My friends and I from architecture scheduled our own Zoom calls twice a week just to work together in silence, or to critique each other's work. It helped us feel less alone and stay on track.
Leveraging the technology's affordances was another key strategy. Mahmoud, despite his preference for in-person classes, acknowledged:
The reason I managed to keep my grades up was my ability to go back to the material on Moodle. I would download and print all the presentations. Having everything in one place, and especially the recorded lectures, was a tool that helped me deepen my understanding, even if I found the live lectures hard to follow.

3.5.6. Theme 6: The Erosion and Reformation of Social Connections

The shift online had a profound and complex impact on students' social worlds. The most commonly expressed sentiment was one of loss and disconnection. The informal, spontaneous social life of the campus—the conversations over coffee, the shared moments before class—evaporated overnight, leading to feelings of isolation. Yasmin described this social erosion:

It was a very tough and lonely period. My connections with my friends in the department have weakened significantly. We didn't talk much, we didn't meet... In the Zoom lectures, I would just see black screens. You know, not all lecturers require students to open their cameras. So, I didn't even see my friends' faces for a whole semester. It was like they disappeared.

Hiba, a nursing student, spoke of the lost connection with faculty:

Before Corona, I knew my professors. I would go to their office hours. On Zoom, they became just a name and a voice. It felt intimidating to ask questions. The personal relationship was gone, and that made it harder to feel engaged.

Yet, paradoxically, for a smaller group of students, the shared adversity and the nature of the medium led to a reformation of social ties, often making them stronger and more purposeful. Omar explained:

My social connection with my close friends actually became stronger. We started helping each other more, checking in on each other's mental health. We had extra Zoom meetings just to share material and prepare for exams. I don't think the distance changes real friendships; in some ways, it tested and strengthened them.

Noor even found new connections:

I actually got to know new people. In some classes, the lecturer would use breakout rooms for group exercises. Every time I was with someone new, and we had to work together. I ended up making a few good friends that way, people I might never have spoken to on a big campus.

3.5.7. Theme 7: The Unintended Benefits: Financial Relief and Newfound Autonomy

Beyond the direct academic impact, participants identified several significant, often unintended, benefits of the remote learning period. The most prominent were the financial and temporal savings. For students from a community facing economic pressures, this was not a trivial matter. Salma, a graduate student, detailed the impact:

The only reason I could continue my Master's was because of Zoom. I didn't have to pay for a dorm in Tel Aviv, which I could never afford. I saved thousands of shekels on rent, transport, and food. It was a huge financial relief for my family. In that sense, Corona was a blessing for me.

This period also fostered a new sense of autonomy and self-reliance. Ahmad noted:

I believe that behind every bad thing that happens, there is some good waiting. The online learning allowed me to work and save money... but more than that, it helped me become more independent. I had to manage my own life, my studies, and my job. It taught me discipline.

3.5.8. Theme 8: The Elephant in the Room: The Perceived Digital and Social Divide

The final, and perhaps most sensitive, theme was the students' perception of a significant gap between their experience and that of their Jewish peers. When asked about this, participants responded cautiously but with a consistent narrative of systemic disadvantage. The most cited issue was the digital divide, not just in terms of personal wealth but public infrastructure. Ahmad explained:

It's a good question. In my opinion, there's a major difference in access to technology and the internet. As I see it, a large part of the Arab population, especially in towns like ours, lacks access to proper equipment or a fast, stable internet connection. The infrastructure in Arab localities is simply not prioritized by the state. This isn't about individual families; it's about community-level neglect.

This was compounded by socioeconomic and cultural factors. Noor spoke to the domestic environment:

I think there are differences in the family context. In many Arab families, homes are more crowded. There might be less of a culture of 'quiet study time' because the concept of personal space is different. Also, the economic pressure is immense. A Jewish student might have parents who can just buy them a new laptop. For us, it's a major family decision.

Yasmin connected it directly to the ability to perform academically:

In this context, I say... there are clear differences in living conditions and economic status... that affect the ability to invest time and effort in remote learning. For example, students who are dealing with complex economic issues or who have to help support their families have additional challenges in investing time and effort. It feels like we are running the same race but starting 100 metres behind.

This perception of running a different race, of facing structural barriers invisible to the majority, was a powerful undercurrent in many of the interviews, framing the entire pandemic experience through a lens of pre-existing inequality.

4. DISCUSSION

The findings of this study paint a complex, polarized picture of the impact of Emergency Remote Teaching on a marginalized student community. The "double-edged sword" metaphor captures the central paradox: the same technology that offered a lifeline of access and flexibility to some, acted as a barrier and a source of profound stress for many others. By weaving together our multi-scalar theoretical framework, we can move beyond this paradox to a deeper, more critical understanding of the relationship between technology, pedagogy, and social justice. The discussion is organised into three sections, each exploring a key analytical thread.

While "Zoom fatigue" has become a popular term, our findings, read through the lens of SST and CLT, suggest it is not merely a psychological response to a technological interface. Rather, it is a socially co-constructed phenomenon. The extraneous cognitive load experienced by these students was not generated by Zoom alone; it was a product of the collision between the technology's demands and the students' unequal social realities. For an affluent student in a private room with fibre-optic internet, the extraneous cognitive load of a Zoom lecture is relatively low. For students like Khaled, whose internet was repeatedly disconnected, or Marwa, who was constantly distracted by family noise, the cognitive load was exponentially higher. Their mental energy was consumed not just by the lecture content, but by the ongoing struggle to maintain a stable connection and a semblance of a "proper" learning environment.

This demonstrates the concept of the seamless web in action (Hughes, [12]). The "technical" problem of bandwidth is inseparable from the "social" problem of a crowded home and the "political" problem of state neglect of infrastructure in their communities. Therefore, "Zoom fatigue" for these students was not just about processing non-verbal cues; it was the psychological weight of managing structural inequality in real-time. The technology's design, which assumes a stable connection and a private space, clashes with the lived reality of many students, creating a punitive psychological tax. This tax is not distributed equally; it falls most heavily on those who are already disadvantaged.

Bourdieu's theoretical toolkit provides the most powerful explanation for the deep-seated inequalities revealed in our findings. The sudden shift to ERT was a radical restructuring of the academic field, fundamentally changing the "rules of the game" and the forms of capital required for success. Success was no longer contingent primarily on traditional academic skills; it now demanded significant economic capital (a fast computer, reliable internet), cultural capital (digital literacy, a quiet study space), and social capital (robust peer networks that could survive the transition to a virtual format).

Our findings vividly illustrate how a deficit in these capitals translated into academic struggle. However, the concept of habitus allows for a deeper analysis. For many students, their habitus—their embodied dispositions and ways of being, honed for the physical campus—was suddenly misaligned with the new digital field. As Majdi stated, "It's hard to be 'excellent' when you're just staring at a screen in your bedroom." This feeling of disorientation is a symptom of a habitus-field mismatch. The embodied routines of commuting, sitting in a lecture hall, and engaging in face-to-face debate were rendered obsolete. The new field required a different habitus, one adapted to solitary, self-regulated, screen-based work—a habitus that is easier to

possess for those whose home life already aligns with middle-class norms of privacy and quiet intellectual labor.

This mismatch is where symbolic violence occurs. When students like Majdi feel they are not learning "as deeply" or are less "excellent," they are internalizing a structural problem as a personal failing. The university, by valorizing a mode of learning that is only fully accessible to those with the right capitals, implicitly communicates that those who struggle are personally deficient—less motivated, less disciplined, less "excellent." The humiliation Khaled felt when his camera froze is a potent example of this. The shame was not directed at the poor infrastructure or the university's inflexible attendance policy; it was turned inward. This is the insidious power of symbolic violence: it persuades the dominant to accept their own domination by misrecognizing structural constraints as individual shortcomings. Yasmin's powerful statement about "running the same race but starting 100 meters behind" is a moment of lucid resistance to this violence, a clear-eyed recognition of the structural nature of the disadvantage.

The widespread sense of isolation reported by the students speaks directly to a profound deficit in social presence. The "black screens" of a Zoom lecture hall represent the stripping away of the affective, interactive, and cohesive cues that create a sense of community. However, our findings push us to think more critically about presence. The ERT model did not just reduce presence; it privileged one very narrow, technologically mediated form of it (being visibly and audibly "on" in a synchronous session) while devaluing all others: the embodied presence of sitting next to a friend, the informal presence of a chat before class, the ambient presence of a bustling campus.

The paradox of students like Omar, whose close friendships strengthened, or Noor, who formed new connections in breakout rooms, is instructive. It suggests that meaningful social connection is possible online, but it requires deliberate design and agency. It does not happen in default. These students actively rebuild their social capital through intentional, purposeful action. This highlights a key failure of ERT: the assumption that simply placing students in a shared digital space would be enough to foster community. The implication for post-pandemic pedagogy is clear: if online and hybrid learning are to be humane and effective, they must include structured, intentional strategies for cultivating all three dimensions of social presence. This is not a technological challenge; it is a pedagogical one.

5. CONCLUSION

The forced migration to Zoom-based learning during the COVID-19 pandemic was a crucible for Arab students in Israel, testing their resilience while exposing the deep structural fissures in the educational landscape. This study has revealed the profoundly paradoxical nature of their experience. For a minority, remote learning was a gateway to newfound autonomy and financial relief, a latent function that lowered barriers to access. For the majority, however, it was a daily struggle against technical failures, domestic distractions, and a crushing sense of social and academic isolation—latent dysfunction that amplified existing inequalities.

This critical socio-technical analysis demonstrates, above all, that the impact of an educational technology is not inherent in the technology itself but is forged in the volatile intersection between the medium and the multi-layered context of its users. For Arab students in Israel, this context is one defined by a persistent digital and socioeconomic divide, itself a product of historical and ongoing structural inequality. The pandemic did not create these inequalities, but it held a magnifying glass to them, casting them into stark relief and transforming them from abstract background conditions into immediate, concrete determinants of academic success and

failure. The university's adoption of Zoom, while presented as a neutral, technical solution to a logistical problem, functioned as a powerful mechanism for the reproduction of social hierarchy, enacting a form of symbolic violence on its most vulnerable students.

As we move forward into an era where digital learning is irrevocably part of the higher education landscape, the voices of these students offer a vital and cautionary lesson against the allure of technological solutionism. The problems this study revealed—inequity, isolation, cognitive overload—cannot be solved with a better app or a faster internet connection alone. They are fundamentally political and social problems that demand political and social solutions. A future of equitable education cannot be built on technology. It must be built on a foundation of social, economic, and epistemic justice. This requires a steadfast commitment from educational institutions to bridge digital divides, to invest in critical, humanizing pedagogies, and to accept their ethical responsibility to create learning environments—whether physical or virtual—where every student has a genuine opportunity not just to participate, but to thrive.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not openly available due to the sensitive nature of the interviews and the need to protect participant confidentiality.

DISCLOSURE OF INTEREST

The authors report there are no competing interests to declare.

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