RESEARCH ARTICLE

The digital divide, gender and education: challenges for tribal youth in rural Jharkhand during Covid-19

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Abstract When analysing the Covid-19 pandemic potential consequences on education, it is evident that it had adverse effects on the existing educational inequalities worldwide. However, little is known about how the digital divide have worsened the conventional educational system and reinforced pre-existing gender inequalities among the historically marginalised communities. This research paper explores how the pandemic, along with digital divide, deteriorated the educational system among the socially deprived groups (i.e. tribals also known as indigenous or Adivasis) and place them in a disadvantaged position. The paper reflects on how the Covid-19 pandemic re-configured the pre-existing issues of educational inequalities and how the digital dived have been manifested in a way that has particularly affected the young tribal girls. For this study, semi-structured interviews with tribal students, their parents and teachers residing in a remote area of Jharkhand, India, were conducted to understand their experiences of shifting to online education mode. Other than accessibility and infrastructure issue, the findings reveal that the elements of cultural and social issues (related to perceived benefits of education for girls and mindset or beliefs parents and teachers towards effectiveness of digital mode of education delivery) create and reinforce the digital divide for the tribal girls in the hinterlands. Based on the information collected from the interview, the study emphasises on re-thinking the digital learning ecosystem and provide policy recommendations to counteract the worsening digital divide and educational inequalities among socially deprived groups.

Keywords Educational inequalities · Digital divide · Covid-19 pandemic · Tribal youth · Bourdieu’s capital

Introduction

Covid-19 induced unprecedented hardship to individuals worldwide and particularly disrupted the conventional in-person delivery of educational services (García-Morales et al. 2021). Due to Covid-19 induced lockdown, educational institute across India was forced to shut down its campus and engage in delivering classes, primarily through a digital platform (Maity et al. 2021). While for the affluent students and educational institutes in the cities, the switch from
physical to virtual classroom was smooth (Cheng 2020); however for the rural areas, where the stable internet connection is elusive and affordability of digital gadgets is low, it created a turmoil in access or delivery of the educational services (Ticona 2022). The differences in the accessibility and affordability of the online education have been deemed as the ‘digital divide’ where there is fair emerging discrepancy between the haves and have-nots of the digital infrastructure (Rajam et al. 2021). Media articles have also highlighted how the students in rural India suffered from a lack of internet connectivity, laptop and mobile phones to attend the online classes (Mishra et al. 2020).

Beyond the affordability and internet issues, there is little discussion on how the digital divide could be manifested due to different social and cultural aspects that varies across different geographic regions (Reddick et al. 2020). More particularly, how the girl students from the non-affluent communities face the hurdles in terms of digital gender divide is yet to be fully explored (Centre for Catalyzing Change 2021). Understanding the digital divide across the gender is an essential element as it can reveal how there could be a variation in the way boys and girls were and are treated when it comes to accessing education through online mediums. Several research have also called for an in-depth, context specific studies that reveal impact of Covid-19 on girls’ education (Jain 2020; Centre for Catalyzing Change 2021). This article responds to such calls by studying tribal (also known as indigenous and Adivasis) girls’ experiences accessing education remotely during the Covid-19 induced lockdown and beyond. Hence, this research paper attempts to uncover the social and cultural factors perpetuating gender digital divide through the following questions:

1. What role do family, community and government play in maintaining or perpetuating the digital divide for the rural tribal girls?
2. How is the digital divide for the tribal girls further strengthened due to the sociocultural biases of community members, teachers and family members?

This article has twofold objectives, first to empirically understand how the digital divide manifested for the tribal boys and girls in the remote areas of Jharkhand state of India. The second objective is to identify a framework that could explain the gender digital divide from the viewpoint of Bourdieu’s (1986) framework on social, cultural and economic capital. The article is further divided in the following way—section two reviews literature on how tribal girls are particularly marginalised in terms of accessing education during the Covid-19 lockdown. This section further develops a framework using Bourdieu’s impression on different ‘forms of capital’ to analyse and discuss the findings on the digital divide for the tribal girls. Section three illustrates the study’s research design, method and data analysis process. Section four describes the empirical findings, followed by the analytical discussion on gender digital divide. The last section provides conclusion and identify policies that could facilitate young tribal girls and women to achieve equitable digital access for education.

**Literature review and theoretical framework**

The sudden and widespread proliferation of Covid-19 had far reached implications, where almost all the aspect of life was affected and the focus of the government machinery moved towards containing the death rates and community transmission (WHO 2020). The advances in information and communication technologies (ICTs) proved to be a significant facilitator, which has allowed the educational institutes to impart education and knowledge sharing through online medium (Chandwani et al. 2021). While technology has been championed as the provider of alternatives, the issues of unequal distribution and poor adoption of ICTs cannot be overlooked (Mathrani et al. 2021a, b). Access to ICTs and digital divide has been a pervasive issue; however, in the course of the Covid-19 pandemic it drew renewed attention to the importance of reducing various type of digital gaps between the developed and underdeveloped countries (Yıldırım et al. 2022). The pandemic has blatantly exposed the issues like accessibility, affordability, exclusion and gender divide and bought them to the forefront of educational policy discussion (Harb and Sidani 2021). For instance, it has been argued that the objective of digitization would not be successful till the policy intervention is able to provide and equitable access to digital technologies to the common mass (Harb and Sidani 2021). Furthermore, at family
and individual level, the socio-economic and demographic realities have created division within where not all members could afford to have access to high quality digital infrastructure (Kanagawa and Nakata 2008). Limited access to digital technology was observed for young girls who were residing in remote areas (Bozkurt et al. 2020). The consecutive sections discuss the general research on the theme of digital divide and thereby position it within the broader framework of Bourdieu’s forms of capital.

Digital divide: the origin, manifestation and reinforcement of digital inequities

The phrase ‘digital divide’ was coined in the 1990s, which was originally used to illustrate the disparity in access to computers between students of different races (Straubhaar et al. 2021). However, it was not a simple case of ‘haves’ and ‘have-nots’ of digital infrastructure and technology, but it was more about systematic differences that produce champions and failures of the digital society (Hargittai et al. 2018; Eubanks 2011; Dewan and Riggins 2005). With the advances in ICTs, there have been a pertinent issue of digital divide cropping up in the academic and policy circle. Broadly the ‘digital divide’ has been identified as having differential access to the technology which could have very broad implications. Digital divide is also known as.

“The gap between people who have sufficient knowledge of and access to technology and those who do not can perpetuate and even worsen socioeconomic and other disparities for already undeserved groups.” (Moore et al. 2019: i).

It has been argued that the digital divide actually represents a multi-layered and dynamic social disparity which reflect the historical advantages or disadvantages of people from different race and region (Goedhart et al. 2019). The digital divide has been a manifestation of socio-economic disadvantages of groups or communities which lack education and income opportunities and are marrd with poverty and gender disparity (Mubarak et al. 2020; Serrano-Cinca et al. 2018; Jackson et al. 2008). Such groups or communities have limited access to digital devices and infrastructure and many could not afford ICT-related products or services. The determinants of digital divide need a closer investigation, where context-specific, multi-level approach is used to better illustrate the real-life complexities and ground realities (Hargittai et al. 2018).

To better understand such a digital divide, scholars have proposed two different levels of digital divide (Van Deursen and van Dijk 2019; Hoffman et al. 2001). First stage of digital divide deals with ‘access to technology’—where the ability to access or afford the benefits of the digital technology creates the ‘haves’ and ‘have-nots’ (Hoffman et al. 2001). More specifically, for the developing nations, the issue of affordability of mobile devices, loaded with internet access packs, could be elusive for a large segment of people with modest means. Second, aspect of digital divide refers to the ‘skill gaps’ which covers a wide range of operational skills required to navigate and evaluate online information and share content using desktop or mobile devices (Van Deursen and van Dijk 2019). While making the digital technology accessible presuppose the possession of relevant skills by the end users, at the ground level, there is significant differences in between the advantageous and disadvantaged groups, and who can do better with technology, once they have access (Attewell 2001). The knowledge or skill-gaps therefore become a crucial determinant of whether the digital divide among the different groups could be narrowed.

Digital divide during Covid-19: the multiple and cumulative disadvantages

Online education during the pandemic lockdown pushed for frenetic attempts by the educational institute and teachers to engage online delivery, and for many this was an uncharted territory (Mishra et al. 2020). It has been reported that despite the availability of numerous and better equipped digital platforms (such as Zoom, Google Meet, Microsoft Teams), many teachers primarily used WhatsApp to teach the students (Mishra et al. 2020). Teachers attributed this preference to ease of use as they were more familiar with WhatsApp in their daily lives as compared to other digital services. In addition, the absence of digital infrastructure (e.g. non-availability of laptops or desktops, power outages, slow network access and expensive internet data packs) also hampered both the students and teacher’s capability to fully unlock the potential of online teaching. If the ground-level issues pertaining to access, skills and affordability of digital
infrastructure remain unaddressed, it has potential to widen the digital divide and severely hamper the value of education.

Covid-19 exposed the multiple reasons behind digital inequality across developing and under-developed countries which severely affected their education sector (Iivari et al. 2020). For instance, studies conducted on digital divide and education in India noted that many urban as well as rural families required access to the digital devices, internet, and learning tools (Mathrani et al. 2021a, b). Yet, another concern was related with the lack of skills and competencies to properly use digital media among parents, pupils and teachers (Mathrani et al. 2021a, b). Several instances of mistreatment of students (e.g. removing the child from online learning group) whose parents were not able to pay the fee due to financial distress were reported (Singh 2020). Such moves by the school further exacerbated the digital divide for the students belonging to poor economic category, where students reported their inability to complete the education due to pandemic contingencies (Jain 2020). The unequal distribution of household responsibilities between men and women is prevalent across countries and cultures, where the ‘invisible work’ of women engaged in household chores is economically devalued (Wenham et al. 2020). Likewise, for the girl students, the normative gendered division of household work was amplified during the Covid-19 lockdown phase, which positioned them in caretaking roles for family members (McLaren et al. 2020). The situation was further worsened for girls or women from socially disadvantaged groups in remote geographical location, where other than gender-specific norms, the girls experienced significant challenges in accessing the digital infrastructure (Centre for Catalyzing Change 2021).

Women and the digital divide

In the milieu of digital divide, there is once again historical reinforcement of women being in disadvantageous position, where millions of young women were forced to leave the school or college education (Centre for Catalyzing Change 2021). While digital medium provided a means of distributing information and guaranteeing that they could learn without interruption at home, however it did not pan out well for many young girls and women. Women belonging to indigenous communities have the lowest levels of accessibility to education and internet. India’s Ministry of Women and Child Development and its Ministries of Social Justice and Empowerment and Information Technology and Electronics had initiated development assistance programs for indigenous women’s and adolescent girls. For instance, The Kishori Shakti Yojana (KSY) aims to improve the health, cleanliness and opportunity for learning life skills of young girls aged 11–18. It also attempted to bridge the learning and skill gap and provide practical or vocational trainings for earning livelihood. In order to facilitate the self-paced learning, various online learning platforms such as e-Pathshala, SWAYAM, NPTEL and Swayam-Prabha DTH channels have been functioning. The vision is to enable combined learning and provide high quality instructor resources to masses for free. It has provided multiple ways for accessing the digital/online education, including e-content for the visually impaired through reading podcasts. Still, accessibility, affordability and knowledge of such digital learning platforms were low in rural areas, especially among indigenous young women. In Jharkhand, the Centre for Catalyzing Change (2021) noted that fear of technology and knowledge gap were the key barriers to digital access for young tribal girls in remote regions. They neither understand the concept nor have a conducive environment to study through online medium. However, limited research has been conducted on what role family, community and government play in maintaining or perpetuating the digital divide for the rural tribal girls. How is the digital divide for the tribal girls further strengthened due to the gender biases? To further understand the role of gender biases in strengthening the digital divide, the concept of capital, as proposed by Bourdieu, has been discussed as the key theoretical construct.

Theoretical framework: Bourdieu’s concept on capital

The work of Bourdieu on forms of capital received a global recognition and continue to add value in educational research field (Rawolle and Lingard 2013). Bourdieu’s concepts have been implemented across a range of diverse situations and context (see Vryonides 2009), however Baumert and Schümer (2002) provided a framework for investigating the
socio-cultural elements in the educational research field. Based on individual’s socio-economic status, the capital theory has been divided into three different kinds—(1) social capital—comprising of social connections and commitments; (2) economic capital—includes money converted directly and indirectly and forms of property rights; (3) cultural capital which could be converted into economic capital and could be formalised through property rights. The cultural capital

...can exist in three forms: in the embodied state, i.e., in the form of long-lasting dispositions of the mind and body; in the objectified state, in the form of cultural goods (pictures, books, dictionaries, instruments, machines, etc.), which are the trace or realization of theories or critiques of these theories, problematics, etc.; and in the standardized state [...] of educational qualifications. (Bourdieu 1986: 243)

Embodied cultural capital is defined in this research as ‘knowledge, abilities and skills in terms of long-term dispositions mostly internalised through parental and educational socialisation’ (Rudolph 2019: 97). It broadly embodies the educational concept of ‘competence’, encompassing aspects like motivation and language and understandable cognitive inclination. As exemplified by musical instruments or literature by Bourdieu, objectified cultural capital is likewise applied to digital teaching and learning equipment. According to Bourdieu, institutional cultural capital comprises degrees and educational credentials of the students, and identifies them with a specific foundation. In this vision, a ‘failed school’ or ‘troubled school’ exemplified a low level of institutional capital. Social capital broadly refers to an individual’s social link/network and their potential (often symbolic) through which an individual could exchange information or physical resources.

The study expands the concept of different capital forms to understand and evaluate the position of tribal girls gender digital divide. Table 1 briefly summarises the Bourdieu’s form of capital and its relevance for this research. From the viewpoint of this research, other than individual factors, a systems approach is taken to understand accumulations of social and educational disparities along with gender digital divide for tribal girls. The research takes into consideration the account of educational infrastructure, local culture and position the girl student’s within their sociocultural environment, including their familial and social networks (Frohen et al. 2021).

From Table 1, it is evident that the advantages or disadvantages for an individual seems to be rooted in larger social and structural factors in which the person is embedded. Therefore, other than evaluating the individual determinants for accessing the digital education, it might also be useful to understand the larger socio-economic and cultural context of the region.

Research design and methodology

The present study is exploratory in nature and a qualitative methodology was opted to collect data from the students (both boys and girls), parents and teachers in a tribal village located in Sisai block, Gumla district of Jharkhand. Jharkhand is house for over 30 tribal communities and according to Census (Census 2011a, 2011b), the total population of Sisai block is 1,16,844, where around 70% of the population consists of the tribal household. The literacy rate in the Gumla district is 51.99% (Census 2011a, 2011b) and Sisai block has two senior secondary schools and one government college. Both the school and college attract students from around 84 nearby villages, who come for receiving their secondary and higher education.

The field visit was conducted in the month of February 2021, where the author spent time in the Sisai block taking interviews and making observations. Due to restrictions in travel, further rounds of data collection happened over the telephonic interviews, for which the contacts were obtained through snowballing method. Research participants were initially contacted through researcher’s network of peers and colleagues who were working in tribal areas. Since the author has been actively engaged in conducting field-based research in the tribal areas and had access to resource persons and securing interviews of the respondents was easy. The researcher believes that her indigenous identity aided to win the interviewees’ trust. The researcher belonged from the Lohariya tribe of Jharkhand, which is distinct from the Santhal, Oraons, Munda and other tribal communities. Before the telephonic interview, the researcher briefly described about the study goal and anonymity provision. Transparency and assurance of reporting back
the result became the central point of the researcher’s relationship and rapport building with the participants. A total of 60 interviews of the students were taken and Table 2 briefly identifies the socio-demographic profile of the participants interviewed for this study.

In terms of education, all the participants were in government college pursuing their bachelor’s degree in three different years, 24 participants were in first year of bachelor’s degree (40%), 19 were in second year (31%) and 17 in third year (28%). With regard to gender, 30 young boys and girls were participants and among them 37 falls into the age group of 18–23 years (61%) and other 23 were in 24–29 years age bracket (38%). Regarding family structure, 21 participants lived with joint family (35%) and 39 had nuclear family (65%). All the participants primarily belonged to families with low income or financial status.

Other than interviewing the college students, interviews with ten parents and five teachers were conducted. Interviews from the students explored their experiences of learning during the lockdown period and understand how actively they were engaged in learning through digital means. With girl students, additional questions on their household roles and responsibilities and experiences with digital form of education were asked. All the students were asked about the availability, accessibility and affordability of digital infrastructure and experiences of learning through online medium. They were also asked to explain how they cope up with digital learning and what they would consider as barriers or facilitators during their transition to digital format of education. From both the parents and teachers, once again the discussions revolved around their opinion on use of digital technology for imparting the education and the challenges they faced during the conversion from conventional (offline) to digital (online) mode of education delivery. Visit to both the schools and the college was made to understand the readiness of the faculty members and nature of digital infrastructural support and training extended to them.

Before conducting the in-depth interviews, the semi-structured questions were shared with other...
researchers who worked with the tribal community to get their feedback which were incorporated in subsequent drafts. For in-person interviews, the researcher provided a brief overview of the research objectives to each participant and requested them to sign a form of informed consent before the interview. In case of telephonic interviews, there was a need to establish trust and make the participants feel at ease. Therefore, the telephonic interviews were conducted over two or three sessions, where first session’s goal was to establish the trust and seek informed consent. Later on, the follow-up interviews seek deeper insights into the challenges faced by the participants during the shift from traditional mode to digital learning. The data were gathered through telephonic interviews conducted in the Hindi or Sadri (local) language. Most of the participants agreed on recording the interview for transcribing purpose. Both the in-person and telephonic interviews lasted between 45 and 60 min. No monetary or non-monetary incentives were provided to any of the participants. The transcripts were translated from Sadri or Hindi to English and for maintaining the anonymity, the real identity/name was deleted from the transcripts and the participants were given pseudo names.

The interview data were analysed using the thematic coding as described by Newman (2006), where ground level or lower-order codes were identified from the interviews. These lower-order codes were later categorised into categories and thereby into larger themes. For instance, the challenges related to securing the digital gadgets, internet recharge, network signal strength were identified as ground level codes. These were clubbed together with infrastructure as the category and later interpreted as theme of accessibility and affordability of digital technology. While discussing the results, the framework of Bourdieu’s capital, as described in Sect. 2, was roped in to provide deeper insights on the role of cultural and interpersonal issues in narrowing or broadening the digital divide.

**Empirical findings from the field study**

From the interviews of students, parents and teachers, three themes that evolved during the interaction was related to infrastructure, cultural and economic problems. When students were forced to continue education online during Covid-19 lockdown, this part delved deeper into digital disparity issues. This study analysed the information collected from the answers to the open-ended, semi-structured questions then categorised it into three different themes, as illustrated in the following segments. The findings have been discussed under the broad subheadings of economic, cultural and digital skills.

**Economic capital: the issues of availability, accessibility and affordability of digital education**

Infrastructure in digital ecosystem refers to the communication devices and technical infrastructure available in a particular geographical region. It refers to the investments made by the government or private players in establishing broadband or mobile internet connectivity. At individual level, the element of affording the suitable gadgets to benefit from larger digital infrastructure is a concern. Therefore, other than availability, the affordability of the gadgets required to amicably participate in the digital ecosystem is vital. From the study, about one-fourth of the student participants reported owing a personal digital device, a smartphone, through which they access the internet (refer Table 3 for details). The remaining three-fourths reported of relying on the shared mobile phones within their households. It is worth to note that none of the research participants had laptop or desktop from which they could access the internet or digital classes. None of the schools or the college had computers meant to be used by the students. This essentially reflected a deep problem of availability and affordability of the digital devices both at educational institutes and individual levels.

Most of the teachers in the college were not resident of Sisai block and primarily stayed in nearby city such as Ranchi and usually commuted to-and-fro on daily basis. The teachers had their laptop and used mobile

| Gender | Kind of digital device used—mobile phones |
|--------|-----------------------------------------|
|        | Had mobile phone | Shared mobile phone |
| Girls  | 4               | 26                  |
| Boys   | 11              | 19                  |

**Table 3** Kind of digital divide. *Source:* Field data
phones for connecting to the internet. The participants adjusted to the new normal when online classes were announced during lockdowns. Data showed that 75% of respondents had to share the digital devices among siblings and adult family members because of the issues of affordability. A 27-year-old young tribal girl shared her notion on how a smartphone was used in her joint family:

“I live in a joint family, and we have only one mobile phone. We all share that phone for our classes. I often miss my classes because my brothers also have their classes and my parents also need it for their conversation...” (Rumi, 27-year, third year graduation student)

From the field data, it was evident that the boys in the family were always prioritised whenever allocation of digital resources was a concern. This argument was highlighted in interacting with one of the girl students

“My brother insisted that he would like to stay in a rented place in Ranchi so that he could have better internet connectivity for his online classes. I also requested similar thing to my parent, however my parents said that they could not afford sending both of us to Ranchi and only my brother can go.” (Sukri, 19-year, first year graduation student)

During the interactions, it was also noted that whenever there were conflicts about who would be getting the mobile phone for the online classes, invariably the girls were on the receiving end. Even the tribal boys had to face similar situations as they could not afford to purchase additional mobile phones. In addition to affordability of gadgets, research participants also highlighted the poor quality (i.e. slow speed) and expensive internet recharge packages. Yet another structural issue was related with stable supply of electricity (i.e. regular power outages, load shedding) and mobile network challenges (i.e. limited mobile data packages and absence of 3G or 4G mobile towers). A 23-year-old tribal boy stated about internet and electricity concerns said:

“We don’t have a reliable internet connection and network tower in my village. During online classes, we have to deal with slow internet, frequent power cuts, and so on... we live in such part of the world where internet connectivity is limited to 2G speeds and the speed for us is mere 40–50 kb/s. This internet speed is good for nothing, forget about it supporting the online classes.” (Jaiwant, 23-year, second year graduation student)

Further, gleaning into the data from the interview presented in Table 4 revealed that Google meets (45%), WhatsApp (30%) and YouTube (25%) were the most frequently used online platform for imparting knowledge. Despite being one of the most well-known information technology businesses, Zoom was not widely used as a learning medium in this region.

A 25-year-old respondent stated that:

“...my smartphone’s setting isn’t a great device for attending online sessions and manage the assignments ...most of the classes are on Google Meet, or teachers usually send WhatsApp videos, and both of them do not run smoothly in my second hand phone. I consider myself lucky if I am able to finish the assignments before the deadline with this device. Managing everything online is a mental strain. I wish if I had a better phone.” (Vivek, 25-year, second year graduation student)

Thus, the interviews of respondents showed that both the structural (network, electric and college) and individual (economic condition) level constraints created an ecosystem which is not supportive of meaningful imparting of education through digital medium. From gender perspective, tribal girls experienced additional domestic disturbances and household obligations that caused mental stress. The following section demonstrates how cultural practices of the tribal community created additional disadvantages for the girls, thus widening the gender digital divide.

Respondents could not receive a conducive environment during online learning due to small digital

| Platforms   | Count | Percentage (%) |
|-------------|-------|----------------|
| Google meet | 27    | 45             |
| WhatsApp    | 18    | 30             |
| YouTube     | 15    | 25             |
devices and internet issues. For instance, a 25-year tribal boy mentioned:

“during online classes … it was not easy to use the Google meet platform on mobile when teachers took online sessions… teachers made a slide in the English language which was hard to grasp the words for us…. In physical classes, we could ask directly…. during online classes, even if we ask, the voice is not clear due to internet disturbance.…” (Paltan, 25-year, first year graduation student)

Another 28-year tribal girl mentioned that the online platform gave them the liberty to learn from home and the teachers also sent the online lecture video on their WhatsApp. Still, she could not watch the lecture videos because her phone storage was not enough to store or play heavy video files. Moreover, due to geographical restrictions and financial issues, she was incapable of going to the cyber cafe to get a print out of the slide decks or the lecture notes.

Other than this, few respondents revealed that they could not contact their teachers for clarification of doubts due to low data or voice call balance in their cell phones. It resulted in the loss of agency for tribal students. And it hampered their self-confidence in performing well over online learning assignments and class involvements.

Cultural performs and digital education: the issue of gendered allocation of household work

Online learning relocated the formal classroom set-up to informal space at home, where having a private room for attending online classes was seldom possible for the participants. Most of the respondents complaint of lack of a dedicated room that was free of household disturbances. Respondents shared their experiences on how digital learning became a part of routine life and from the interviews it was evident that the girls faced more disturbance at home than the boys. According to the female respondents, when the family members had to compulsorily stay indoors (during the lockdown period), the girls were expected to shoulder the household chores. A comparative account of cultural expectations and gendered treatment of boys and girls is summarised in Table 5.

All the respondents mentioned that they could not focus on their studies because of non-conducive home environment. Two tribal girls aged 18 and 25 year old expressed their feelings on it:

“… I am unable to concentrate on my studies due to family disturbance and many times it happened that my family members called me for doing small household work like, removing the earthen pot from the hearth and that too during the class time.” (Anisha, 18-year, first year graduation student)

“My household situation is not favourable for learning… I am simply hoping that this pandemic will pass and will be able to return to college. At home I am unable to concentrate in my studies. I don’t have enough quiet space to study since I can hear youngsters screaming. When I try to study, I usually get distracted. Because I am the only girl at home, I am either sent to do domestic duties and I am tired after that. At least, if we could attend classes at college, I am confident that we will have ample time to study in a conducive environment.” (Anupa, 25-year, third year graduation student)

Not only tribal girls but the boys too faced similar challenges in an informal setting as few family responsibilities or household chores emerged during their classes. A 19-year-old tribal boy stated:

“From my home … .I had to walk a long distance…. the other day, so that I could study in peace, …. I generally avoid people for two motives - first, for good network connection, and next reason is to find a peaceful location free of distractions…. Because I have to catch up with my peers, this technique has worked for me at least to attend the class.” (Lohor, 19-year, first year graduation student)

Another 29-year tribal girl mentioned frequent cancellations of online classes, and she had to adjust her timing for household duties accordingly. Yet another concern raised by the tribal girls was related to lack of parental support and expectation to look after younger siblings at home.

Digital education: perspective of parents and teachers

The general notion of online classes is that it is just any like any other entertainment video and since there is
liberty of dropping off on pretext of connectivity issues, its utility remains limited. This particular mindset was also strong among the teachers of the region, who described online teaching experience as ‘nonsensical’, ‘ineffective’ and ‘waste of time’. One of the teachers in village exclaimed:

“What online teaching are you talking about, first a few students turn up for online classes, when you ask questions, they do not respond, then they drop-off saying they have network issues. This is a random joke, it’s better not to have classes at all than engaging in this remote teaching and patchwork of online education…simply put, this whole online teaching is a farce” (Nishi, a college-teacher)

Similar sentiments were also shared by the parents of the tribal girls, whose opinion ranged from deeming online education as just another ‘time-pass’ activity with no concrete learning outcomes. One of the parents for a tribal girl complained:

“I always thought that she is learning something by having her mobile all the time. However, I realise that she uses to play mobile games more often and that too even during the class hours. What use is such kind of teaching when one can’t even keep a tab on what the students are doing. I therefore snatched her mobile phone and have asked her to help in household chores.” (Anupa’s father)

From the field discussion, it was evident that both the teachers and parents were not prepared for the switch to digital format of education. Both the groups felt that the quality of education deteriorated and the digital delivery of classes was a ‘half-hearted effort’ or mere an eye-wash to showcase and justify the college fee being charged from the students.

**Table 5** Cultural performs.

|                | Boys                                                                 | Girls                                                                 |
|----------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
|                | Lack of focus at home                                                | Study get hamper by irregular routine                                |
|                | Disturbance by family members during lecture                         | Call by parents during classes                                        |
|                | In between studies family responsibility come up                     | Shifting to digital platform, technical issues                       |
|                | Disproportionate allocation of household chores                       | Attending class and managing kitchen                                  |
|                |                                                                      | Eye pain and health issues being all the time on mobile              |
|                |                                                                      | No quiet environment at home                                          |

**Discussion**

The digital divide, is further, manifested and strengthened in the case of tribal girls through a systematic process, where historical disadvantages (at community level) and family biases (at individual levels) cumulatively put the girl students in the receiving end. The mechanism of increasing the gender digital divide among the tribal girls has been facilitated through ‘Selective incorporation’ (of boys) into digital ecosystem, ‘Digital Status Quo’ (maintained by government and private telecom operators) and ‘Gendered Expectation’ (household chores and care work for girls) which leads to cumulative disadvantages. In the process of selective incorporation, it was found that the tribal families had a significant bias towards the education of boys. While this could be unintentional due to affordability issues, the ultimate result is that when there is a choice, the boy’s education would be prioritised over the girls. Young tribal boys seem to be less effected by poor quality of electronic gadgets, power outages, noisy families and distracting household chores. Tribal girls, on other side, reported significant constraints in attending the online classes due to increased domestic obligations, taking care of family members and siblings. Such instances arose because of normative expectations from the girls to meet the household obligations, which at time happened at the expense of educational learnings. The tribal girls were also underconfident about their skills to access online contents.
Yet, another systematic issue, which remained unaddressed by both the government and private telecom operators, is the issue of accessibility to digital infrastructure. It was reported by many of the primary level students in the village that even if they had a smart phone with internet access, they could barely get a strong signal in their household. The broadband coverage, technological infrastructure and affordable data packages have been considered as refereeing factors for delivering additional accessible digital world to underdeveloped cultures (Hoffman et al. 2001). In the absence of the infrastructure and affordable data packs, the aim of narrowing the digital gaps between the rural and urban India would remain elusive. Moreover, even the teachers of the schools struggled to secure a stable internet connection at home or the college. As a result, both the schools and their teachers are impaired to conduct classes through online medium. While the problems are known to both the government and private telecom players, the maintenance of status quo in digital infrastructure has fuelled the problem of digital divide.

Contextualization: forms of capital in socially deprived tribal community

The above-mentioned interview excerpts and discussions show that such contingencies are common place in economically impoverished environment. However, a nuanced understanding reveals that other than economic factors, the cultural and societal norms play an equally important role in determining who would benefit from the limited resources related to e-learning. In this regard, the various forms of capital, identified by Bourdieu, could help in demystifying the ground level realities. Figure 1 attempts to integrate the various forms of capital with the issues pertaining to digital gender divide.

From Fig. 1, it is evident that the digital divide could happen at both structural and individual levels. At structural level, the economic, social and cultural capital of the tribal community could determine the outcomes pertaining to affordability and pressure they could create to bring investments in upgrading the digital infrastructure of the region. The cultural capital could refer to the perception and shared understanding of value of educating the girl child. At individual or household levels, once again the issue of infrastructure is reflected in the form of economic capital. However, a bigger challenge is related to cultural and normative societal norms where differential expectations in terms of educational attainment from the boys and girls. When the poor economic capital is seen in unison with a cultural notion of not imbibing a serious value to girl’s education further fuels the gender digital divide. Under those circumstances, the agency of girls seems to be limited and low educational attainment and poor encouragement met at the society or family level affect their confidence and motivation.

Existing literature illustrates a diversity of methodologies for operationalising economic, social and cultural capital. In current study, economic capital is
proved to be one of the major issues leading to digital divide and the existing literature has deemed economic capital to be easily measurable entity (e.g. parent’s income) (Valentine et al. 2005). However, the aggregate income level could still not reveal the division of resources within a household, as it could happen that most of the economic resources is diverted towards education and development of male child. Such nuanced understanding requires operationalising the concepts of cultural notions, which are difficult to quantify or measure empirically through quantitative methods (Talaee and Noroozi 2019; Dutton and Helsper 2007; Harrison et al. 2002).

Hence, in this research probes like social status, normative cultural practices, social and gender norms, distribution of household chores were considered in analysing the cultural and social capital. Both social and cultural capital has an impact on acceptability of the digital or e-learning methods among tribal community. A shared understanding of significance and general efficacy of digital mode of learning could go a long way in convincing the local community to suitably invest in digital gadgets that could facilitate digital learning environment. When considering the cultural capital, family backgrounds, parents and local teacher’s mindsets have an impact on students’ academic achievement, learning attitudes and academic goals (Checchi 2006). Also, academic achievement is influenced by the family’s size, structure and social or peer group environment (Onatsu-Arvilommi and Nurmi 1997). However, from the viewpoint of this study, the tribal community in Sisai region significantly lacks in having economic and cultural capital and perhaps this could also explain the low literacy and lower academic ambitions of the students. The poor cultural capital, where less importance is attached to quality of education, has affected the skills and knowledge of the tribal students, when compared to their mainstream counterparts (whose parents are proactively supporting them in education and had knowledge or exposure to usage of technology). Most of the tribal parents have never been exposed to the capacity of digital technology in facilitating learning process, which could also be attributed to their historically disadvantageous position. The cascading effect still affect the younger generations, who are underconfident and hesitant about using the digital interface for the purpose of learning.

These disparities depict social and cultural difference in the ways cell phones were used by socio-economically deprived vis-à-vis students from affluent backgrounds. Under such circumstances, mere possession of a smartphone might not automatically lead to its optimum utilisation for the purpose of education. An optimum utilisation of digital resources definitely requires support and interventions from the knowledgeable teachers and supportive family, friends and peer group. Therefore, this article argues that the student’s family background and cultural capital possessed by his/her community would determine if they are really going to benefit from digital learning ecosystem or they are going to remain at receiving end of the digital divide. At every stage of learning phase, the education policy therefore should also consider the family and cultural background, when they target to reduce the digital divide between the mainstream and tribal students. The discrepancies due to family and cultural background were amplified due to Covid-19 lockdowns, as the full impact of historical disadvantages could be witnessed in the form of widening digital divide.

**Conclusion**

This article focussed on understanding the manifestation of digital divide for the tribal girl students residing in the hinterlands of India. Covid-19 has altered the traditional way of educational method. The exclusionary nature of e-learning, for the tribal girls during the Covid-19 pandemic has been successfully unpacked in this study. The girl students encounter a slew of difficulties, which significantly hampered their capacity to fully participate and engage in e-learning. One key conclusion that could be drawn from this study is that the digital divide is both at infrastructure and mindset levels. The extant literature has focussed mostly on the infrastructure and accessibility part of digital divide; however, there exists a digital divide due to the thought process and adaptability of the teachers and parents. From this research, it is evident that due to the mindset of the community and individual family members about the utility of educating the girl child and therefore discriminating them in providing the necessary infrastructure is detrimental for the tribal girls. Likewise, the poor adaptability of teachers in tribal regions towards new
forms of digital education created further barriers in terms of adopting the modern digital education technology. While these caveats were earlier known, however, it was spelled out more vociferously during the Covid-19 induced lockdown and subsequent time when the schools and colleges remained closed. The attitude of parents, teachers and community in general could increase the digital divide for the girl child, irrespective of the fact whether the region has affordability and accessibility of digital infrastructure.

The analysis of different forms of capital demonstrates that attitudes and (cultural) values regarding utility of education play a significant role in determining acceptability of digital format of educational delivery. The implication of the research is twofold. First, the digital divide is also a function of people’s mindset and in order to narrow down the digital divide, there need to be focussed interventions to overcome the barriers in the minds of learner as well as the educator. Both the parents and the educators need to understand the alternative ways of delivering sessions through online medium. It also means to orient the students in ways that are more engaging and enriching than merely delivering a long, monotonous lectures over digital platforms. From the policy viewpoint, other than filling the infrastructure and affordability issues, perhaps suitable emphasis could also be given to address the cultural aspects related to perceived value of online education among the parents and teachers. Future research could possibly focus on comparative account of the e-learning experiences of tribal girls in rural and urban setting. This could possibly reveal if the challenges faced by rural tribal girls are of universal in nature or is a geographically limited to remote areas.

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Conflict of interest The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

References

Attewell P (2001) The first and second digital divides. Sociol Educ 74:252–259. https://doi.org/10.2307/2673277

Baumert J, Schümer G (2002) Famililiäre Lebensverhältnisse, Bildungsbeteiligung und Kompetenzerwerb im nationalen Vergleich (Family living conditions, participation in education and acquisition of skills in a national comparison). In: Baumert J, Artelt C, Klieme E et al (eds) PISA 2000—Die Länder der Bundesrepublik Deutschland im Vergleich (PISA 2000—a comparison of the German States). Springer, Wiesbaden, pp 159–202

Bourdieu P (1986) The forms of capital. In: Richardson JG (ed) Handbook of theory and research for the sociology of education. Greenwood Press, New York, pp 241–258

Bozkurt A, Jung I, Xiao J, Vladimirschi V, Schwerer R, Egorov G, Lambert S, Al-Freih M, Pete J, Olcott D Jr, Rodes V, Aranciaga I, Bali M, Alvarez AJ, Roberts J, Pazurek A, Raffagelli JE, Panagiotou N, de Coëtlogon P, Shahadu S, Brown M, Asino TI, Tunwesige J, Ramirez Reyes T, Barrios Ipenza E, Ossiannilsson E, Bond M, Belhamel K, Irvine V, Sharma RC, Adam T, Janssen B, Skyjarova T, Olcott N, Ambrosino A, Lazou C, Mocquet B, Mano M, Paskevicius M (2020) A global outlook to the interruption of education due to COVID-19 pandemic: navigating in a time of uncertainty and crisis. Asian J Distance Educ 15(1):1–126

Census of India (2011a) A-11 individual scheduled tribe primary census abstract data and its appendix. Retrieved from http://www.censusindia.gov.in/2011census/PCA/ST.html

Census of India (2011b) Primary census abstract data for scheduled tribes (ST) (district/sub-dist/town level). https://censusindia.gov.in/2011census/pca/st/pca-st.html

Centre for Catalysing Change (2021) Bridging the digital divide for girls in India. Available at: https://www.c3india.org/uploads/news/Bridging_the_Digital_Divide-Policy_Brief_2021_(website)1.pdf

Chandwani J, Shah D, Shaikh A (2021) A study on role of digital technologies and employee experience. In: Singh PK, Polkowski Z, Tanwar S, Pandey SK, Matei G, Pirvu D (eds) Innovations in information and communication technologies (ICT-2020). Advances in science, technology and innovation (IEREK interdisciplinary series for sustainable development). Springer, Cham. https://doi.org/10.1007/978-3-030-66218-9_2

Checchi D (2006) The economics of education: human capital, family background. Cambridge University Press, Cambridge

Cheng X (2020) Challenges of “school’s out, but class’s on” to school education: practical exploration of Chinese schools during the COVID-19 pandemic. Sci Insights Educ Front 5(2):501–516. https://doi.org/10.2139/ssrn.3565605

Dewan S, Riggins F (2005) The digital divide: current and future research directions. J Assoc Inf Syst 6(12):289–337. https://doi.org/10.17705/1jais.00074

Dutton W, Helsper E (2007) The internet in Britain. Oxford Internet Institute, University of Oxford, Oxford

Eubanks V (2011) Digital dead end: fighting for social justice in the information age. MIT Press, Cambridge

Frohen J, Brodesser E, Moser V et al (eds) (2019) Inklusives Lehren und Lernen. Allgemein- und fachdidaktische Grundlagen (Inclusive teaching and learning. General and subject specific foundations). Klinkhardt, Bad Heilbrunn

Garcia-Morales VJ, Garrido-Moreno A, Martin-Rojas R (2021) The transformation of higher education after the COVID
disruption: emerging challenges in an online learning scenario. Front Psychol 12:196. https://doi.org/10.3389/fpsyg.2021.616059

Goedhart NS, Broere JE, Kattouw R, Dedding C (2019) ‘Just having a computer doesn’t make sense’: the digital divide from the perspective of mothers with a low socio-economic position. New Media Soc 21(11–12):2347–2365. https://doi.org/10.1177/1461444819846059

Harb B, Sidani D (2021) Smart technologies challenges and issues in social inclusion—case of disabled youth in a developing country. J Asia Bus Stud. https://doi.org/10.1108/JABS-10-2020-0389

Hargittai E (2018) The digital reproduction of inequality. Routledge, Milton Park, pp 660–670

Harrison C, Comber C, Fisher T, Haw K, Lewin C, Lunzer E, McFarlane A, Mavers D, Scrimshaw P, Somekh B, Watling R (2002) ImpacCT2: the impact of information and communication technologies on pupil learning and attainment. ICT in Schools Research and Evaluation Series. 7. http://dera.ioe.ac.uk/id/eprint/1572

Hoffman DL, Novak TP, Schlosser AE (2001) The evolution of everyday life—How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care? Int J Inf Manag 55:102183. https://doi.org/10.1016/j.ijinfomgt.2020.102183

Jackson LA, Zhao Y, Kolenic IIIA, Fitzgerald HE, Harold R, Von Eye A (2008) Race, gender, and information technology use: The new digital divide. CyberPsychol Behav 11(4):437–442. https://doi.org/10.1089/cpb.2007.0157

Jain S (2020) Gender dimensions of school closures in India during COVID-19: lessons from Ebola, ORF. Available at: https://www.orfonline.org/expert-speak/gender-dimensions-of-school-closures-in-india-during-covid19-lessons-from-ebola-66643/

Kanagawa M, Nakata T (2008) Assessment of access to electricity and the socio-economic impacts in rural areas of developing countries. Energy Policy 36(6):2016–2029. https://doi.org/10.1016/j.enpol.2008.01.041

Maity S, Sahu TN, Sen N (2021) Panoramic view of digital education in COVID-19: a new explored avenue. Rev Educ Technol 26(3):405–423. https://doi.org/10.1080/10719864.2021.2007325

Mathrani A, Mathrani S, Haja M, Scogings C (2021a) Interpreting aggregate income transgressions among learning communities. Int J Educ Integr 17(1):1–16. https://doi.org/10.1080/14767724.2021.1981253

Mubarak F, Suomi R, Kantola S-P (2020) Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide. J Inf Commun Ethics Soc 18(3):415–430. https://doi.org/10.1080/14767724.2020.1108/JICES-02-2019-0021

Neuman WL (2006) Social research methods: qualitative and quantitative approaches. Pearson education Inc, London

Onatsu-Ar vilommi T, Nurmi J (1997) Family background and problems at school and in society: the role of family composition, emotional atmosphere, and parental education. Eur J Psychol Educ 12:315–330. https://doi.org/10.1007/BF03172879

Rajam V, Reddy AB, Banerjee S (2021) Explaining caste-based digital divide in India. Telemat Inform 65:101719

Rawolle S, Lingard B (2013) Bourdieu and educational research: thinking tools, relational thinking, beyond epistemological innocence. In: Murphy M (ed) Social theory and education research: understanding Foucault, Habermas, Bourdieu and Derrida. Routledge, New York, pp 117–137

Reddick CG, Enriquez R, Harris RJ, Sharma B (2020) Determinants of broadband access and affordability: an analysis of a community survey on the digital divide. Cities 106:102904. https://doi.org/10.1016/j.cities.2020.102904

Rudolph S (2019) Digitale Medien, Partizipation und Ungleichheit. Eine Studie zum sozialen Gebrauch des Internets (Digital media, participation and inequality. A study of the social use of the Internet). Springer, Wiesbaden

Singh HP (2020) Parents protest against private school, demand fee waiver. Hindustan Times, September 14. https://www.hindustantimes.com/cities/parents-protest-against-private-school-demand-fee-waiver/story-qjnxwEOrrmTG4EizhIbLGL.html

Talaee E, Noroozi O (2019) Re-conceptualization of “digital divide” among primary school children in an era of saturated access to technology. Int Electron J Elem Educ 12(1):27–35

Ticoma J (2022) Left to our own devices: coping with insecure work in a digital age. Oxford University Press, Oxford

Valentine G, Marsh J, Pattie C (2005) Children and young people’s home use of ICT for educational purposes: the impact on attainment by key stages, pp 1–4

van Deursen AJAM, van Dijk JAGM (2019) The first-level digital divide: facing a crisis or creating a myth. MIT Press, Cambridge, pp 47–97

Von Eye A (2008) Race, gender, and information technology. In: Murphy M (ed) Social theory and education research: thinking tools, relational thinking, beyond epistemological innocence. In: Murphy M (ed) Social theory and education research: understanding Foucault, Habermas, Bourdieu and Derrida. Routledge, New York, pp 117–137

Wansbrough J (2020) COVID-19 lockdown. Glob Soc Educ. https://doi.org/10.1016/j.gse.2020.100012

Moore R, Vitale D, Stawinoga N (2019) The digital divide and educational equity a look at students with very limited access to electronic devices at home. Available at: https://files.eric.ed.gov/fulltext/ED593163.pdf

Mubarak F, Suomi R, Kantola S-P (2020) Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide. J Inf Commun Ethics Soc 18(3):415–430. https://doi.org/10.1080/14767724.2020.1108/JICES-02-2019-0021

Neuman WL (2006) Social research methods: qualitative and quantitative approaches. Pearson education Inc, London

Onatsu-Ar vilommi T, Nurmi J (1997) Family background and problems at school and in society: the role of family composition, emotional atmosphere, and parental education. Eur J Psychol Educ 12:315–330. https://doi.org/10.1007/BF03172879

Rajam V, Reddy AB, Banerjee S (2021) Explaining caste-based digital divide in India. Telemat Inform 65:101719

Rawolle S, Lingard B (2013) Bourdieu and educational research: thinking tools, relational thinking, beyond epistemological innocence. In: Murphy M (ed) Social theory and education research: understanding Foucault, Habermas, Bourdieu and Derrida. Routledge, New York, pp 117–137

Reddick CG, Enriquez R, Harris RJ, Sharma B (2020) Determinants of broadband access and affordability: an analysis of a community survey on the digital divide. Cities 106:102904. https://doi.org/10.1016/j.cities.2020.102904

Rudolph S (2019) Digitale Medien, Partizipation und Ungleichheit. Eine Studie zum sozialen Gebrauch des Internets (Digital media, participation and inequality. A study of the social use of the Internet). Springer, Wiesbaden

Serrano-Cinca C, Muñoz-Soro JF, Brusca I (2018) A multivariate study of internet use and the digital divide. Soc Sci Q 99(4):1409–1425. https://doi.org/10.1111/ssoq.12504

Singh HP (2020) Parents protest against private school, demand fee waiver. Hindustan Times, September 14. https://www.hindustantimes.com/cities/parents-protest-against-private-school-demand-fee-waiver/story-qjnxwEOrrmTG4EizhIbLGL.html

Straubhaar J, Tufekci Z, Spence J, Rojas V (2021) Chapter 1. Digital Inequity in the Austin Technopolis: an introduction. In: Straubhaar J, Spence J, Tufekci Z, Lentz R (eds) Inequity in the technopolis: race, class, gender, and the digital divide in Austin. University of Texas Press, New York, pp 1–32. https://doi.org/10.7560/728714-002

Talaee E, Noroozi O (2019) Re-conceptualization of “digital divide” among primary school children in an era of saturated access to technology. Int Electron J Elem Educ 12(1):27–35

Ticoma J (2022) Left to our own devices: coping with insecure work in a digital age. Oxford University Press, Oxford

Valentine G, Marsh J, Pattie C (2005) Children and young people’s home use of ICT for educational purposes: the impact on attainment by key stages, pp 1–4

van Deursen AJAM, van Dijk JAGM (2019) The first-level digital divide shifts from inequalities in physical access to inequalities in material access. New Media Soc
Vryonides M (2009) Applying Bourdieu’s concepts of social and cultural capital in educational research in Greece and Cyprus. In: Robson K, Sanders C (eds) Quantifying theory: pierre bourdieu. Springer, Dordrecht, pp 129–140

Wenham C, Smith J, Morgan R (2020) COVID-19: the gendered impacts of the outbreak. Lancet 395(10227):846–848

World Health Organization (WHO) (2020) Rolling updates on coronavirus disease (COVID-19). Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen

Yildirim S, Demirtas I, Yildirim DC (2022) A review of alternative economic approaches to achieve sustainable development: the rising digitalization and degrowth post COVID-19. In: Yildirim S, Demirtas I, Cagri D, Yildirim S (eds) Handbook of research on sustainable development goals, climate change, and digitalization. IGI Global, Pennsylvania, pp 288–307. https://doi.org/10.4018/978-1-7998-8482-8.ch018

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