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Challenges for Female Students in ICT Education at the Higher Secondary Level in Rural Bangladesh

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Abstract:- This study explores the challenges faced by female students in rural Bangladesh pursuing Information and Communication Technology (ICT) education at the higher secondary level. It highlights the digital divide exacerbated by socio-cultural norms, economic constraints, and infrastructural deficits. Traditional gender roles, insufficient parental support, community attitudes, and inadequate technology, internet, and educational infrastructure hinder girls' ICT participation. Economic factors like poverty and opportunity costs prevent families from prioritising girls' ICT education. Gender-biased curricula, a lack of qualified ICT instructors, and insufficient gender-sensitive training create educational barriers. Safety concerns, including gender-based violence and harassment, and the lack of secure spaces and support systems further restrict girls' involvement. The study calls for rigorous research to evaluate interventions, examine long-term consequences, and provide culturally sensitive, sustainable solutions for an equitable and inclusive educational system.

Keywords:- *Female Students; ICT Education; Higher Secondary Level; Rural areas; Bangladesh.*

I. INTRODUCTION

This paper delves into the intricate and multifaceted hurdles female students face in pursuing Information and Communication Technology (ICT) education at the higher secondary level in rural landscapes of Bangladesh. ICT, brimming with potential for empowerment and socio-economic advancement [1], often confronts girls in rural settings with a reality riddled with daunting barriers. These obstacles intertwine with prevailing gender inequalities and the limitations of rural infrastructure, weaving a perplexing tapestry of challenges necessitating nuanced understanding and targeted solutions. Existing research on education, gender, and technology in Bangladesh will be drawn upon, homing in on higher secondary ICT education. The pervasive digital divide, especially stark in remote areas, heavily impacts access to educational resources and opportunities [1, 2]. This disparity is exacerbated by socio-cultural norms, economic constraints, and infrastructural limitations, creating a bewildering interplay of factors hindering female students' progress in ICT education. The ensuing sections will detail the challenges, drawing upon relevant research to comprehensively analyse the issue. The lack of access to technology and quality education is critical in perpetuating the cycle of poverty and inequality [2], further emphasising the urgency of addressing these challenges to promote gender equality and sustainable development.

II. SOCIO-CULTURAL BARRIERS

- *Traditional Gender Roles and Expectations*

In rural Bangladesh, the landscape is often painted with patriarchal norms deeply embedded, severely curtailing the dreams and paths of girls [3]. These norms dictate traditional roles, with a heavy expectation that women should focus mainly on domestic duties, thereby limiting their steps into education and careers beyond the home. This societal construct, steeped in tradition, often places boys' education on a pedestal above that of girls, carving a stark educational gender chasm [2]. The realm of ICT is often seen as a "masculine" domain, further cementing this disparity, as young girls may find themselves dissuaded from stepping into ICT education due to societal whispers and biases [3].

Family decisions regarding girls' education are significantly moulded within this cultural tapestry, frequently opting for immediate economic needs or traditional roles rather than long-term educational investments. The perpetuation of these gender roles creates a formidable barrier to girls' participation in ICT education. Compounding this issue is the absence of female role models in tech, strengthening the belief that ICT isn't a path for women [3]. Without visible female figures in tech professions, the cycle of underrepresentation is perpetuated, and the aspirations of young girls are constrained, their dreams clipped before they can take flight.

- *Limited Parental Support and Community Attitudes*

Girls' educational paths are significantly shaped by parental views and community perceptions [4]. Without financial and emotional support from parents, girls may face obstacles in accessing ICT education [5]. This lack of support can appear in several forms, such as insufficient funds for educational expenses like tuition, books, and technology and a

lack of encouragement from parents who might not value ICT education for their daughters. Additionally, societal biases against female involvement in technology fields can further dissuade girls from pursuing ICT education [4]. These biases often arise from traditional gender roles, cultural beliefs about women's abilities, or a lack of understanding of the importance of ICT skills today. The perception of ICT as predominantly male can create an unwelcoming environment for female students, discouraging their participation and hindering their academic development. The pressure to adhere to societal norms and the absence of support from family and community members pose significant barriers for girls aspiring to pursue ICT education.

III. INFRASTRUCTURE AND ACCESS

➢ *Limited Access to Technology and Internet Connectivity*

The disparity in digital access between urban and rural regions in Bangladesh poses a major challenge [1, 5]. Rural areas frequently lack the essential infrastructure for ICT education, such as dependable internet service, computers, and other technological resources [5]. This deficiency affects girls' ability to attend ICT classes and interact with educational materials. The scarcity of computers and internet connectivity in rural schools presents a substantial obstacle to effective ICT education. Many rural schools do not have adequately equipped computer labs, and even if they do, the internet connection is often unreliable or nonexistent. This situation hinders female students from completing assignments, accessing online resources, and participating in interactive learning activities. The lack of technological access outside of school worsens the issue. Many rural families do not possess computers or internet access at home, restricting opportunities for female students to practice their ICT skills and remain engaged with their studies.

➢ *Inadequate Educational Infrastructure and Resources*

Beyond internet access, the overall quality of educational infrastructure in rural areas is often poor [2]. Schools may lack adequately equipped computer labs, qualified ICT teachers, and appropriate learning materials, hindering girls' access to quality ICT education. The inadequate infrastructure extends beyond the lack of technology. Many rural schools lack basic amenities such as electricity, clean water, and sanitary facilities, which can create an environment that is not conducive to learning. The lack of qualified teachers is a significant problem. Many rural schools lack adequately trained teachers to teach ICT, particularly at the higher secondary level. This lack of expertise limits the quality of instruction, which can negatively impact the learning outcomes of female students.

IV. ECONOMIC CONSTRAINTS

➢ *Poverty and Household Income*

Poverty poses a significant obstacle to girls' education in rural Bangladesh [2, 5]. Many families find it challenging to cover the costs of school fees, uniforms, books, and other educational expenses, making it difficult to send their daughters to school, particularly for specialised subjects like ICT. The high cost of ICT education adds to the financial strain on low-income families, encompassing tuition fees and the need to purchase computers, internet access, and other essential technological resources. These expenses can be prohibitive for impoverished families, hindering their ability to send their daughters to school, let alone afford specialised ICT training. Moreover, economic disparities between urban and rural areas exacerbate this issue, as rural families often face fewer economic opportunities and have less access to financial support.

➢ *Opportunity Costs and Household Labor*

Girls in rural households often contribute significantly to household labour, limiting their time available for education [2]. This opportunity cost and financial constraints make it challenging for families to prioritise girls' ICT education. Girls' involvement in household chores and agricultural work creates a significant time constraint, making it difficult to dedicate sufficient time to their studies. This is particularly challenging in the context of ICT education, which often requires considerable time for practice and engagement with learning materials. The opportunity cost of education is also a factor, as girls may be perceived as having more value in their contribution to household labour than their educational pursuits. This perception reinforces the prioritisation of household work over education, hindering girls' access to ICT education.

V. EDUCATIONAL BARRIERS

➢ *Gender-Biased Curriculum and Pedagogy*

According to Imaduddin [3], ICT education's curriculum and teaching methods may not be adequately designed to meet female students' unique needs and interests. Gender bias in educational materials and classroom dynamics can deter girls from engaging in the subject. The curriculum often lacks content and examples sensitive to gender differences, failing to represent female students' diverse experiences and perspectives. As a result, girls may feel disengaged and unmotivated. Additionally, teaching methods may inadvertently favour male students, using examples that resonate more with boys, which can create an unwelcoming atmosphere for girls and impede their participation and academic growth. Moreover, the absence of female role models within the curriculum can perpetuate gender stereotypes and restrict the ambitions of female students.

➢ *Lack of Qualified ICT Teachers and Gender-Sensitive Training*

A significant challenge to providing effective ICT education for girls is the shortage of qualified ICT teachers, especially those trained in gender-sensitive pedagogy [6]. Teachers must possess the skills and knowledge necessary to foster inclusive learning environments that address their students' diverse needs. In rural areas, the scarcity of qualified ICT teachers presents a major hurdle to deliver quality education. Many educators in these regions lack the expertise and skills to effectively teach ICT, leading to subpar instruction, low student engagement, and unsatisfactory learning outcomes. Furthermore, the absence of gender-sensitive training among teachers can intensify the difficulties faced by female students. Educators who are not equipped to

tackle gender bias and develop inclusive classrooms may inadvertently reinforce stereotypes and discrimination.

VI. SAFETY AND SECURITY CONCERNS

- *Gender-Based Violence and Harassment*

Girls in rural areas, such as those in Bangladesh, often encounter considerable safety and security challenges, including gender-based violence and harassment [7]. These issues are particularly pronounced in ICT education, especially when accessing technology or educational facilities necessitating travelling to remote locations. The journey to school, often long and solitary, exposes girls to heightened risks of violence and harassment due to the significant distances between rural schools and their homes.

Furthermore, the use of technology itself can create new vulnerabilities for girls. Online harassment and cyberbullying are growing concerns, and girls in rural areas may lack the support and resources to address these issues. The lack of awareness and understanding of these issues among teachers and community members further exacerbates the problem.

- *Lack of Safe Spaces and Support Systems*

The absence of safe spaces and support systems intensify the challenges girls face in rural areas [7]. Without proper protective measures and support networks, girls become more susceptible to violence and harassment, which can hinder their involvement in ICT education. The scarcity of secure environments in schools and communities restricts girls' ability to engage in ICT learning fully. They may feel insecure or uneasy using school computers or accessing the internet without privacy and security. Additionally, the lack of support systems like counselling services or legal aid can leave girls feeling isolated and vulnerable when confronted with violence or harassment. This absence of support may deter them from reporting incidents or seeking assistance, potentially causing long-term psychological and emotional damage. Consequently, the lack of protection and support further diminishes girls' participation in ICT education and impacts their overall development.

VII. CONCLUSION AND RECOMMENDATIONS

The obstacles faced by female students in rural Bangladesh who pursue ICT education are intricate and deeply intertwined. Overcoming these challenges necessitates a comprehensive approach that addresses socio-cultural barriers, enhances infrastructure and access, mitigates economic constraints, improves educational quality, and ensures safety and security. Future research should aim to assess the efficacy of different interventions, explore the long-term effects of ICT education on girls' lives, and develop culturally sensitive and sustainable solutions. Emphasising the empowerment of girls and their families to understand the value of ICT education as a means of empowerment and socio-economic progress is critical. The aim should be to establish a more equitable and inclusive educational system that allows all girls in rural Bangladesh to achieve their full potential. This will demand a coordinated effort from the government, academic institutions, community organisations, and international development partners to tackle the systemic issues that sustain gender inequality and restrict access to ICT education for girls in rural regions. Specific measures could include providing financial support to families, enhancing school infrastructure, training teachers in gender-sensitive teaching practices, and creating safe environments for girls to engage in ICT activities. Additionally, increasing awareness about the significance of ICT education for girls and challenging detrimental gender norms is vital for fostering a supportive atmosphere that enables all girls to excel in this field.

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