Research Article

Exploring Gender stereotypical attitude towards using technology in teaching and learning: Perspectives of prospective secondary level school teachers

Debanjali Ghosh[1] & Vijay Kumar Yadav[2]

[1] Scholar, Department of Education, Central University of Jharkhand, Ranchi, Jharkhand

Email- debanjalighosh2013@gmail.com

[2] Assistant Professor, Department of Education, Central University of Jharkhand, Ranchi, Jharkhand

Abstract

Over the years, there has been a biased, stereotypical view concerning gender roles and technology use. Despite rigorous policy reforms and implementation in society to spread societal awareness of gender sensitivity and gender inclusion, women's role in STEM (science, technology, engineering, and mathematics) professions is a matter of great concern. In this regard, teachers play a pivotal role in teaching their students the skills to use technology for educational purposes, along with inculcating values to eliminate gender stereotypical attitudes among them. So, it is much required to explore the prospective teachers' attitude, who are the future nation-builders, whether they have a gender-stereotypical attitude towards using technology in teaching and learning or not. The piece of research mainly explores the prospective teachers' overall gender sensitisation as well as their gender sensitisation regarding technology use in teaching and learning. The study also provides a few suggestions that should be included in the B.Ed. curriculum and adopted by prospective teachers to bridge the gender digital divide that exists in people's minds. The present study follows the descriptive survey method for prospective B.Ed. teachers in Jharkhand, where 400 prospective teachers pursuing B.Ed. courses were selected randomly from 10 teacher training institutions as a sample. The data was collected through circulating questionnaires via Google Forms. Data analysis and interpretation are made by calculating percentages and diagrammatic representations. As a result, it is found that male prospective teachers have a gender stereotypical attitude towards using technology, which is being nurtured by patriarchal society. It is also revealed that the teacher education programme rarely practices the elimination of the digital gender divide from the society which indicates the strong requirement to promote gender sensitisation in society by organising gender-sensitive and gender-neutral technological skill development programmes into teacher education courses.

Keywords: Gender stereotypical attitude, gender sensitisation, technology in teaching and learning, prospective teachers.

Introduction

Over the years technology is playing a significant role in not only performing our daily activities seamlessly but also performing better in the academic field. Especially after the outbreak of the pandemic, the education sector is using technology to provide effective teaching and learning, and teacher education

institutes are being no exception there. Despite the progress in technology integration in our daily life chores and having a deep societal awareness about gender sensitivity and gender inclusion, women still face discrimination in STEM (science, technology, engineering, and mathematics) fields. Factors like, biased upbringing, where girls are forced to choose humanities and language subjects over the science or mathematics one, and lack of training in promoting gender awareness, play as the great influencer in contributing to this gender stereotypical attitude in the society. which is clearly a reflection of gender biasness in the society. Societal unconscious gender bias and a lack of training in promoting awareness from a gender perspective mainly trigger this gender stereotypical attitude.

In this context, quality teachers play a major role, not only in the education system, but also in the societal reforms, by guiding their students in the path of wisdom and rationality. Basically, the purpose of the teacher education institutions is to prepare quality teachers to work in the educational institutions who will shape the young minds by instilling good values and enhance their rational thinking related to the ideas of equal opportunity and eradicate the patriarchal mindset that induces gender discrimination. In the education system, gender sensitivity has become a buzz term now and teachers are there to promote gender sensitivity among students through imparting value education and making them progressive thinkers and responsible citizens (Naqvi & Ahsan, 2021). Regarding this, at first, future nation-builders should be gender-sensitised and have a gender-neutral perspective to filter gender stereotypes from students' minds and from the society itself, in the broader sense.

Following the recent technological trends, prospective teachers are also being trained to conduct technology integrated teaching and learning. But the issue is that the integration of technology in teaching and learning has led to a gender-differenced outlook, with male students often choosing careers requiring technological skills more frequently than female students. This has resulted in the underrepresentation of women in fields like technology related education, employment and research and to solve this issue, along with other policy and programs, UNESCO aims to implement training for Information and Communication Technology (ICT) in education to achieve sustainable development goal 4 by 2030, which is related to technology education. However, these programs often lack a gender perspective, leading to unequal use and access of technology among genders (Trigueros and Aldecoa, 2021). To address this issue, new teaching methodologies incorporating ICT should be practiced in teacher education institutes to avoid the gender difference in using ICT and promote gender sensitisation towards females. Prospective secondary level school teachers are selected for this study due to their crucial role in adolescent development, particularly by instilling good values through their teaching and actively contributing in their personality development.

Literature Review

The following section presents a thematic analysis of past research studies on gender dynamics, access to and use of technology, and the persistent gender gap in STEM fields, despite the implementation of social norms aimed at increasing women's participation. The analysis is organised under relevant thematic categories.

Structural Barriers in Academia: Systemic inequalities have been

found as per the research by Puri and Sengupta (2022). The study highlights that women participation is prevented due to multifaceted barriers. It is also found that the factor, patriarchal structures reproducing in educational institutions is creating an invisible yet strong function of exclusion and strategically disadvantageous women. Barriers like unequal access for having quality education, limited faculty recruitment in STEM fields, gender biased curriculum, insufficient support for women in technical fields. Nandi and others in their study (2023) demonstrates how much importance the social norms have for significantly impacting girls' educational trajectories. Social norms focusing on familial expectations, community perceptions, cultural standards etc., influence women's educational involvement in the STEM field.

Digital Resource Access and Digital Divide: Chakravorti and Chaturvedi (2023) in their research reveals the fact that India has a significant digital gender divide. Women have limited access to technological resources. Limited digital literacy hinders STEM involvement. Another factor like socioeconomic factors came up as the reason behind technological exclusion. Mehta and Kumar (2022) in their research explored the required intervention for addressing these disparities. They recommended providing scholarships, targeting women in STEM, community awareness programs for removing traditional gender roles, and initiatives for mentorship.

Multifaceted Complex Dynamics: Patel and Narayanan (2024) in their study argued that gender bias in STEM cannot be understood through a binary perspective. Caste, regional variations, class have a deep impact on modulating women's experiences.

Sociological and Psychological Dimensions: Lekha and Kumar (2024) explored how stereotypical attitude creates psychological barriers. Stereotypical threats impact academic performance and professional outcomes, undermining women's confidence in the STEM field. Early intervention is needed to address these issues.

Recommendations by Policies and Institutes: Indian schemes like Mahila Shakti Kendra, Beti Bachao Beti Padhao Transformative strategies adoption through multifaceted and interdisciplinary approaches like gender-sensitive curriculum adaptation, creating supportive and inclusive learning environments, developing mentorship programs (Jeyakumar, Gayathri, 2023), challenging existing gender-bias social practices in STEM fields were suggested to address gender biasness (Chakrabarty, 2023). GATI (Gender Advancement for transforming Institutions) an initiative by the Indian Government aims to promote gender equality in STEM fields by working with academic and research institutes (Modi, 2024).

Objectives

To study about the prospective secondary level school teachers' attitude towards overall gender sensitisation.

1. To study about the prospective secondary level school teachers' attitude towards overall gender sensitisation.
2. To explore the prospective secondary level school teachers' attitude towards gender sensitisation for using technology in teaching and learning.
3. To suggest a few measures which should be adopted and practiced

by the prospective secondary level school teachers for bridging the gender digital divide in using technology during teaching and learning and spreading gender sensitivity in the society.

Methods and Procedures

Method: To fulfil the set objectives and as per the need of the present study, Descriptive survey method has been adopted by the researcher.

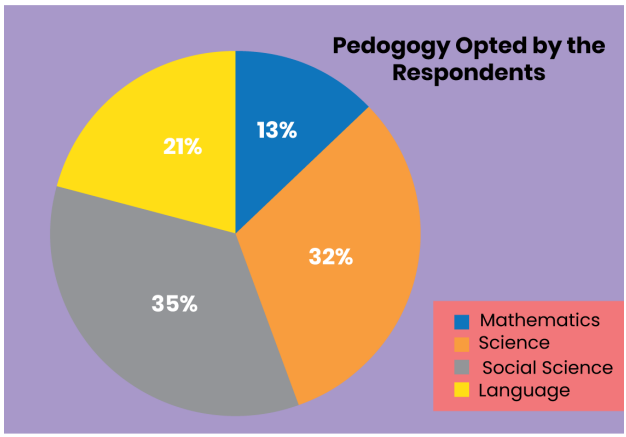
Population and Sample of the study:

Table 1: Gender demographic profile of the respondents

Gender	Frequency of Prospective teachers	%
Male	151	37.75%
Female	249	62.3%

In the present study, the prospective secondary level school teachers of Jharkhand state are considered as the population. 10 districts from 24 districts of Jharkhand were selected purposively and from each district 1 teacher education institute providing B.Ed. course was selected randomly and from each teacher education institute, 40 prospective secondary level school teachers were selected randomly as the sample of the study. Each institute has about 100 secondary level prospective teachers. 40 sample is chosen from the 100 prospective teachers from each institute by using lottery method. The distribution of gender and pedagogy opted by prospective teachers are shown below in the form of table and pie chart respectively. Male female representation and different pedagogy wise representation in the total number of sample are shown in Table 1 and Figure 1.

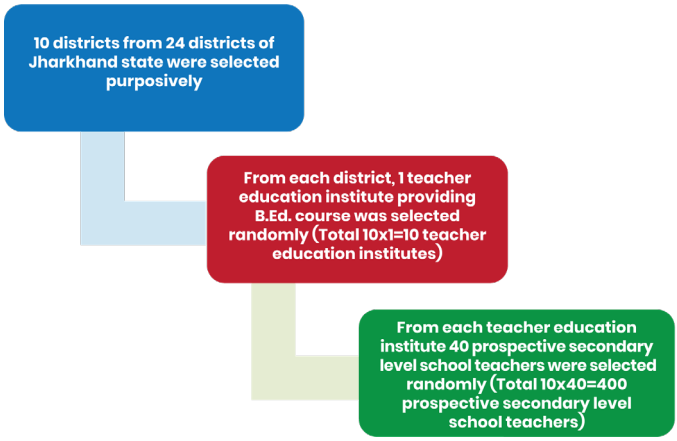
Figure-1: Pie chart representing distribution of respondents from different pedagogy



Sampling Procedure

Chart sampling procedure followed in the present study is represented below in Figure 2.

Figure-2: Diagrammatic representation of sampling procedure



Tools used in the study

To explore the gender sensitive and gender stereotypical attitude of the secondary level prospective teachers, a self-made questionnaire has been made by the researcher and content validity was checked by the experts of the field. The close-ended questionnaire is divided in 2 dimensions like, "Overall gender sensitivity" and "gender sensitive attitude towards technology in teaching and learning". The first dimension "Overall gender sensitivity" is divided among 3 areas like traits (communal traits, weaknesses, dominance traits, agentic traits), men-women relationship, gender sensitisation in women education. The second dimension "gender sensitive attitude towards technology in teaching and learning" is divided among 5 areas like "digital gender gap for using technology in educational purpose", "gender based perception of using technology", "gender based perception regarding access of technological resources and techno competency", "gender based perception of using technology for educational purpose", "exposure related to develop gender neutral and gender sensitive attitude regarding using technology for educational purpose".

The questionnaire consists of 32 items. The items of the questionnaire are in the statement form with multiple options under each. Suitable and relevant options should be chosen by the researcher. Item analysis has been done by calculating the percentage of occurrence of each option chosen by the sample. The questionnaire was distributed to the participants via sending Google Form to them.

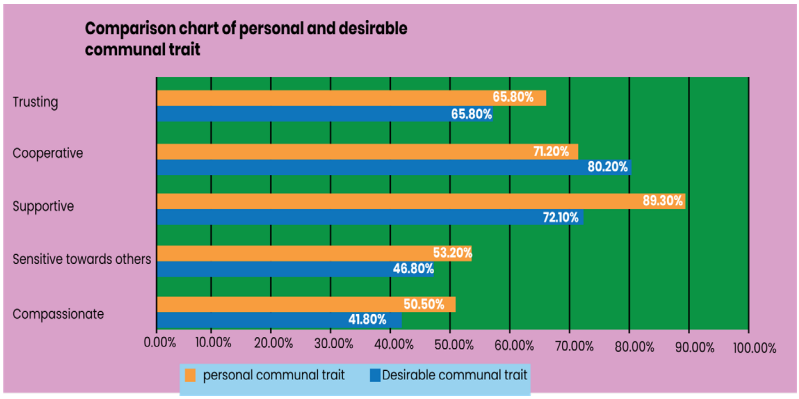
Data Analysis and Interpretation

A. Data Analysis and Interpretation pertaining to Objective 1: To study about the prospective secondary level school teachers' attitude towards overall gender sensitisation

To investigate the secondary level prospective teachers' attitude towards overall gender sensitivity, a two way framework is used in the study. The first one is how the participants perceived themselves and the second one is how they perceived their opposite gender's desirable traits. In this context four types of traits, communal traits (compassionate, sensitive attitude towards others, supportive, cooperative, trusting), weaknesses (worrying, dependent, approval seeking, insecure, uncertain), dominance traits (controlling, stubborn, arrogant, dominant, egoistic), and agentic traits

(ambitious, competitive, efficient, independent, having leadership quality) were taken account into by the researcher. Gender based comparison is done between them and shown in the following diagrammatic representations.

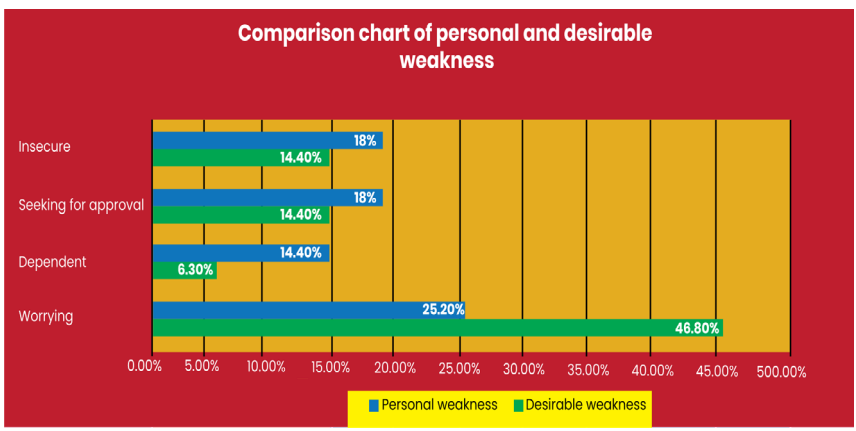
Figure-3: Comparison chart of personal and desirable communal trait



- Concerning prospective teachers' overall gender sensitisation in terms of communal traits were assessed and it is found (Figure 3) that except to 'cooperative nature' all the participants prefer that their opposite gender should have these qualities within them. The least number of participants (41.40 per cent) think that they are not 'compassionate' enough but almost 50.50 per cent participants desire that their opposite gender should have this quality. Among all the communal traits the highest number of people (80.20 per cent) think that they are cooperative and almost 71.20 per cent people prefers that other gender people should be cooperative. Almost 89.30 per cent participants desire that other gender people should be supportive in nature though a little less no of respondents (72.10 per cent) people think them as supportive.

  Also, it is found that communality traits are more selected by the women as their personal trait and by the most of the men this trait is selected as a desirable trait for women.

Figure-4: Comparison chart of personal and desirable weakness

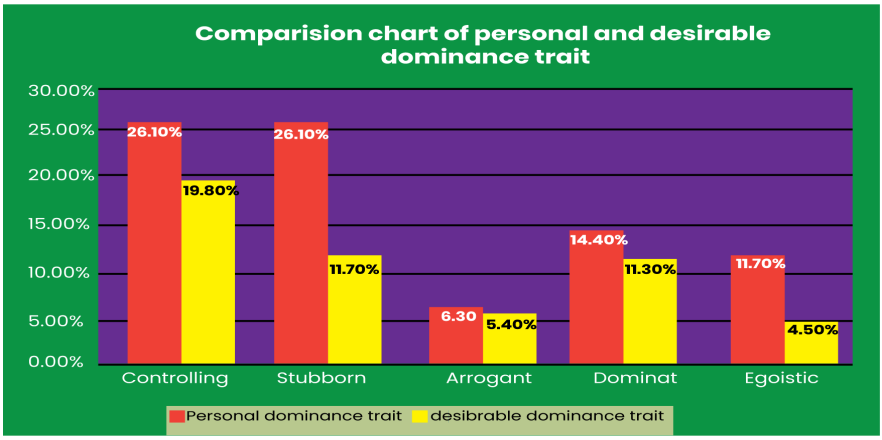


- Prospective teachers' personal weakness and in opposite genders' desirable weakness is checked (Figure 4) and it is found that almost 46.80 per cent people think that they are of worrying nature. 25.20 per cent of people think that this is a desirable trait. Among all the weaknesses, 'dependency' is the least chosen trait by the participants (6.30 per cent) and 14.40 per cent participants think it as a desirable trait in their opposite gender. A smaller number of people have selected these traits 'seeking approval' and 'insecurity' as their personal traits or as the desirable traits. So, it is found that people desire approval seeking traits in the opposite gender.

It is also found that men want few weaknesses like 'dependency', 'seeking for approval', 'insecurity' in their opposite gender and they do not think that they possess such kind of traits wherein few women believe that they possess such kind of weakness and these traits are not desirable in their opposite gender.

Here reflects respondents' gender insensitivity, which is the reflection of gender stereotypical attitude among the society. Where from the young age traits like 'communality', 'weaknesses' are associated with women (femininity) only. Even if women are equally competent in comparison to men, they still get rejected from getting hired in the job and are underrepresented in STEM fields.

Figure-5: Comparison chart of personal and desirable dominance trait



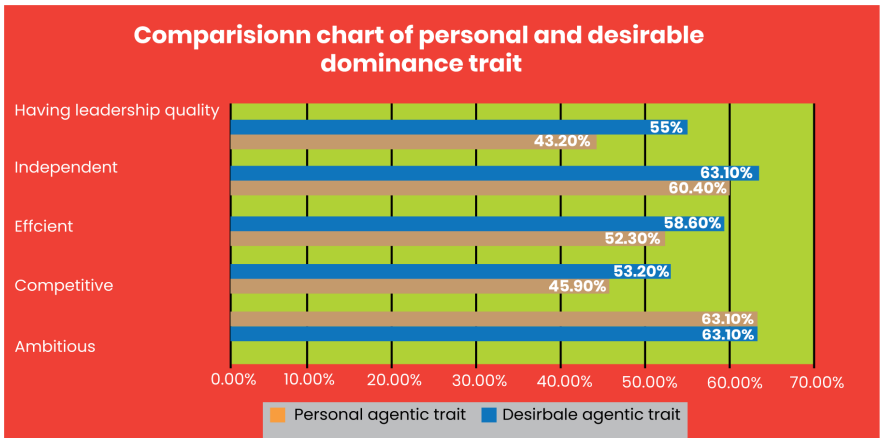
- Prospective teachers' personal and desirable dominance is demonstrated in Figure 5. The two items 'controlling' and 'stubborn' got selected by most of the participants (26.10 per cent) as their personal trait. The least number of people (4.50 per cent) have chosen egoistic nature as their personal trait and as a desirable trait only 5.40 per cent people have chosen arrogance. The desirable dominance trait that is chosen by the highest number of people 19.80 per cent is controlling nature.

It is found that each and every dominance trait is chosen as a personal trait by more male participants rather than female

participants and a lesser number of male participants chose this trait as a desirable trait in other gender in comparison the case of women.

The data shows a tendency that the trait associated with masculinity is more considered as a desirable trait for men which reflects prospective teachers' gender stereotypical attitude.

Figure-6: Comparison chart of personal and desirable agentic trait

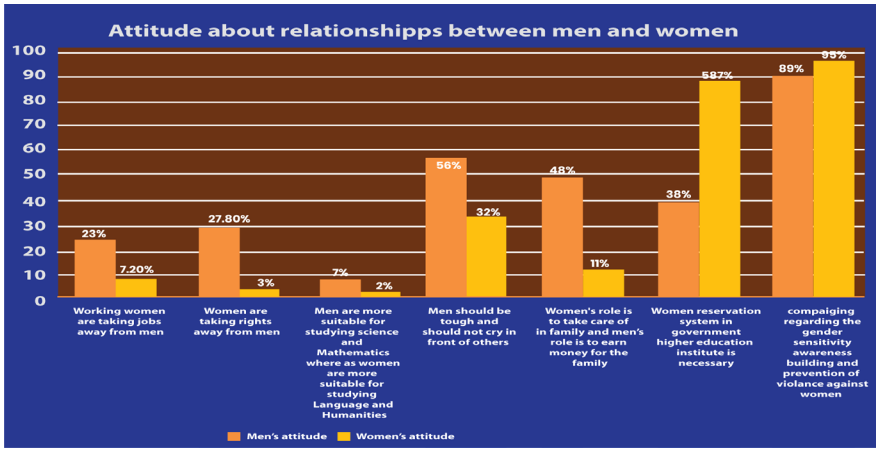


- The personal and desirable agentic traits of the prospective secondary level school teachers are assessed (Figure 6) and it is found that being 'ambitious' is selected by the maximum number of respondents (63.10 per cent) as personal characteristics. Wherein being independent and ambitious both have been chosen as the desirable trait by most of the participants (63.10 per cent). Leadership' quality is chosen as personal quality by least of the respondents (43.20 per cent) and 'competitive' nature is being reflected as an unpreferable quality of opposite gender as it is chosen by the least number of respondents (53.20 per cent) as a desirable trait.

It is also found that'agentic' trait is selected as a desirable trait by most of the women, whereas most of the male respondents chose this trait as their personal trait and less desirable for women. The socialisation process is the underlying cause of such gender insensitive idea where from childhood the girls are taught to be more weak, soft hearted, and communal as it considered as representation of femininity wherein dominance trait, agentic trait is more related to masculinity, the true representation of gender stereotypic attitude.

- Gender-stereotypical attitudes are cultivated from an early age within the family, school, and society, which later contribute to the development of gender-insensitive individuals and, more broadly, a male-dominated society. In this context to explore the secondary level prospective teachers' attitude towards overall gender sensitivity their attitude about relations between men and women is also assessed. The result is represented in Figure 7.

Figure-7: Attitude about relationships between men and women

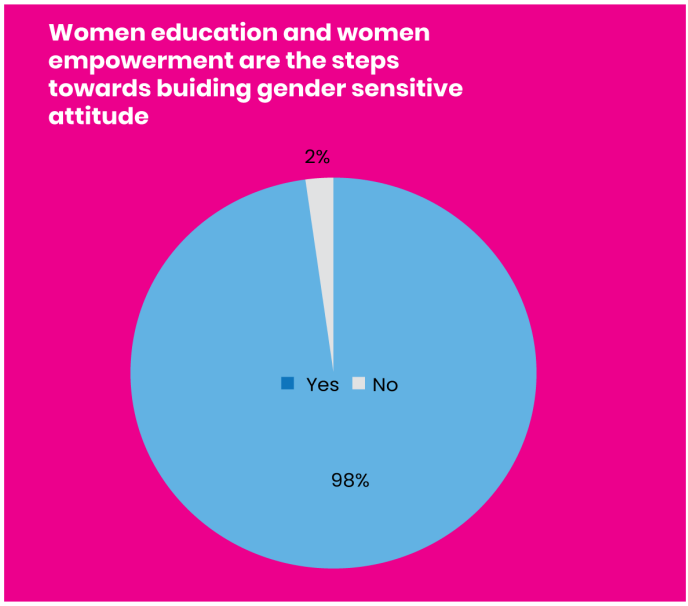


After analysing the data pertaining to this issue (Figure 7), it is very shocking that 23 per cent men think that working women are taking the job away from men. Infact, few women also think this way. Beyond their future roles as educators, prospective secondary school teachers—who are also key contributors to nation-building—hold significant gender-based perceptions. Among them, 27.8 per cent of male respondents believe that women are taking rights away from men. Nearly 56 per cent of men feel that they should not express emotions, such as crying, in front of others, and interestingly, 32 per cent of female respondents share this belief. Additionally, 48 per cent of male prospective teachers believe that a woman's role is to care for the family while a man's role is to earn money. Only 38 per cent of male participants support the idea of a women's reservation system in higher education institutions. On a positive note, attitudes toward pursuing STEM careers showed fewer signs of gender bias. Regardless of gender, most respondents expressed the need for campaigns to raise awareness about gender sensitivity and to prevent violence against women.

It is true that societal practices spread such kinds of gender biasness and as a result male prospective secondary level school teachers also think that women are emotional, sensitive, cowardly, less intelligent, talkative whereas they think that men are intelligent, sober, brave, emotionally stable, caring, bold. It is found that there exists gender inequality in every norm making, decision making, power distribution management, resource access in institutions etc., where teachers are one of the groups where gender inequality is found. On women empowerment, male prospective secondary level school teachers do not prefer the entrance of women in the job market as they think that they are taking away the job from men. According to them, women's earnings are just for luxuries spending and so better they stay at home and do household work.

- Prospective teachers' views on women education and women empowerment is also assessed, where 98 per cent respondents think that women education and women empowerment are the key steps towards building gender sensitive attitudes in the society. This rational thinking is needed more in the society because the gender biased outlook of the prospective secondary level school teachers will carry with them even when they enter the teaching profession.

Figure-8: Attitude towards women education and Gender Sensitisation

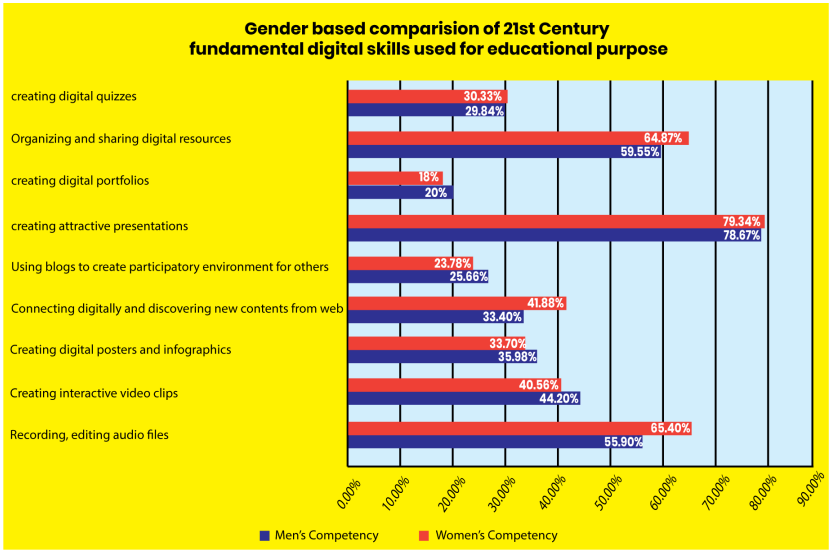


B. Data Analysis and Interpretation of Objective 2: To explore the prospective secondary level school teachers' attitude towards gender sensitisation for using technology in teaching and learning.

To study on the secondary level prospective teachers' gender bias attitude towards gender sensitisation for using technology in teaching and learning, the 400 participants' fundamental skills to use digital platform for educational purpose is assessed. Along with this, a few general value statements related to using technology skilfully and accessing technological resources for educational purpose is also surveyed focusing onto gender perspective. A survey also performed on whether the participants have ever got the chance to be a part of any awareness program related to developing gender neutral and gender sensitive attitude regarding using technology for educational purpose.

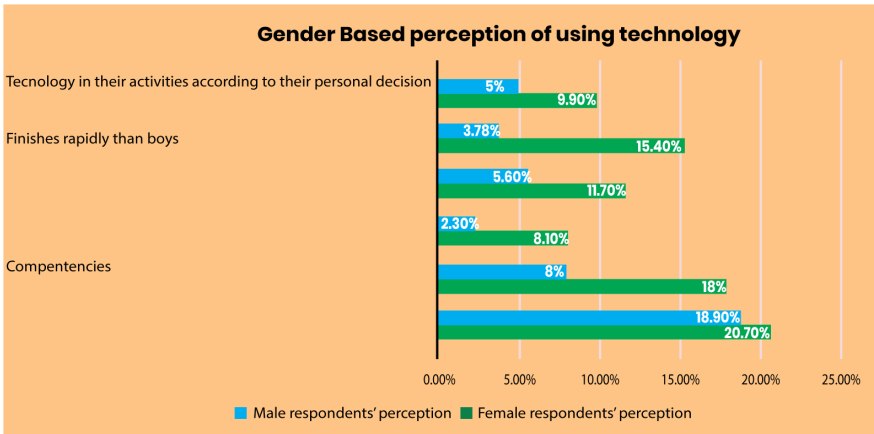
- To explore about digital gender gap, it is required to know the skills and competency of technology users in the field of education. Digital gender gap is the idea of male dominant society, where women are considered to be inferior in the world of ICT in compare to man. So, the prospective secondary level school teacher's fundamental digital skills which they can use for their educational purpose was assessed to see if girls have less competency in this area and is shown in the diagrammatic representation below.

Figure-9: Gender based comparison of 21st century fundamental digital skills used for educational purpose



From Figure 9, it can be seen that secondary level prospective teachers have highest competency in 'creating attractive presentations' and lowest competency in 'creating digital portfolios'. Among all the items in creating digital quizzes, attractive presentation, connecting digitally and discovering new contents from the web, recording and editing audio files female secondary level prospective teachers have more competency than the male. For using technology in different activities of teaching and learning process both genders have more or less equal competency. It is seen that for each item, both genders have moderate type of competency in using technology. This shows that even though the digital gender divide is overcoming day by day in using technology, there are still few social practices which contribute to lower technology preference by females and that results in male dominance in those fields where every day new technology develops. Limited investment in digital training and technological resources hinders the development of a gender-equitable and inclusive environment, with women receiving fewer opportunities to build digital skills. Key indicators influencing this gap include a country's connectivity, internet accessibility, integration of digital technologies, and availability of human capital. The secondary level prospective teachers' gender-based perception of using technology is assessed to know more deeply about the digital gender divide that causes the reinforcement of gender stereotypes and makes the society gender insensitive. To eradicate this gender biased outlook nurtured by social and cultural practices, the future nation builder's perception is studied to make the society a way more technologically inclusive, equitable and sustainable. The result is shown in Figure 10.

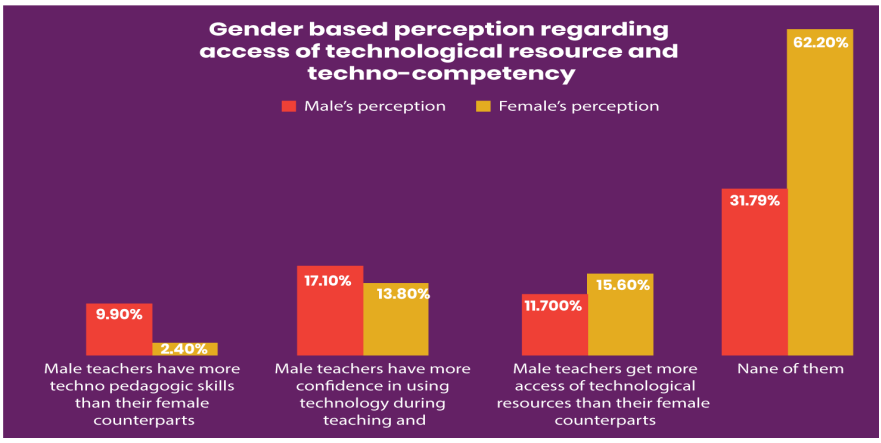
Figure-10: Gender based perception of using technology



From Figure 10, it is found that, almost everyone has positive gender perception regarding the use of technology. According to the respondents "Boys are more capable in pursuing careers that requires technological skills" is least justified. And "compared to girls, boys are more competent in using technological gadgets", is perceived as true by maximum number of respondents irrespective of gender. It is also found that less exposure of technology to women in the society can cause such negative perception. As teachers play a very important role in moulding tomorrows society so they should have training regarding not only using the modern technology in their work but also, they should possess value regarding gender sensitivity.

The digital gender gap is the result of disparity in using ICT in social structure. Greater male-dominance in the field of managing ICT can cause poor perception of women and hence results into less confidence. The less access of technological resources like software and hardwires can cause less competency in this area so gender-based perception of secondary level prospective teachers is assessed.

Figure-11: Gender based perception regarding access of technological resources and techno competency



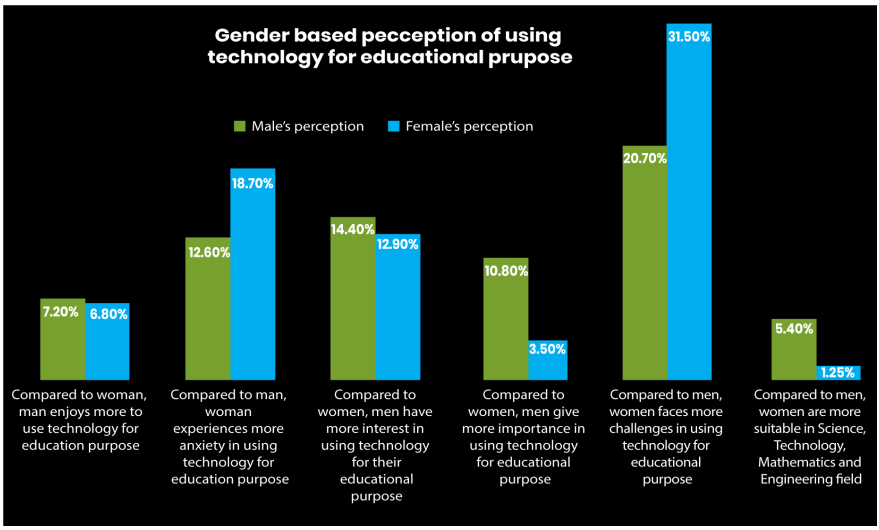
From Figure11, it is found that 9.90 per cent male respondents think that they have more techno pedagogic skills. 17.10 per cent male respondents think

that they have more confidence to use technology whereas 13.80 per cent female respondents think that male have more confidence. More female secondary level prospective teachers (15.60 per cent) think that men have more access to technological resources. 62.20 per cent male secondary level prospective teachers and 31.79 per cent female respondents do not think none of the items is true.

This disparity can be the result of having access to internet issues, network and computer access, low participation, less involvement and less interest in women's training and capability development in the use of specific technological gadgets. It is detected that female secondary level prospective teachers cannot identify which technological resources can be used for developing teaching tasks. This leads to their professional development hinders the development of digital competency and finally produces negative self-perception regarding technology, lower motivation and negative societal perception towards technology skills in the educational field. Female respondents feel that they have received less training to include ICT in their pedagogy whereas male respondents think that they have got adequate training which may be the result of sociocultural factors and in few cases attitudinal factors. Increasing access to and digital resources by all the students irrespective of any gender from an early age in school and as well as in the society can compensate for the gender inequality and develop gender sensitisation.

The secondary level prospective teachers' gender-based perception of using technology for educational purposes is surveyed and showed in Figure 12.

Figure-12: Gender based perception of using technology for educational purpose

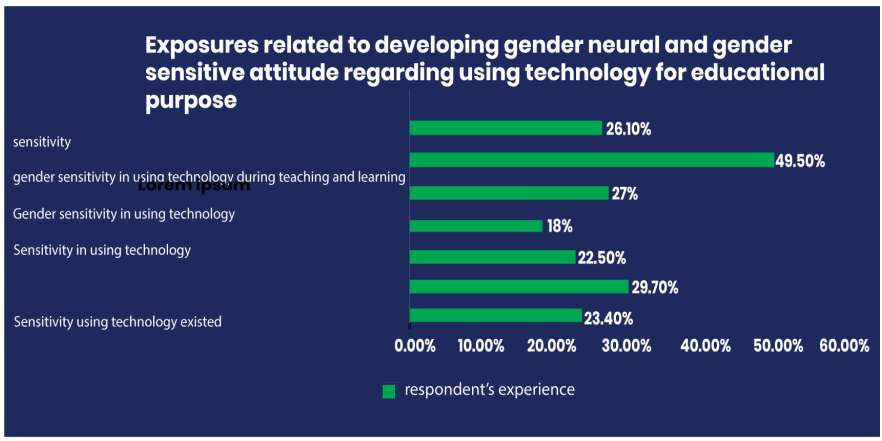


It is found that almost 31.50 per cent female secondary level prospective teachers think that they face challenges and 20.70 per cent male secondary level prospective teachers also think the same for women. It is found that a very less portion of secondary level prospective teachers (5.40 per cent male, 1.25 per cent female) think that STEM profession is for men only 18.70 per cent women

face more anxiety in using technology for educational purpose which is quite greater than men's perception regarding women. 14.90 per cent men have a negative perception regarding that women are less interested in using technology for educational purposes.

The female respondents' negative attitude is the result of gender gap in using and accessing technological resources, knowledge gap of ICT and job preference where these skills are required. Self-perceptions of female secondary level prospective teachers and perception of male secondary level prospective teachers towards women is found negative in terms of teachers' digital competence and planning of teaching, using digital resources in teaching and learning, knowledge processing and creating of information with the help of ICT. It is also found that absence or less presence of digital classroom technology, lower level of technology enabled learning in the classroom can be the cause for negative perception of female secondary level prospective teachers which may have negative perception of using digital content during teaching and learning and about ethical safety that causes inequality of being the active role model as a techno pedagogue among the students. To assess gender insensitivity among the secondary level prospective teachers, data regarding the values they have instilled and the exposures and awareness program they have experienced in their lifetime are assessed and shown in Figure 13.

Figure-13: Exposure related to develop gender neutral and gender sensitive attitude regarding using technology for educational purpose



From Figure 13, it is found that 49.50 per cent have knowledge about various government policies/ rules related to gender sensitisation and gender equality. Only 29.70 per cent of respondents from different universities said that in their B.Ed. syllabus there exists few content which promote gender sensitivity regarding the use of technology in teaching and learning and only 22.50 per cent respondents tell that in B.ED. curriculum there exists a few activities those needed to be done in order to support gender sensitivity in using technology, which is similar for school curriculum also. Gender biasness is also reflected in textbooks. Only 18 per cent and 27 per cent respondents shared that during their B.Ed. They were trained for building up their own awareness related to gender sensitivity in using technology during teaching and learning and organised some awareness programs/ social activities in local communities respectively. Also, it is found that almost 26 per cent

of respondents have no experience regarding any of the above activities.

So, the above data reveals that to mitigate gender stereotypes, female teacher's technological training, implementation of technology integrated teaching learning model should be there in the B.Ed. curriculum.

When prospective teachers internalise and reflect gender-insensitive values, they are likely to perpetuate the same biases among their future students. This can negatively impact female students, particularly in subjects like science and mathematics, where they may receive less encouragement and attention. Such bias can contribute to lower academic performance, reduced confidence, and increased self-doubt among female learners. Therefore, it is essential to positively shape teachers' task competency and task values, while promoting a more gender-sensitive and inclusive outlook within society.

C. Data Analysis and Interpretation of Objective 3: To suggest a few measures those should be adopted and practiced by the prospective secondary level school teachers for bridging the gender digital divide in using technology during teaching and learning and spreading gender sensitivity in the society.

Digital technology advancements lead to society's development but also contribute to gender inequality. Women are often left behind due to gender bias and societal insensitivity. To promote gender sensitisation, education and skill development programs are essential. Along with that men must also change their mindset to support gender sensitisation and teachers should instil value in students to create a healthy, gender-equal society.

In this context, prospective teachers should implement measures at various levels to bridge the gender digital divide in teaching and learning, promoting gender sensitivity and utilising technology effectively. Some suggested initiatives at different levels are as follows:

1. The teacher training program lacks opportunities to address gender inequality, necessitating a focus on gender mainstreaming in teacher education curricula through considering all social dimensions.
2. Feminist critical pedagogy, as proposed by Freire, Shor, Giroux, and McLaren, aims to promote gender parity through the B.Ed. curriculum by addressing power structures, redressing inequality, and understanding the perpetuation of gender inequality in patriarchal societies should be adopted in contemporary B.Ed. curriculum. The proper training for prospective teachers should be provided to eliminate gender disparities in perceptions of technology integrated teacher education.
3. The implementation of technology-enhanced teaching and learning models is crucial for future teachers to effectively utilise technological tools and combat the digital gender divide.
4. Transmission of more female examples in the technological field is suggested to make a gender equitable society.
5. The proposal suggests providing easy access to technological resources for prospective teachers to enhance their skills, regardless of gender.
6. Continuous professional development to provide techno-based opportunities.
7. Online training facilities should be there in all teacher training institutes.

8. Quality teachers with gender-neutral outlooks and ICT skills should be appointed as teachers and teacher educators to teach students ICT skills and ICT papers.
9. Government initiatives should focus on eliminating gender bias, promoting gender sensitisation, and fostering a tech-sustainable world, ensuring no gender disparity in planning, theory, and implementation.
10. Portraying gender biasness in terms of various examples in text books, media should be stopped.
11. Regular training, workshops, seminars, and conferences, social activities should be organised to raise awareness about gender sensitivity for integrating technology in teaching and learning.
12. UNESCO has recognised technology as the focal part of the knowledge system. Several programmes like i-2010 (2005 - 2009), Digital Agenda 2010, Digital Education Action Plan 2018 etc. aim to provide software hardware for better employability through ICT, technology in teaching and training, innovative technology based pedagogical techniques. So, awareness and information should be spread to have knowledge regarding various government policies/ rules related to gender sensitisation and gender equality in technology so that the aims and objectives of such programs have fruitful vision.
13. B.Ed. syllabus should incorporate a few chapters that support gender sensitivity in using technology including activities needed to be done in order to support gender sensitivity in using technology
14. To enhance a nation's digital competitiveness, a gender-responsive approach to education, skill, career and professional development should be implemented by focusing on technology-oriented solutions, STEM guidance and experiential learning opportunities.
15. Inclusivity and equality in terms of gender should be taken care of by tech industries and policies and initiatives regarding gender sensitisation should be implemented in a proper way to have a positive change in people's mind.
16. To reform the society, gender sensitisation should be taught in the family, school, society. Prospective teachers, who are the future teachers, will address this issue and mould their students in a desired way to make a technology based, gender sensitive, inclusive, sustainable world.

Major Findings and Discussion

- Concerning prospective teachers' overall gender sensitisation in terms of communal traits were assessed and it is found communality traits are more selected by the women as their personal trait and by most of the men as a desirable trait for women.
- Prospective teachers' personal weakness and in opposite genders' desirable weakness is checked and found that men want few weaknesses like 'dependency', 'seeking for approval', 'insecurity' in their opposite gender and they do not think that they possess such kind of traits wherein few women believe that they possess such kind of weakness and these traits are not desirable in their opposite

gender. Here reflects respondents' gender insensitivity, as from the young age traits like 'communality', 'weaknesses' are associated with women (femininity) only.

- Dominance trait is chosen as the personal trait by more male participants rather than female participants and a lesser number of male participants chose this trait as a desirable trait in the opposite gender in comparison to the case of women. It shows a tendency that the trait associated with masculinity is more considered as a desirable trait for men which reflects prospective teachers' gender stereotypical attitude.
- Agentic' trait is selected as a desirable trait by most of the women, whereas most of the male respondents chose this trait as their personal trait and less desirable for women as it is more related to masculinity, the true representation of gender stereotypic attitude.
- Regarding the attitude towards relationship between men and women about gender roles it is found that, on women empowerment male prospective secondary level school teachers do not prefer the entrance of women in the job market as they think that they are taking away the job from men. According to them, women's earnings are just for luxury spending and so they stay at home and do household work.
- It is found that prospective teachers think that women education and women empowerment are the key steps towards building gender sensitive attitudes in the society.
- For using technology in different activities of teaching and learning process both the gender has moderate competency. It is found that there is a male dominance in those fields where every day new technology develops. The less investment in training and less technological resources dragging back the gender equitable and gender inclusive setup as women get less training to develop digital skills.
- A saddening fact came out through the study that, "Boys are more capable in pursuing careers that requires technological skills" least justified and "compared to girls, boys are more competent in using technological gadgets", is perceived as true by maximum number of respondents irrespective of any gender depicts a negative attitude towards gender sensitivity, which is a result of digital gender gap.
- It is detected in the study, that female secondary level prospective teachers cannot identify which technological resources can be used for developing teaching task leads to their professional development hinders the development of digital competency and finally produce women's negative self-perception regarding technology, lower motivation and negative societal perception of women towards STEM skills. Their male counterparts also believe the same sowing gender insensitive attitude in the society.
- Regarding the values the prospective teachers have instilled and the exposure and awareness program they have experienced in their lifetime reveals that to mitigate gender stereotypes, female teacher's technological training, implementation of technology integrated teaching learning model should be there in the B.Ed. curriculum. Because when there is a lack of skills within the female, they start doubting themselves and the rest of the world also thinks the same about them.

Educational Implications

The study has a great educational implication as it aligns with the recommendations of various Indian policies and schemes in the context of Indian education, as mentioned below:

- National Education Policy (NEP) 2020 recommends having inclusive and equitable education, by reducing gender barriers and promoting a larger gender involvement in access to quality education. One of the core principles of NEP 2020 is to promote Digital Literacy by practicing technology- enabled learning to challenge gender biased perceptions and gender stereotypes in educational spaces. The findings of the study suggests that gender stereotypes should impede this goal if it is not addressed.
- The findings of the study emphasises to address gender stereotypes in technology integration, that has a linkage with various government initiatives as mentioned below:
    - Digital India programmes aim to bridge the digital divide by focusing on skill development, promoting digital literacy for all the stakeholders of education and proper teacher training.
    - Samagra Shiksha Abhiyan focuses on the Gender -sensitive teacher training and awareness programs for practicing inclusive and equitable quality education.
    - Beti Bachao Beti Padhao scheme aims to empower the girls by ensuring that the teachers are equipped with educational technology to support girls' education.
    - PM eVidya Scheme promotes digital and technology integrated teaching and learning with special reference to address gender disparities.
- The outcome of the study highly recommends teachers' training and sensitisation programmes, curriculum development and redesigning of prospective teachers' training curricula by integrating gender-sensitive technological engagement, providing mentorship and support, creating targeted interventions, conducting professional development programs on gender sensitive educational technology inclusion etc.
- The study underscores a significant need for conducting further research and evaluating its effectiveness of addressing gender stereotypes by promoting inclusive practices to provide equal opportunities irrespective of any gender, in having technology-enable education.

Conclusion

The present study is mainly aimed to explore the prospective secondary level school teachers' gender stereotypical attitude towards using technology in teaching and learning. It is an important piece of research in the context of a developing country like India. The findings of the study reveals that the secondary level prospective teachers' attitudes towards technology use and gender insensitivity are influenced by the male-dominated patriarchal society. It is also noted that, to promote gender-sensitive education and a gender-neutral society, initiatives should be taken at various levels and by following multidimensional approach to remove gender stereotypes from the society and in educational technology by mainly emphasising on the role of teacher education, to make women techno-savvy, building up their self-confidence. It can be said that by applying appropriate strategies, it is possible to remove gender stereotypical

attitudes from the society, towards using educational technology and finally creating a more inclusive and equitable learning environment and an inclusive society in a broader sense.

References

Chakrabarty, M. (2023). 'Beti bachao beti padhao'–A mechanism of women empowerment.

Dai, A., Li, D., Zhu, H., & Zhang, Z. (2021). How do Teachers' Gender Stereotypes Impact Students?. *Advances in Social Science, Education and Humanities Research*, volume 637.

https://doi.org/10.2991/assehr.k.220131.133

Jeyakumar, R. A., & Gayathri, A. (2023). SCHEMES FOR WOMEN EMPOWERMENT IN INDIA. NCSDSGE–2023, 175.

Lekha, N. B., & Kumar, P. (Eds.). (2024). *Routledge Handbook of Gender, Culture, and Development in India*. Routledge.

Lindner, J., Makarova, E., Bernhard, D., & Brovelli, D. (2022). Toward Gender Equality in Education- Teachers' Beliefs About Gender and Math. *Education Sciences*. 12(6), 373.

https://doi.org/10.3390/educsci12060373.

Modi, N. (2024). Accelerating Women Empowerment: A Reconnaissance of Government Policies and Initiatives. *Modi's Vision to Empower Women,* 74.

Nandi, A., Sahoo, S., Haberland, N., & Ngô, T. D. (2023). A glass ceiling at the playhouse? Gender gaps in public and private preschool enrollment in India. *International Journal of Educational Development*, 103, 102905.

Naqvi, F., Ahsan, M. (2021). Prospective teachers' perception of gender roles education and stereotypes. *Academia Journal of Educational Research*, 9(9), 161-165.

https://www.researchgate.net/publication/364193477

Saif, S. (2019). Attitude Of Prospective Teachers and Prospective Teacher Educators' Towards The Usage Of Information And Communication Technology And Its Related Technologies In Colleges Of Teacher Education. *IJRDO- Journal of Social Science and Humanities Research*, 4(7), 243-250.

https://doi.org/10.53555/sshr.v4i7.3105

Sengupta, P., & Puri, R. (2022). Gender Pay Gap in India: A Reality and the Way Forward—An Empirical Approach Using Quantile Regression Technique. *Studies in Microeconomics,* 10(1), 50-81. https://doi.org/10.1177/2321022221995674

Syed, S. (2017). Introducing gender equity to adolescent school children: A mixed method's study. *Journal of family medicine and primary care*, 6(2), 254-258.

https://doi.org/10.4103/2249-4863.220020

Trigueros, G., Maria, I., Aldecoa, C. (2021). The Digital Gender Gap in Teacher Education: The TPACK Framework for the 21st Century. *European Journal of Investigation in Health., Psychology and Education,* 11(4), 1333-1349.

https://doi.org/10.3390/ejihpe11040097