Article

A Comprehensive Research on Online Technological Education Courses Education of Diversified Gender Equity

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Abstract: This research examines the complex landscape of diversified gender equality within educational systems, revealing both progress and persistent challenges. Through a comprehensive analysis, the research identifies key areas of concern: representation and inclusion, accessibility and accommodations, pedagogical approaches, learner experiences, and long-term impacts of gender-focused initiatives. Findings indicate that while advancements have been made in incorporating diverse gender identities into policies and curricula, significant disparities persist in fostering genuine validation and belonging for learners across the gender spectrum. Support for transgender, non-binary, and genderqueer students remains inconsistent across institutions, with many struggling to provide comprehensive services and inclusive facilities. Implementation of gender-sensitive and gender-transformative teaching methods is variable, indicating room for improvement in pedagogical practices. Based on these findings, the research proposes a multifaceted approach to enhance diversified gender equality in education. Recommendations include prioritizing visibility and validation of diverse gender identities, improving accessibility and accommodations, enhancing educator training in gender-sensitive pedagogies, strengthening institutional policies addressing gender equality and bias, and fostering collaborative partnerships with stakeholders. Eventually, the research underscores the importance of holistic interventions to create truly inclusive and equitable learning environments. Future research directions include longitudinal studies to assess long-term impacts and exploration of intersectional approaches considering the interplay of gender with other aspects of identity and social positioning.

1. Introduction

The gender equality learning literacy system ("GEELS") can conceptualize gender education through an interdisciplinary theoretical framework and conduct a series of cross-method analyzes that integrate critical gender studies and transformative learning theory (Barreiro Gen, Lozano, Temel & Carpenter, 2021). This research framework is designed to facilitate the examination of the complex interactions between gender identity, power dynamics, and sociocultural context in general and educational settings. Because empirical research on learning literacy in gender education investigates the determinants, processes, and outcomes of gender-centered education initiatives across different modes, including traditional classroom settings and online learning platforms such as online technological education courses ("OTECs"). An examination of these research literature studies reveals that comparative approaches are more in-depth in analyzing different cultural, socio-economic and national contexts. Therefore, the interdisciplinary nature of this research required the integration of insights from pedagogy, sociology, psychology, and political science to develop a comprehensive understanding of the system. In particular, qualitative investigation can provide a detailed research perspective on gender education learning literacy based on the life experiences and narratives of learners, educators and other stakeholders. In addition, critical discourse analysis is often used to examine the language, representations and power structures embedded in discourses surrounding gendered educational learning literacy, thereby challenging underlying biases and expressions of hegemonic gender narratives. Therefore, the determinants of the global pattern of gendered educational learning literacy operate at multiple levels through the educational analytical contextual perspective of the OTECs (Di Vaio, Hassan, & Palladino, 2023)

The OTECs course registration rates versus actual participation rates: Analysis of global enrollment data for the GEELS-focused MOOC courses over time is critical to identifying trends, changes and factors that influence participation. These factors

may include affordability, technology infrastructure, and personal attitudes toward gender equity. It is critical for MOOC course content and pedagogy to assess the breadth and depth of the GEELS-related topics in the MOOC courses, as well as the inclusivity and representation of diverse gender identities and experiences, and therefore the need to cultivate the GEELS teaching methods for engaging in participatory and transformative learning experiences in the MOOC courses are worth examining. Targeting the MOOC learner engagement and outcomes: There is a need to investigate course participant completion rates, performance indicators, and learner satisfaction in the GEELS-focused OTECs. Understanding how course design, delivery and support services impact learning outcomes, as well as the practical application of knowledge gained, can provide valuable insights into the GEELS. Furthermore, regarding the MOOC course system and organizational factors: the role of educational institutions, government policies and social/cultural norms in the GEELS in shaping the gender education MOOC landscape must be explored. This includes reviewing partnerships, collaborations, funding sources, incentives and barriers that impact the growth and sustainability of the GEELS. Finally, regarding the innovation and accessibility of current digital technology education: the impact of emerging technologies on the influence and inclusiveness of the GEELS-centered OTECs are key determinants that need to be considered (Shih et al., 2023-a; Shih et al., 2023-b.; Huang, 2023-a.; Huang, 2023-b).

Understanding the interaction of these multi-level factors can inform the development of more inclusive and transformative gender education measures through the GEELS-focused OTECs online learning platform (Abualtaher et al., 2021). The policy analysis and evidence-based recommendations resulting from this research aim to enhance the inclusive, equitable and transformative impact of the GEELS-focused OTECs within educational institutions and the wider social context. The standard evaluation of the GEELS-focused OTECs is a complex and meticulous academic work that requires a multi-faceted approach. Therefore, this research uses literature analysis ("LA") to be able to implement and evaluate a comprehensive literature review to examine various aspects of gender equality in the educational context. Theoretical Framework of the Research: This research is based on a conceptual framework derived from the GEELS gender studies, feminist theory, and intersectionality. These theoretical underpinnings provide a solid foundation for understanding how constructs such as gender identity, expression and fluidity inform the assessment of equality standards across the gender spectrum. Relevant methodological approaches have been found to be: (1). Analysis of representation and inclusion of the GEELS-focused OTECs: This section examines the representation and concentration of different gender identities in the GEELS-focused OTECs educational curriculum, policies and institutional practices . The analysis focuses on quantitative measures of representativeness and qualitative assessments of meaningful inclusion. (2) The GEELS-focused OTECs Course Accessibility and Accommodation Assessment: Evaluate the availability and effectiveness of support services and inclusive facilities for gender-identified learners in all the GEELS-focused OTECs. The assessment considers the physical, digital and social aspects of accessibility in educational settings. (3). Evaluation of the GEELS-focused OTECs teaching methods: Research carefully examines the GEELS-focused OTECs teaching methods' ability to promote inclusive, equitable and empowering learning experiences. Special attention is paid to gender-responsive and gender-transformative approaches that challenge traditional norms and power structures. (4). Analysis of participant learning outcomes and impact of the GEELS-focused OTECs: This section focuses on the GEELS-focused OTECs to illustrate how gender-centered education can help promote gender equality, social justice, and personal empowerment. (5). The GEELS-focused OTECs course platform policy review: A critical analysis of institutional policies, codes of conduct and administrative procedures related to gender equality, harassment and bias in the GEELS-focused OTECs; specifically must be reviewed for this review The comprehensiveness, implementation and effectiveness of the policies in the GEELS-focused OTECs. (6) Integration of stakeholder perspectives in the GEELS-focused OTECs courses (Huang et al., 2023-c.; Chen et al., 2024; Hsieh, 2024).

The research incorporates the perspectives and experiences of different stakeholders, including students, educators, administrators, and community members. This qualitative data enriches the analysis and informs recommendations for enhancing gender equality within the GEELS-focused OTECs. Through the above comprehensive methods, this research aims to conduct a comprehensive assessment of gender equality standards in the GEELS-focused OTECs. Therefore, the findings of this research are expected to contribute to the development of more inclusive and equitable GEELS-focused OTECs that reflect more educational practices, policies, and environments to accommodate and empower the learning of course participants from different gender groups. Later results.

Due to LA approach, the evaluated criteria were the (LA approach standard and the appraised aspects, evaluated criteria and assessed surveyed questions of diversified gender equality were able to be induced and explored as described in Table 1:

Table 1. Appraised aspects, evaluated criteria and assessed surveyed questions of diversified genders equality.

Appraised Aspects	Evaluated Criteria	Assessed Surveyed Questions

1. conceptual Frameworks (Wojniak, 2017)	The extent to which different theoretical frameworks (e.g., gender performativity, intersectional feminism, queer theory) provide a comprehensive understanding of gender diversity and its implications for education. (Aipira, Kidd & Morioka, 2017) The applicability of these theories in addressing the specific needs and experiences of learners from diverse gender backgrounds. (Morgan, Dhatt, Kharel & Muraya, 2020) The ability of these theories to challenge traditional gender norms and promote a more inclusive and equitable educational environment. (Hartman & Barber, 2020)	How do existing theories and models from gender studies, feminist theory, and intersectionality inform the conceptualization of diversified gender equality in education?
	The identification and operationalization of key constructs such as gender identity, gender expression, gender roles, gender stereotypes, and intersectionality. (Lawless, Cohen, Mangubhai, Kleiber & Morrison, 2021) The development of comprehensive and inclusive measures to assess gender equality across the gender spectrum, considering the diverse experiences and needs of learners. (Baker & Jones, 1993) The ability of these constructs and dimensions to capture the complexities of gender and provide a nuanced understanding of gender equality in education. (Beckwith, 2005)	What are the key constructs and dimensions that should be considered when evaluating gender equality across the gender spectrum?
2. Representation and Inclusion (Agarwal, 2018)	The inclusion of diverse gender identities in educational curricula, textbooks, and teaching materials. (Blackburn & Jarman, 2006) The development of policies and procedures that promote gender inclusivity and address the specific needs of learners from diverse gender backgrounds. (Falk & Hermle, 2018) The extent to which institutional practices and culture reflect and support gender diversity. (Fors Connolly, Goossen & Hjerm, 2020)	To what extent are diverse gender identities (e.g., transgender, non-binary, genderqueer) represented and centered within educational curricula, policies, and institutional practices?
	The perceptions of learners from diverse gender identities regarding their sense of belonging and inclusion within the educational environment. The identification of factors that contribute to positive or negative experiences for learners from diverse gender backgrounds. The extent to which learners feel safe, respected, and supported in expressing their gender identity.	How do learners of diverse gender identities experience inclusion (or exclusion) within the educational environment?
3. Accessibility and Accommodations (Enaifoghe & Idowu, 2021)	The availability and accessibility of accommodations, such as gender-neutral restrooms, locker rooms, and changing facilities. (Asperholm, Nagar, Dekhtyar & Herlitz, 2019) The existence of support services, such as counseling, mentoring, and advocacy programs, for learners from diverse gender backgrounds. (van Staveren, 2013). The effectiveness of these measures in meeting the specific needs and fostering the well-being of learners from diverse gender identities. (Vianello, Schnabel, Sriram & Nosek, 2013)	What accommodations, support services, and inclusive facilities are available for learners of all gender identities?
	The perceived effectiveness of accommodations, support services, and inclusive facilities in addressing the needs of learners from diverse gender identities.(Vishkin, 2022) The impact of these measures on the academic performance, social adjustment, and overall well-being of learners. The identification of areas for improvement or additional support needed to meet the needs of all learners.	How effective are these accommodations in meeting the needs and fostering the well-being of diverse gender learners?

4. Pedagogical Approaches (Clavero & Galligan, 2021)	The potential of technology to create more inclusive and supportive learning environments for learners from diverse gender backgrounds. (Wong, & Charles, 2020) The identification of specific technological tools and strategies that can promote gender equality and address the needs of learners. The evaluation of the effectiveness of these technological innovations in enhancing the accessibility and inclusivity of education.	In what ways can technological innovations enhance the accessibility and inclusivity of educational environments for diverse gender identities?
	The extent to which teaching methods and classroom dynamics are inclusive and respectful of diverse gender identities. The impact of assessment practices on the learning experiences and outcomes of learners from diverse gender backgrounds. The identification of strategies to create more equitable and inclusive learning environments for all students.	How do teaching methods, classroom dynamics, and assessment practices impact the learning experiences of diverse gender learners?
	The extent to which educators are aware of and incorporate gender-sensitive and gender-transformative pedagogies into their teaching practices. The effectiveness of these pedagogies in challenging traditional gender norms and promoting gender equality. The identification of barriers and facilitators to the implementation of gender-sensitive and gender-transformative pedagogies.	To what extent do educators integrate gender-sensitive and gender-transformative pedagogies that challenge traditional gender norms and power structures?
	The identification of perceived barriers to implementing inclusive and empowering pedagogical approaches, such as lack of training, resources, or support. The identification of facilitators that can support the implementation of these approaches, such as positive school climate, supportive colleagues, and professional development opportunities. The development of strategies to overcome barriers and promote the adoption of inclusive and empowering pedagogies.	What are the perceived barriers and facilitators to implementing inclusive and empowering pedagogical approaches?
5. Learning Outcomes and Impacts (Thomson, Palmén, Reidl, Barnard, Beranek, Dainty & Hassan, 2022)	The academic performance, skill development, and overall well-being of learners from diverse gender identities. (Murphy, Fisher & Robie, 2021) The long-term impacts of inclusive education on the personal and professional lives of learners. (Mac Giolla & Kajonius, 2019) The contribution of gender-focused education to the advancement of gender equality, social justice, and individual empowerment. (Su, R., Rounds & Armstrong, 2009)	What are the learning outcomes, skill development, and long-term impacts for learners of diverse gender identities?
	The impact of gender-focused education on challenging gender stereotypes, promoting gender equality, and fostering social justice. (van de Werfhorst, 2017) The contribution of inclusive education to the empowerment of individuals from diverse gender backgrounds. The long-term outcomes of gender-focused education in terms of societal change and progress.	How does gender-focused education contribute to the advancement of gender equality, social justice, and individual empowerment?
6. Institutional Policies and Practices (Bussey & Bandura, 1999).	The existence and effectiveness of policies, codes of conduct, and administrative procedures to address gender discrimination, harassment, and bias. (Charles, Harr, Cech & Hendley, 2014) The clarity and comprehensiveness of these policies. (Costa, Terracciano & McCrae, 2001)	What policies, codes of conduct, and administrative procedures address gender discrimination,

	The extent to which these policies are enforced and implemented consistently. (Freiberg, 2019)	harassment, and bias within educational institutions?
	The effectiveness of the implementation and enforcement of policies addressing gender discrimination, harassment, and bias. (Ganley & Vasilyeva, 2011). The identification of gaps or areas for improvement in these policies and procedures. (Gevrek, Gevrek & Neumeier, 2020) The development of strategies to enhance the effectiveness of policy implementation and enforcement. (Lippa, Collaer & Peters, 2010)	How effectively are these policies implemented and enforced, and what are the perceived gaps or areas for improvement?
7. Stakeholder Perspectives (Dekhtyar, Weber, Helgertz & Herlitz, 2018)	The perceptions of learners, educators, administrators, and community members regarding the state of gender equality in education. (Diekman & Schneider, 2010) The identification of areas of strength and areas for improvement. (Eagly & Mitchell, 2004) The extent to which these perceptions align with objective data and evidence. (Eagly & Wood, 1999)	How do learners, educators, administrators, and community members from diverse gender backgrounds perceive the state of gender equality within the educational system?
	The recommendations of learners, educators, administrators, and community members for improving gender equality in education. (Eagly & Wood, 2012) The feasibility and effectiveness of these recommendations. (Hyde, 2012) The potential impact of implementing these recommendations on the educational experiences and outcomes of learners from diverse gender backgrounds.	What are their recommendations for enhancing inclusive and equitable practices and policies?

Through the analysis of Table 1 to explore these research issues in the GEELS-focused OTECs, the results of this research are expected to provide future researchers with a comprehensive understanding of the multi-faceted standards for evaluating the diversity of gender equality in the GEELS-focused OTECs in the field of education, and to formulate More inclusive, equitable, and transformative educational practices and policies.

2. Results

Based on the evaluation of the theoretical framework in Table 1, through systematic analysis and investigation of these research issues on the GEELS-focused OTECs, this research can further clarify the complex and multi-dimensional aspects of evaluating the diverse gender equality of the GEELS-focused OTECs in the educational context. standards. This comprehensive analysis makes it possible to:

1. The GEELS-focused OTECs advance the theoretical framework: By integrating insights from gender studies, gender egalitarian theory, and intersectionality in the GEELS-focused OTECs, this research can improve existing conceptual models and potentially develop new paradigms to understand gender equality in the GEELS-focused OTECs.

2. The GEELS-focused OTECs empirical practice information: The results of this research can guide the development and implementation of more inclusive, equitable and transformative educational strategies for the GEELS-focused OTECs at the GEELS-focused OTECs analysis level and in the OTECs learning environment. .

3. Strengthen policy formulation for the GEELS-focused OTECs: By providing the preliminary research results of this research, this research can provide more detailed and effective policies for related research on the GEELS-focused OTECs to meet the needs of the GEELS-focused OTECs. The diverse needs of learners of different genders.

4. The GEELS-focused OTECs promote intersectional approaches: The holistic perspective of this research can highlight the interconnections between gender equality and other forms of social equity, encouraging a more holistic approach to educational inclusion in the GEELS-focused OTECs.

5. The GEELS-focused OTECs promote cross-cultural comparison: The standards developed in this research can serve as the basis for future comparative research on the GEELS-focused OTECs in order to examine gender equality issues in the GEELS-focused OTECs education under different social and cultural backgrounds.

6. the GEELS-focused OTECs identify areas for future research: By illuminating current knowledge gaps through this research, this survey can inspire further the GEELS-focused OTECs on specific aspects of gender equality in educational settings the GEELS-focused OTECs academic areas Explore.

Ultimately, this research can make a significant contribution to the current discussion on gender equality in education in the GEELS-focused OTECs, and create a more inclusive, equitable and empowering research result for current researchers related to the GEELS-focused OTECs.

3. Discussion

In sight of Table 1, in the context of assessing diversity gender equality within the GEELS-focused OTECs, several key methodological factors must be considered to ensure the rigor and ethical integrity of this research process.

1. Ethical considerations for the GEELS-focused OTECs: (1). Informed consent from participants in the GEELS-focused OTECs: It is crucial to obtain informed consent from all participants in the GEELS-focused OTECs, ensuring that they understand the research objectives, methods and potential impacts. (2). Anonymity and confidentiality of participants in the GEELS-focused OTECs: Implement robust protocols to maintain the anonymity and confidentiality of participants in research related to the GEELS-focused OTECs throughout the collection, analysis, and reporting phases. (3). Cultural sensitivity of the GEELS-focused OTECs: Throughout the GEELS-focused OTECs research process, OTECs participants must remain culturally aware and sensitive, and recognize and respect each other's different cultural norms and perspectives regarding gender and education.

2. The GEELS-focused OTECs research validity and reliability enhancement strategies: (1). Qualitative research data triangulation: Use multiple data sources and methods in the GEELS-focused OTECs to corroborate research results and enhance the validity of conclusions. (2). Validation of quantitative qualitative survey results: member checking or peer reporting is implemented in the GEELS-focused OTECs to verify qualitative interpretations. (3). Pilot testing of the GEELS-focused OTECs course: Pilot testing of the GEELS-focused OTECs research survey tool to refine questions and ensure clarity across different language and cultural contexts. (4).The inter-rater reliability of the GEELS-focused OTECs: The inter-rater reliability of the qualitative coding of the GEELS-focused OTECs courses was checked to ensure the consistency of data interpretation in the GEELS-focused OTECs research.

3. Limitations and potential biases of the GEELS-focused OTECs: (1). Language Barriers in the GEELS-focused OTECs: Acknowledging the potential limitations in capturing nuanced perspectives due to the linguistic diversity of global OTECs. (2). Participant self-selection bias in the GEELS-focused OTECs: Recognize potential self-selection bias in MOOC participation, which may affect the representativeness of the sample. (3). The GEELS-focused OTECs researcher bias: Regarding the GEELS-focused OTECs rescue topic, conduct reflective practice to reduce researcher bias in data interpretation and analysis.

4. Conclusions

This research highlights the complexities of achieving gender equality in the education of the GEELS-focused OTECs. Despite the progress made in the GEELS-focused OTECs, creating truly inclusive and equitable learning environments in the GEELS-focused OTECs will still require the efforts of those involved in the future. Therefore, by making comprehensive recommendations for the GEELS-focused OTECs through the results of this research, the GEELS-focused OTECs education platform can strive to create a more inclusive, equitable and transformative learning environment to verify and enhance the GEELS-focused OTECs. Focused OTECs course learning is more empowering for gender equality. Therefore, this research conducts a comprehensive analysis of the current situation of diverse gender equality within the GEELS-focused OTECs education system. The results of this research reveal a complex landscape characterized by progress and continuing challenges:

1. Representation and Inclusion in the GEELS-focused OTECs: While progress has been made in incorporating diverse gender identities into educational policies and curricula, there is a lack of progress in promoting trans equality among course learners in the GEELS-focused OTECs. There are still huge disparities in real recognition and a sense of belonging.

2. The GEELS-focused OTECs are non-sexist environments: Institutional support for transgender, non-binary and genderqueer students is inconsistent, so many institutions still struggle to provide a fully inclusive environment for the GEELS.

3. Teaching methods of the GEELS-focused OTECs: The implementation of gender-sensitive and gender-transformative teaching methods that challenge traditional norms and power structures remains inconsistent, indicating that there is room for improvement in teaching practices of the GEELS-focused OTECs.

4. The GEELS-focused OTECs learner experience: Students of different gender identities offer different experiences of gender equality, from empowering learning environments to situations of marginalization and inequality.

5. Adverse long-term effects of the GEELS-focused OTECs on gender equality: Despite gender equality challenges, research shows that the GEELS-focused OTECs Centered educational initiatives can make a significant contribution to promoting gender equality, social justice and personal empowerment.

Based on the results and findings of this research, future research suggestions are to suggest that in future research on the GEELS-focused OTECs, the following multi-faceted methods can be adopted to strengthen diversified gender equality in the field of education:

1. Prioritize visibility and validation in the GEELS-focused OTECs: Institutions should incorporate inclusive language, representation, and gender-affirming policies at all levels of the education system to increase the visibility and validation of different gender identities.

2. Improve accessibility of the GEELS-focused OTECs: Implement comprehensive support services, gender-inclusive facilities and technological innovations to meet the needs of learners of all gender identities.

3. Strengthen the GEELS-focused OTECs educator training: Emphasis on incorporating gender-responsive and gender-transformative pedagogy into educator training and professional development programs to provide teachers with the knowledge and skills to promote inclusive, equitable and empowering learning experience.

4. Strengthen the GEELS-focused OTECs education platform policies: Develop and implement strong institutional policies and practices to effectively address gender equality, harassment and bias issues, and develop clear accountability measures and enforcement mechanisms.

5. Promote the GEELS-focused OTECs partnerships: Work with learners, families, advocacy groups and community organizations to increase the relevance, responsiveness and impact of gender-focused initiatives.

Future research should focus on longitudinal studies of the GEELS-focused OTECs to assess the long-term impact of these gender equity strategies and explore intersectional teaching methods that consider the interaction of gender with other aspects of identity and social positioning in the GEELS-focused OTECs.

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