**Migration Letters**

Volume: 21, No: S10 (2024), pp. 729-733

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)

www.migrationletters.com

# Influence Of Gender On Female Preservice Technology Teachers During Practical Work

Asheena Singh-Pillay*[1] and Mai van Wyk[2]

**Abstract**

*This article explores how gender influences female preservice technology teachers' (PSTTs) participation in practical work. This qualitative study adopted a case study design. Social construction theory and intersectionality were used to understand how gender and rurality intersect when gender is constructed, (re)produced, performed and challenged during practical task-based activities. Sixty female PSTTs enrolled for the final module in Technology Education were purposively selected to participate in this study. Data were generated using focus group interviews and reflective journals, and were subjected to content analysis. It was found that, in spite of the nurturing environment created to increase female PSTTs' participation in practical work, they do gender, and are subjugated to perform gender, (un)do gender, and construct new forms of femininity. These performances are sculpted by the intersections of gender with rurality. The findings have implications for how technology spaces can be made more inclusive.*

***Keywords:*** *Doing gender, Undoing gender, Performance, Subjugation, Task-based activities.*

## INTRODUCTION

Technology Education (TE) was introduced into the South African school curriculum in 1998, to overcome the critical shortage of engineers, technicians and artisans needed in society. It was envisaged that TE would act as a conduit to address issues of equity and access into the Science, Technology, Engineering and Mathematics (STEM) disciplines among previously disadvantaged groups (Sotsaka, 2015). Achievement of the above vision is dependent on well-trained teachers of Technology. To address the aforementioned imbalances, equity and access into STEM, young women from disadvantaged communities are encouraged t[1]o study to become teachers of Technology, even though they lack a background in high school Science and Technology (Theron & Theron, 2013). These aspirant pre-service teachers are offered a bursary by the Department of Basic Education as a lucrative incentive to train as teachers of TE. This department anticipates that upon completion of their studies, preservice Technology teachers (PSTTs) who receive a bursary will return to their communities to teach and engage learners to be problem solvers and critical thinkers, so that these learners can eventually become engineers, technicians or artisans.

At the institution where this study was conducted, PSTTs are trained to teach Technology up to Grade 9. As part of their training, PSTTs engage in many practical activities using equipment such as drills, screwdrivers, hammers, saws, chisels, clamps, hydraulic jacks, wood-cutting lathes, nail guns, fisher technique sets, voltmeters, ammeters, resistors, and drill presses, that is all too often associated with masculinity, or is typical of a male domain (Mayeza, 2015).

South Africa has an array of policies (the Bill of Rights, White Paper on Science, Technology and Innovation) to support gender equity in STEM. These policies grant women access to TE in order to increase numbers; however, in practice women are denied such access due to sociocultural stereotypes and patriarchal structures (Akala & Divala, 2016). These structures have specific defined roles, behaviour, actions and expectations for

[1,2]Science and Technology education cluster, University of KwaZulu Natal, South Africa.

males and females. These gender-specific roles serve as a discriminatory barrier against the equitable participation of women in education, and further prevent the acceptance of women in non-traditional roles (Martin & Barnard, 2013). In these societies, preferential treatment is given to the male child, especially in education, and girls have fewer opportunities to gain access to, complete and benefit from quality education. The social norms that support these gender relations are culturally transmitted from one generation to the next through the process of socialization (Ofoha, 2013). Hence the notion that gender is socially constructed is embraced in this article which reports on a study that sought to explore how gender influences female PSTTs' participation in practical work in the TE lecture room.

The attention here is not on conceptual learning, rather the focus is on gender construction and performance within practical work in TE. The argument made is as follows: female PSTTs are affected by gender stereotypes in society, which assume that males are better suited to Technology and Engineering, and further, that these stereotypes make it hard for females to accept that Technology is for them. Consequently, they 'deselect' themselves from embracing Technology fully. To be able to address gender stereotypes in the TE classroom, one needs to understand the experiences of female PSTTs during practical work activities.

This article is organized into four sections, the first section presents the theoretical framework underpinning the study, the second section elucidates the methods used, and the third section pays attention to the findings and discussion. The last section provides some concluding thoughts.

## THEORETICAL FRAMEWORK

Social construction theory and intersectionality were used as a framework to address the ways in which sociocultural constructions of gender perpetuate and reproduce the gendered division of labour and participation in TE. Social constructionists are concerned with how meanings are attached to people, objects or events by the societies in which we live (Paechter, 2003; Connell & Messerschmidt, 2005; West & Zimmerman, 1987).

The experience of gender is highly contextualized by place (for example, KwaZulu-Natal, South Africa, is the context of this study) and its relationship to rurality and ethnicity. I draw on Crenshaw's (1991) concept of intersectionality to demonstrate how gender, rurality and ethnicity converge to perpetuate inequalities, vulnerabilities, marginalization and subjugation in a new context. Bringing intersectionality into the analysis allows for a more nuanced understanding of the ways in which gender is performed in the TE classroom in South Africa.

## METHODOLOGY

This interpretative case study adopted a qualitative approach, and was located at Richmond University teacher-training campus (pseudonym). There were 210 PSTTs enrolled for the Processing module in 2015, of whom 60 were females. The 60 female PSTTs were purposively selected to participate in data generation. Informed consent was obtained from each, and they were informed about confidentiality, anonymity, and the right to withdraw from the research at any time without any repercussions

Data were generated in two stages. In stage one, data were generated via focus group interviews. These interviews focused on two issues: the role the participant plays during practicals, and factors that promote or inhibit their participation in practical work. Four focus group interviews were conducted with 15 PSTTs per group; they self-selected groups for convenience. Each focus group interview was of 30 minutes' duration and was audio-recorded. In stage two, participants were required to maintain a journal to reflect on their perceptions of and participation in practical work in the TE lecture room.

In preparation for data analysis, the reflective journals were numbered from 1 to 60. The audio-recordings of the focus group interviews were transcribed verbatim, and transcripts were subject to member checking by participants before analysis. Data collected were

subjected to content analysis, and emerging themes were confirmed with the participants. The data were read and re-read several times before coding could begin, in order to identify patterns or trends. In this way, I was able to note convergences and divergences in the data. I used the constructs from my theoretical framework to assign a term or phrase that described the meaning of the text segment. Text segments with similar codes were grouped to derive five themes.

## PRESENTATION OF RESULTS AND DISCUSSION

Analysis of the data from the focus group interviews and journal entries was used to gain deeper insight into how gender influences female PSTTs' participation in task-based activities in Technology. Five themes emerged from the data: fostering an inclusive environment, (un)doing gender, doing gender, subjugation to perform gender, and ambivalent technology-home identity.

## CONCLUSION

The findings reveal how in the South African context gender, rurality and racial identities continue to facilitate or hinder opportunities for female PSTTs during practical work in the TE lecture room. These stereotypes make it hard for female PSTTs to accept that Technology is for them; consequently, they deselect themselves from embracing Technology fully. The intrusive, overpowering, perceived dominant voices of male PSTTs that female PSTTs carry with them come to the fore in this study, in spite of the nurturing, gender-fair environment fostered by the lecturer. On the one hand, the TE lecture room was an enabling space where female PSTTs challenged and subverted existing gender stereotypes on women's roles during practical work, and enjoyed working with masculine tools (they un-do gender). On the other hand, it was a contested space where gender, rurality and race intersected and interacted to serve as systems of domination, subordination and marginalization that led some female PSTTs to perform gender by conforming to the gender stereotypes applied by men to women.

Other female PSTTs have come to act as border-crossers by adopting an ambivalent dualistic Technology-home identity. These female PSTTs negotiated and compartmentalized their identity as they traversed from one social setting to the other. In the process, they constructed a "new femininity" that simultaneously challenges both the discourse of the "empowered woman in Technology" as well as that of "traditional femininity". The findings confirm that gender is also mediated through rurality and race in ways that allow areas of openness for some and of subordination for others.

Understanding the ways in which identities such as gender, rurality and race intersect and shape the pedagogic experience of female PSTTs is critical to understanding factors that either retard or facilitate opportunities and obstacles within the education landscape. The findings of this study have implications for systems to be put in place in higher learning institutions and schools, that would dismantle the social barriers causing female PSTTs to have limited participation in or access to TE.

## IMPLICATIONS AND RECOMMENDATIONS

These realities of female PSTTs during practical work require a paradigm shift in how we make TE more inclusive to promote equitable access to women in TE, and to overcome gender relations, bias and stereotypes. Understanding gender in this way could provide an opportunity to encourage and affirm divergent performances of gender. Encouraging alternative and divergent forms of gender performances could serve as a springboard for challenging gender inequalities in schools and lecture rooms.

Furthermore, the findings of this study raise the following pertinent question: How do we train teachers to have different lenses in their pedagogy?

## References:


Akala, B. & Divala, J. (2016), "Gender equity tensions in South Africa's post-apartheid higher education: in defense of differentiation" South African Journal of Higher Education, Vol. 30 No. 1 pp: 1-16. doi: 10.20853/30-1-557

Burke, P. J. & Stets, J. E. (2009), Identity Theory (New York, Oxford University Press). Catalyst. (2013), More women are pursuing science in higher education (New York, Catalyst). Collins, P. H. & Sirma, B. (2016), Intersectionality (Cambridge, UK, Polity).

Connell, R. W. & Messerschmidt, J. W. (2005), "Hegemonic masculinity: Rethinking the concept" Gender and Society, Vol. 19 pp: 829-859.

Crenshaw, K. (1991), "Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color" Stanford Law Review, Vol. 43 No. 6 pp: 1241-1299.

Gasant, M. (2012), Gender and perceptions of science and science education, unpublished PhD thesis, University of the Western Cape, Bellville, South Africa.

Galtung, J. (1969), "Violence, peace and peace research" Journal of Peace Research, Vol. 6 No. 3 pp: 167-191.

Koenig, A. (2018), "Comparing Prescriptive and Descriptive Gender Stereotypes About Children, Adults, and the Elderly" Frontiers in Psychology, Vol. 9 pp: 1086-1089. doi: 10.3389/fpsyg.2018.01086.

Mabambo, C. (2017), An assessment on the provision of manufacturing, engineering and technology (MET) subjects in the FET band in the Sisonke District, unpublished Master's thesis, University of KwaZulu-Natal, Durban.

Mader, R. (2001), "Females face trade bias" Contractor Magazine, Vol. 49 No. 7 pp: 1-10.

Mapotse, T. A. & Gumbo, M. T. (2013), "Identifying Grade 8 and 9 Technology teachers' areas of need for intervention in Limpopo Province" Journal of Social Sciences, Vol. 36 No. 1 pp: 19-28.

Martin, P. & Barnard, A. (2013), "The experience of women in male-dominated occupations: A constructivist grounded theory inquiry" South African Journal of Industrial Psychology, Vol. 39 No. 2 pp: 1-12. Retrieved December 04, 2018, from http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2071-07632013000200002&lng=en&tlng=en

Mayeza, E. (2015), Playing gender in childhood: how boys and girls construct and experience schooling and play in a township primary school, unpublished PhD thesis, University of Stellenbosch.

Moletsane, R. & Reddy, V. (2011), Gender equality in the mathematics and science school curriculum. HSRC policy brief. Retrieved from ww.hsrc.ac.za/uploads/pageContent/3326/2011marGender%20equality%20in%20the%20mathematics%20and%20science%20school%20curriculum.pdf

Mouton, J., Tapp, J., Luthuli, D. & Rogan, J. (1999), Technology 2005: A National Implementation Evaluation Study (Stellenbosch, CENIS).

Mwamwenda, T. (2013), "Adolescents' Gender Stereotypes, Differences and Other Aspects of Behaviour in the Eastern Cape Province, South Africa" The Independent Journal of Teaching and Learning, Vol. 8 pp: 1-19.

Ofoha, D. N. (2013), "Gender stereotypes and their impact on the girl-child's self-image and attitude towards education" African Journal of Educational Studies, Vol. 3 pp: 7-12.

Paechter, C. (2003), "Learning masculinities and femininities: power/knowledge and legitimate peripheral participation" Women's Studies International Forum, Vol. 26 No. 6 pp: 541- 552.

Ramrathan, L. (2017), "Compassion in the context of higher education transformation in South Africa" in Gibbs, P. (Ed.) The Pedagogy of Compassion at the Heart Of Higher Education (Geneva, Springer). pp: 101-112.

Reitsma, G. & Mentz, E. (2009), "In-service training for technology teachers: A needs assessment" African Journal of Research in Mathematics, Science and Technology Education, Vol. 13 No. 2 pp: 15-29.

Robinson, L. & Diale, B (2017), "Through the eyes of children: Exploring Grade 7 career aspirations" South African Journal of Childhood Education, Vol. 7 No. 1 pp: 498-500. doi: 10.4102/sajce,v7il.5ht00.

Schabort, F., Sinnes, A., & Kyle, W. C. (2018), "From contextual frustrations to classroom transformations: female empowerment through science education in rural South Africa" Educational Action Research, Vol. 26 No. 1 pp: 127-143. doi: 10.1080/09650792.2017.1286996

Shepherd, D. L (2017), Gender, Self-concept and Mathematics and Science Performance of South African Grade 9 Students (Stellenbosch Economic Working Papers: WP11/2017). www.ekon.sun.ac.za/wpapers/2017/wp112017.

Singh-Pillay, A. & Alant, B. (2015), "Tracing the policy mediation process in the implementation of a change in the life sciences curriculum" African Journal of Research in Mathematics,

Science and Technology Education, Vol. 19 No. 1 pp: 12-22.
Sinnes, A. T. (2005), Approaches to gender equity in science education: Two initiatives in sub-Saharan Africa seen through a lens derived from feminist critique of science, unpublished dissertation for the degree of Dr.Scient., University of Oslo, Oslo.
Slabbert, V. (2014), Understanding the career choices of grade 12 female learners studying technical subjects, unpublished Master's thesis, University of KwaZulu-Natal, Durban.
Sotsaka, D. S. T. (2015), An exploration of the interface between Grade 11 Engineering Graphics and design teachers' understanding of assembly drawing and their practice: A case study of the uThukela District, KwaZulu-Natal, unpublished Master's thesis, University of KwaZulu-Natal, Durban.
Stevens, A. (2005), Technology Teacher Education in South Africa. PATT-15: Technology Education and Research: Twenty Years in Retrospect. Available from: www.iteaconnect.org/Conference/PATT/PATT15/Stevens.pdf
Theron, L. C. & Theron., A. M. C. (2013), "Positive adjustment to poverty: How family communities encourage resilience in traditional African contexts" Culture & Psychology, Vol. 19 No. 3 pp: 391-41.
Welty, K. & Puck, B. (2001), Modeling Athena: Preparing young women for citizenship and work in a technological society (Stout, WI, University of Wisconsin-Stout).
West, C. & Zimmerman, D. (1987), "Doing gender" Gender and Society, Vol. 1 pp: 125-151.