Teacher educators' perceptions of gender equality in the post-Soviet context

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Abstract

Gender equality in education is a key driver of individual empowerment, economic prosperity, and societal well-being. Educational institutions, as authoritative organisations, contribute significantly to the perpetuation of gendered cultural practices, and they play a critical role in shaping learners' gender-related attitudes. Therefore, gender-aware and gender-sensitive teachers are crucial actors that can help to achieve gender equality in teaching and learning environments. This qualitative interview-based study aimed to explore the gender equality needs of teacher educators in Kazakhstan by exploring their perceptions of gender equality. More specifically, the study focuses on teacher educators' perceptions surrounding the issues of gender equality in education and their capacity to improve the educational environment. The findings of the study suggest that teacher educators hold strong gendered views on students' performance and abilities and do not acknowledge the existing inequities in education in the Kazakhstani context.

Key Words

Gender equality, teacher educators, teacher training

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Introduction

Ensuring gender equality has a paramount effect on society's economic and cultural development as it allows individuals to exercise their human rights, fully realise their potential, and improve the quality of services and production (UNESCO, 2021). According to research, economies with higher levels of gender parity are more likely to experience long-term growth and prosperity. Gender equality also contributes to broader social justice (Fraser, 2020). It addresses historic and systemic discrimination, working towards a just and equitable society.

Paradoxically, despite the advances made by governments worldwide toward the gender equality agenda, negative attitudes to gender equality have been gaining ground because of recent health crises, religious extremism, violent conflicts, social tensions, and increased xenophobia (Ocio, 2023).

Gender has a political-economic dimension since it divides paid labour into higher-paid male-dominated and lower-paid female-dominated occupations and devalues unpaid labour women perform in the domestic sphere (Fraser, 2020). This occupational segregation reinforces women's inferior positions in society due to low earnings, limited employment opportunities, and restricted access to decision-making. Rigid gender social norms prescribed for women remain persistent and are still the root cause of subtle discrimination against women in their advancement. This leads to a political-economic structure perpetuating gender-specific marginalisation in various forms (Fraser, 2020).

Addressing this issue involves providing women with more education and professional opportunities, empowering them in the struggle against social and political inequities. While equitable quality education is widely considered crucial to women's empowerment, it is important to subject these

optimistic assumptions to empirical investigation. This is because the content, structures, and practices within education systems can inadvertently perpetuate gendered norms and biases (Durrani and Halai, 2018). By promoting women's empowerment, we can reduce social inequality and tension, ultimately fostering greater societal and economic advancement (Cornwall and Rivas, 2015).

Contextual background

Despite notable strides towards gender parity in Kazakhstan, challenges to achieving gender equality persist. Although women consistently outnumber men at all levels of education, they remain a minority in high-paid occupations and predominate in low-paid occupations such as education and health care. According to the Bureau of National Statistics of the Republic of Kazakhstan, women's wages still average 74.2% of men's wages. Women often face biases regarding their leadership abilities and experience barriers when it comes to participating in decision-making processes (Kuzhabekova *et al*., 2018). Domestic violence remains a significant concern, with reports indicating that a considerable number of women experience abuse within their homes (Joshi and Childress, 2017).

An overview of previous research

Educational institutions are the social settings that play a critical role in shaping learners' gender-related attitudes (Ocio, 2023). Educational institutions can potentially institutionalise rigid gender norms as a 'natural' aspect of society (Sauntson, 2012). Gender relations, as well as gender behaviors and attitudes in society, can be maintained or changed through education. Therefore, it is critical to develop gender-sensitive learning environments.

The main actors that can help to achieve gender equality in teaching and learning environments are gender-aware and gender-sensitive teachers. Teachers do not only serve as transmitters of instrumental knowledge but also have the power to challenge gender equality perceptions existing in society through the students they teach (Acar-Erdol *et al*., 2022). Teachers' egalitarian views are crucial for achieving a gender-sensitive environment. Teachers might promote gender values through their instructional strategies and by transferring implicit and explicit perceptions about gender roles. Gender-sensitive teachers can challenge gender stereotypes, fostering a growth mindset in their classroom (Starr and Simpkins, 2021). Therefore, it is critical to have gender-sensitive teachers with positive perceptions of gender equality (Keddie and Mills, 2009; Ocio, 2023).

Implicit gender bias is often manifested in educational settings. Female students in STEM classrooms also often face unequal treatment by their university/college instructors (Washburn and Miller, 2004). They are less likely to receive teacher help after classes and are graded differently than their male peers (Meadows, 2018). Even in group work, when students are divided into boys' and girls' groups, the teachers often pay attention to the groups comprised of boys (Rocca, 2010). As Sadker and Sadker (1994) highlighted, boys and girls might get a completely different education even if they sit in the same class and listen to the same teacher. The studies also suggest that male students are mostly praised for intellectual achievement, whereas female students are praised for the tasks performed. Therefore, teachers' guidance and gender-responsive instruction are critical in promoting gender equality in the classroom (Murphy and Whitelegg, 2006).

As prior studies conducted in the Kazakhstani context suggest, teachers, especially in STEM classes, often display gendered views regarding the students' intellectual capacities and tend to pay more attention to male students in class (Almukhambetova *et al*., 2023), display gendered approaches when guiding the students in their career choices (Almukhambetova and Kuzhabekova, 2020) and attribute different characteristics to female and male students (Almukhambetova, 2024). Recent research on teachers' gender awareness in Kazakhstan indicated that teachers often lack an understanding of their ability to challenge gender inequity in education (Durrani *et al*., 2022).

One plausible explanation for STEM teachers' gendered practices is that they do not receive sufficient training in initial teacher education. Meanwhile, initial teacher education is the critical period to ensure that future teachers are gender aware and will use education to promote gender equality. As previous research suggests, teacher educators are often insensitive to gender issues,

and consequently, teachers do not receive gender-sensitive training (Khalil *et al*., 2023). Previous research also highlighted the importance of teacher educators as role models for pre-service teachers and their unbiased teaching practices (Lunnenberg *et al*., 2007). Therefore, this research focuses on faculty members of teacher-training universities in Kazakhstan to explore their perceptions of gender equality and identify areas for improvement.

Methods

The study employed a descriptive qualitative research design (Creswell and Poth, 2016). The participants were 22 STEM university teachers working in teacher training universities nationwide. The participants were selected through purposive sampling, with attention given to recruiting a balanced sample in terms of characteristics such as gender, region, age, and teaching experience (see Table 1).

Table 1: Participants Background Characteristics

Region	Gender	Specialization	Teaching experience	Age
North	F	Chemistry	19+	–
North	F	Biology	10+	–
South	M	Maths	15+	40
South	F	Physics	15+	38
South	F	Maths	15+	40
North-East	F	Maths	20+	48
Almaty	F	Chemistry	25+	53
North	M	Chemistry	6	28
North-East	M	Physics	18	40
North-East	F	Informatics	17	42
North-East	F	Informatics	10	37
South	F	Computer Science	5	30
South	F	Computer Science	10	34
Almaty	F	Chemistry	15	40
North-East	F	Informatics	12	–
North	F	Physics	12	35
North-East	M	Informatics	10	32
North	F	Physics	10+	36
South	M	Computer Science	7	35
South	M	Computer Science	5	33
Almaty	F	Chemistry	15	40
North	F	Biology	10+	–

Semi-structured, in-depth interviews were chosen as the main data collection tool as they allow the capture, contextualisation, and interpretation of attitudes of a particular social group (Patton, 2014). The faculty members were interviewed when they were free from their classes and other responsibilities at convenient locations near their workplaces.

The interview protocol was developed after carefully reviewing the related literature and consisted of 15 questions. It included questions related to understanding gender equality, perceptions of gender and students' performance, gender and occupational stereotypes, and gender and teachers' practices. The

questions also asked if the teacher educators had the necessary training and knowledge about the topic and how they thought gender inequity might affect student teachers, their learning, and individual development.

Confidentiality was scrupulously maintained throughout the project, including data collection, processing, and storage. The minor risks associated with a breach of confidentiality were mitigated by following all ethical guidelines. Before participating in the study, the participants were informed that they had the right not to answer the questions and to withdraw from the study at any time before and during the interview. Before starting the data collection process, participants were requested to complete an informed consent form containing information about the project and participants' rights.

All the interviews were transcribed and analyzed with the help of NVivo software. The interview data was then analysed with the help of an inductive content analysis strategy (Patton,2014). Such type of analysis is characterized by extensive interaction with the data to identify patterns, themes, and categories and identify 'core consistencies and meaning' (Patton, 1990, p.463). The following steps were implemented: (1) transcribing the data and making notes of relevant details; (2) examining the data to find terms, concepts, and practices; (3) coding the data into different topics and categories; (4) labeling and classifying the emerging patterns; (5) analysing the categories for convergence. Such an approach to analysing the data enabled a transparent categorisation of interview data (Patton, 1990). To ensure the validity of the identified categories, a second round of analysis was conducted to identify the categories related to teachers' perceptions of gender equality.

Positionality of the researcher

The researcher is a middle-aged bilingual citizen of Kazakhstan of female gender. She has a background in teacher education and research on gender issues in education in Kazakhstan and the broader Central Asian context.

Findings

Teachers' understanding of gender equality

When asked about their understanding of gender equality, most participants considered that gender equality is 'treating students equally, regardless of their gender.' A similar quote:

'For the teacher-they must be equal for both male and female students. When we assess the students, we do it based on certain criteria, and we do not have any gender-sensitive assessment strategies that differ depending on whether you are a girl or a boy.'

Several participants, mostly of a younger age, stated that perceptions of gender are changing in Kazakhstani society. As one participant noted:

'There is a difference in how men behaved previously and how they behave now. Now, the girls are also different. They are not looking as feminine as they did some time ago. We see a lot of men who look like women and women who look like men…so it is not correct to divide people according to their race, class, and gender.'

Despite considering gender norms as malleable and subject to change over time, the participants did not understand their and the school's role in promoting gender equality. Instead, they emphasised the 'neutral' role of the teacher. When asked if they had received training in gender awareness and sensitivity, the teacher educators unanimously stated that there are no modules regarding this area of knowledge in teacher training universities, and there are no policies at their universities concerning gender equality in education and women's advancement. This finding corroborates previous literature, which documented that in many other traditional contexts, future teachers are not trained in gender-sensitive instructional strategies (Khalil *et al*., 2023). Other studies have also identified a lack of targeted policies to address inequities in education internationally (Brundrett and Dung, 2018; Kalu, 2005).

The most interesting detail was that the participants were reluctant to admit that there is gender inequality in the Kazakhstani context. This can be seen in the following comments:

'I notice that there are no gender differences in schools and universities in Kazakhstan. Everyone is

treated the same way by teachers when learning a subject. So, there's no difference or special attention given to girls. It's the same level…'

'We can't say there is gender inequality in the Kazakhstani context…'

Perceptions of students' abilities and performance

The analysis of interview data identified that teacher educators hold strong gendered views about students' abilities and performance. Several reported that they consider male students to be more logical and skilful in tasks that required analysis and synthesis, whereas female students were perceived as more competent in assignments that required completing a task. Generally, the participants perceived male students as naturally smarter but 'not diligent enough' and the girls as 'more diligent but superficial.' Generally, they devoted more time to speaking about boys when discussing the students' abilities. This is evidenced in the quotes below: 'As I was teaching at courses and lyceums where both guys and girls were studying, I can say that male students are intellectually smarter.'

'You know, boys are more logical in a way… also even if they do not study hard, they still can solve problems faster; they also do well easier with computers…Girls are more diligent and more organised, and they perform well due to these qualities…'

'Male students have brains…so they can present themselves, and they are more active. This is definitely connected to some psychological traits…'

'I think that female students need more mentorship as they are less concentrated than male students…'

The stereotypes regarding the biological differences between male and female students and gender differences in students' performance were particularly reinforced in participants' responses. Such a tendency to evaluate male and female students' performance is well documented in the literature. Prior research suggests that teachers often attribute male students' underachievement to a lack of diligence, whereas girls' underachievement is associated with an inability (Thompson and Windschitl, 2005). The assumptions about male and female students' performance have also been previously discussed in the literature. The scholars identified no difference in general intelligence between male and female students, although the issue of low expectations from female students still persists (Howard, 2005).

These beliefs imply that if teachers hold implicit gendered attitudes toward the students' abilities, they are likely to be gender biased in their practice, even though they claim to treat both genders equally. Furthermore, they are likely to transfer these beliefs to future STEM teachers.

Perceptions about gender roles and societal stereotypes

In the analysis of interview data, the influence of societal gender stereotypes was evident. Moreover, it was noticed that most interviewed teacher educators favor the traditional distribution of gender roles in society. It is important to note that teachers of both genders support the traditional division of gender roles. Some illustrative comments from teacher educators:

'Women's role is to be a good wife.'

'Kazakh women are unique. They receive a traditional upbringing and understand that man is the head of the family, and women should always be at home when he arrives from work and take care of children.'

Most participants did not view the transmission of traditional stereotypes to the younger generation as a precondition of gender inequality. The study also identified that most teacher educators are uncomfortable challenging gender stereotypes. One of the participants stated that societal stereotypes are 'embedded in Islamic traditions to put men higher than women,' and these traditions should be preserved in Kazakhstani society.

The study also identified a controversy surrounding the role of teachers in addressing existing gender stereotypes. Most participants suggested that gender stereotypes stem from home environments and that only parents are responsible for the development of these stereotypes. These teacher educators stated that teachers must remain neutral, not discuss social stereotypes with their students and not educate them about gender stereotypes. Only two teachers agreed that the role of teachers in combating gender stereotypes is important.

As one participant commented: 'Traditional beliefs of the parents, they do matter. [They] give the traditional upbringing to our girls, to be calm and subordinate.'

Occupational stereotyping

The issue of teacher educators' awareness of occupational stereotyping was also explored in the study. It was revealed that many teacher educators hold gendered views on occupations. They mostly associate male students with such spheres as engineering and IT, highlighting that males are naturally more interested in these fields:

'They go for IT more because they are more interested, and they also go until the end once they're interested in making robots and etc.; it's their male character; they always go until the end.'

'Men are the ones who engage more, also because it's the technology, electronics – more of a male thing. I accept it. Technology and electronics – it is theirs.'

One teacher highlighted that some spheres are not associated with women at all. This is evidenced by the following quote:

'In the IT sphere, women are a source of funny anecdotes. A girl working in a computer field is the main character of the jokes…'

These teacher educators' beliefs about occupational stereotyping might have certain implications for their teaching practices. If teacher educators hold implicit gendered attitudes toward occupations, they will likely be gender biased in their practice and transmit these attitudes to student teachers. Moreover, they might not see the need to remove the common misconceptions that STEM is a male domain and support female students in their STEM career endeavours.

Generational differences in perceptions of gender equality

Surprisingly, more female teacher educators were reluctant to admit the existence of social stereotypes about gender and girls' abilities in learning. In addition, older female teacher educators displayed significantly lower egalitarian perceptions than younger ones. This can be explained by the fact that female teacher educators have to tolerate inequality in everyday life, both at home and in their workplaces. This also suggests that older faculty members are less gender aware because they had socialised to their professions when the traditional gender norms were more rigidly defined.

These findings can also be interpreted through the lens of generational theory, which posits that different generations are shaped by their social, cultural, and historical contexts (Howe and Strauss, 1991). This applies to the participants of the current study. Older teacher educators had grown up and socialised in their profession in Soviet times when gender stereotypes were normalised, and there were strong gendered expectations from women despite seemingly egalitarian views on gender equality (Heinen, 1990). The generational theory also explains why younger male faculty members who participated in the study displayed more egalitarian perspectives. This indicates young teachers' awareness of gender issues and openness to challenge existing biases. This suggests that younger generations are being exposed to more progressive views on gender, reflecting broader societal shifts towards equality (Cichy *et al*., 2007).

Conclusion and implications

The study contributes to scholarly research by providing insights into teacher educators' perceptions of gender equality in Kazakhstan and identifying the areas where they need further support to enhance their gender sensitivity. The study results can be used to inform and guide teachers, administrators, and policymakers in developing programs that can support gender equity in educational contexts.

The study affirms that gender inequality can be found in less visible aspects of education, such as teachers' perceptions of gender equality, gender roles, and students' performance. Although the interviewed teachers stated that their role is to be neutral, they were found to hold strong gendered views on students' performance and future occupations. The study's findings also reveal that university teachers maintain gendered views on women's abilities, consistent with earlier studies (Almukhambetova and Kuzhabekova, 2020). Additionally, it was found that teachers predominantly support the traditional distribution of gender roles in society and do not acknowledge the existing inequities in education in the Kazakhstani context (Almukhambetova, 2024).

These findings suggest that teacher educators' gendered beliefs and perceptions of gender equality might influence their teaching practices. If teacher educators hold implicit gendered beliefs about students' abilities and performance, they are likely to be gender biased in their practice, even though they claim to treat both genders equally. Furthermore, they are likely to transfer these beliefs to future STEM teachers. This also suggests that teacher educators display a limited capacity to improve the educational environment. Consequently, rather than addressing gender inequality, educational institutions are at risk of perpetuating current gender stereotypes and biases (Stromquist, 2018).

The lack of policies promoting gender equality in teacher training institutions, along with the absence of gender-awareness programmes for current and future teachers, has become apparent. Additionally, it was identified that university faculty members do not receive training in recognising and addressing gender stereotypes and there is no systematic effort by teacher training institutes to sensitise the teacher educators on gender issues. Meanwhile, it is crucial to develop specific policies within educational organisations to ensure that the education systems support gender-equitable experiences for all and provide opportunities for critical reflection. Implementing comprehensive policies at teacher training institutions is a crucial step toward creating a more inclusive and supportive educational landscape. It benefits pre-service teachers and contributes to fostering gender-equitable learning for students.

Implications for policy and practice

The findings of the study suggest that efforts to raise teachers' gender awareness should be intensified through the planning and implementation of professional development courses and in-school teacher development activities. These initiatives can provide current teachers with the necessary knowledge and skills to understand and promote gender equality. Additionally, it is important to develop courses on gender awareness and sensitivity for pre-service teachers. These courses can cover the theoretical foundations of gender equality, introduce research on gender issues in education, and gender-related statistical information. Training on gender-responsive pedagogy should also be incorporated into both teacher training and retraining programmes.

The Kazakhstani teacher training curriculum should include gender-sensitive content that addresses the roles and contributions of individuals of all genders across various fields. Furthermore, teachers should be encouraged to conduct practical research on gender issues. The findings from such research can help stimulate discussions on gender-related topics within educational settings.

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References

Acar-Erdol, T., Bostancioglu, A., & Gözütok, F. D. (2022). 'Gender equality perceptions of preservice teachers: Are they ready to teach it?' *Social Psychology of Education, 25(4), 793–818*.

Almukhambetova, A. (2024). 'Exploring STEM teacher educators' gender awareness and understanding of gender-responsive pedagogies in Kazakhstan.' *In The Political Economy of Education in Central Asia: Evidence from the Field* (pp. 97–115). Springer Nature Singapore.

Almukhambetova, A., & Kuzhabekova, A. (2020). 'Factors affecting the decision of female students to enrol in undergraduate science, technology, engineering and mathematics majors in Kazakhstan.' I*nternational Journal of Science Education*, 42(6), 934–954.

Almukhambetova, A., Kuzhabekova, A., & Hernández-Torrano, D. (2023). 'Hidden bias, low expectations, and social stereotypes: Understanding female students' retention in math-intensive STEM fields.' *International Journal of Science and Mathematics Education*, 1–23.

Cichy, K. E., Lefkowitz, E. S., & Fingerman, K. L. (2007). 'Generational differences in gender attitudes between parents and grown offspring.' *Sex Roles*, 57, 825–836. https://doi.org/10.1007/s11199-007-9314-1

Cornwall, A., & Rivas, A. M. (2015). 'From "gender equality" and "women's empowerment" to global justice: Reclaiming a transformative agenda for gender and development.' *Third World Quarterly*, 36(2), 396–415.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage Publications.

Durrani, N. (2022, March 9–26). Teachers' agency for gender justice in Kazakhstan. *2nd Annual Consortium of Gender Scholars Gender Forum*, Nazarbayev University.

Durrani, N., Cohen Miller, A., Kataeva, Z., Bekzhanova, Z., Seitkhadyrova, A., & Badanova, A. (2022). '"The fearful khan and the delightful beauties": The construction of gender in secondary school textbooks in Kazakhstan.' *International Journal of Educational Development*, 88, 102508.

Durrani, N., & Halai, A. (2018). 'Dynamics of gender justice, conflict and social cohesion: Analysing educational reforms in Pakistan.' *International Journal of Educational Development*, 61, 27–39. https://doi.org/10.1016/j.ijedudev.2017.11.010

Fraser, N. (2020). 'From redistribution to recognition?: Dilemmas of justice in a "postsocialist" age.' In *The New Social Theory Reader* (pp. 188–196). Routledge.

Heinen, J. (1990). 'Inequalities at work: The gender division of labour in the Soviet Union and Eastern Europe.' *Studies in Political Economy*, 33(1), 39–61.

Howard, R. W. (2005). 'Are gender differences in high achievement disappearing? A test in one intellectual domain.' *Journal of Biosocial Science*, 37(3), 371–380.

Howe, N., & Strauss, W. (1991). *Generations: The history of America's future*, 1584 to 2069. N.Y.

Joshi, M., & Childress, S. (2017). 'A national survey of attitudes toward intimate partner violence among married women in Kazakhstan, Kyrgyzstan, and Tajikistan: Implications for health prevention and intervention.' *Social Work in Health Care*, 56(4), 294–319.

Kalu, I. (2005). 'Classroom interaction in physics lessons, relative to students' sex.' *African Journal of Research in Mathematics, Science and Technology Education*, 9(1), 55–66.

Keddie, A., & Mills, M. (2009). 'Disrupting masculinised spaces: Teachers working for gender justice.' *Research Papers in Education*, 24(1), 29–43.

Khalil, N., Aljanazrah, A., Hamed, G., & Murtagh, E. M. (2023). 'Teacher educators' perspectives on gender-responsive pedagogy in higher education.' *Irish Educational Studies*, 1–17.

Kuzhabekova, A., Janenova, S., & Almukhambetova, A. (2018). 'Analyzing the experiences of female leaders in civil service in Kazakhstan: Trapped between economic pressure to earn and traditional family role expectations.' *International Journal of Public Administration*, 41(15), 1290–1301.

Lunenberg, M., Korthagen, F., & Swennen, A. (2007). 'The teacher educator as a role model.' *Teaching and Teacher Education*, 23(5), 586–601.

Meadows, M. C. (2018). *Gender differences in STEM sense of belonging for academically advanced middle school students* (Doctoral dissertation, University of Arkansas at Little Rock).

Murphy, P., & Whitelegg, E. (2006). *Girls in the physics classroom: A review of the research on the participation of girls in physics*. Institute of Physics.

Ocio, A. R. (2023). '"Theory is beautiful": Resistance and counter- resistance to gender equality in teacher training.' *Higher Education Quarterly*.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*.

Patton, M. Q. (2014). *Qualitative research and evaluation methods: Integrating theory and practice*. Sage Publications.

Rocca, K. A. (2010). 'Student participation in the college classroom: An extended multidisciplinary literature review.' *Communication Education*, 59(2), 185–213.

Sadker, M., & Sadker, D. (1994). *Failing at fairness: How America's schools cheat girls*. Charles Scribner's Sons.

Sansone, D. (2017). 'Why does teacher gender matter?' *Economics of Education Review*, 61, 9–18.

Sauntson, H. (2012). *Approaches to gender and spoken classroom discourse* (pp. 45–116). Palgrave Macmillan.

Starr, C. R., & Simpkins, S. D. (2021). 'High school students' math and science gender stereotypes: Relations with their STEM outcomes and socialisers' stereotypes.' *Social Psychology of Education*, 24, 273–298.

Stromquist, N. P. (2018). 'Gender structure and women's agency: Toward greater theoretical understanding of education for transformation.' In *Education and Other Modes of Thinking in Latin America* (pp. 67–83). Routledge.

Thompson, J. J., & Windschitl, M. (2005). '"Failing girls": Understanding connections among identity negotiation, personal relevance, and engagement in science learning from underachieving girls.' *Journal of Women and Minorities in Science and Engineering*, 11(1).

UNESCO. (2021). *Policy brief: Gender equality in and through education in Central Asia*. https://unesdoc.unesco.org/ark:/48223/pf0000377910

Washburn, M. H., & Miller, S. G. (2004). 'Retaining undergraduate women in science, engineering, and technology: A survey of a student organisation.' *Journal of College Student Retention*, 6(2), 155–168.