

# Chapter 39

## STEM Fields and Ethnic Women in New Zealand: Issues of Sexism and Racism

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### ABSTRACT

*A critical race theory was used to analyse policies and strategies in place to enable the participation of New Zealand ethnic women of Latin-American, Middle Eastern, and African (MELAA) origin in Science, Technology, Engineering, and Mathematics fields (STEM) in education and industry. The aim was to find out what policy – and other – levers are available for better participation in the STEM fields by the ethnic women's population. The process involved an analysis of publicly available official documents on STEM strategies at national and regional levels. The main findings were that gender issues are expressed in a generic way, either across all ethnic groups, or across the four ethnic groups where the MELAA stands not clearly identifiable in the classifications. Recommendations include the need to develop policies and strategies that account for race and gender equity as part of an agenda to eliminate marginalization of this group.*

### INTRODUCTION

In 2014 the New Zealand government, in its five-year strategy-Tertiary Education Strategy 2014-2019 (Ministry of Education, 2014), made a landmark announcement of the need for an increase in funding for students taking studies in the science, technology, engineering and mathematics (STEM) fields in universities. This was in line with the Government strategy of boosting the economy through supplying the industry with the required skills and by research and scientific innovation. Graduates in these subjects are in short supply in industry and therefore this was also a response to changing workforce needs (Ministry of Business Innovation and Employment & Ministry of Education, 2014). Following this decision, the state-funded universities responded by incorporating this change into their five-year investment plans. Before this policy was announced, some government and non-government organizations were already

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involved in initiatives aimed at encouraging women and vulnerable minority groups, such as the Maori and Pacific Island communities, to enroll in STEM subjects. Little is known about initiatives targeting a group which in New Zealand is classified as 'other' or 'ethnic minorities' (consisting of Middle-Eastern, Latin American and African people (MELEAA), 1.2% of the total population) to participate in STEM careers. It was against this background that a document analysis was undertaken to find out the presence or absence of statements in policy documents that target women from this ethnic minority group.

This chapter therefore utilises critical race theory to examine the current state of the STEM field for MELEAA women and to analyse organizational and policy instruments that are available to address issues of participation of ethnic women in STEM fields in New Zealand. Evidence that ethnic minority women tend to be on the fringe of policy action in documents targeting ethnic minority women will be presented. This chapter can be of significance internationally in other English-speaking Western countries, such as Canada, Australia, the United States of America and United Kingdom, as the ethnic minority women of New Zealand may be originally from similar source country backgrounds as ones in these countries.

## **BACKGROUND**

In New Zealand and most western High Income Countries (HIC) STEM fields have been seen as critical to the advancement of national economies and competitiveness in the global economy (George, Neale, Van Horne, & Malcolm, 2001; Marginson, Tytler, Freeman, & Roberts, 2013). The New Zealand government earmarked STEM fields as vehicles for advancing the economy. Thus, the link between universities with industry has been encouraged in tertiary education strategies: the rationale being that STEM subjects are seen as catalysts in achieving economic goals (Ministry of Education, 2014; Mpofu, 2014). For example in most reports it has been argued that mathematical sciences provide direct contributions to profits and savings and underpins a significant proportion (often over 50%) of total business, industry and government activity within New Zealand (Ministry of Research Science and Technology, 1998). This means that the skill gaps identified in STEM at tertiary education institutions and industry are an issue not only for those aspiring for jobs but for the Government's goals of boosting the economy too.

The globalised nature of the workforce leads to competition in attracting this workforce especially among HIC countries. Most western countries have a fluid labor force that flows between these countries and this adds to the competition for workers in these fields (Langen & Dekkers, 2005). Thus, governments in HIC countries are now compelled to come up with novel STEM policies in order to be competitive in this market. Furthermore, although this issue is of concern in most western countries, it has received different levels of attention in different parts of the world. For example, the European Union (EU) formed an official strategy of increasing enrolments in STEM subjects at the beginning of the 2000s (Langen & Dekkers, 2005), while New Zealand has only adopted a related major policy shift recently in 2014 (Ministry of Education, 2014). New Zealand therefore needs more STEM workers, not only to meet industry demands but to keep pace with other HICs which have already put strategies in place to increase their STEM pool. In addition to encouraging the general uptake of STEM fields in tertiary education, different countries have specific policies of addressing equity issues targeting groups such as women and vulnerable communities that have traditionally had low participation in the labor market (Marginson et al., 2013).

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