Differentiated Instruction in Secondary Education Across Countries: Measurement Invariance and Comparison [paper presentation].

Abstract

1. Rationale and objectives

Differentiated instruction (DI) is important for student outcomes (e.g., Van de Grit et al., 2014; Maulana et al., 2015). This topic has attracted practical and scientific interest across the world (Smale-Jacobse et al., 2019). Nevertheless, little is known whether DI can be measured uniformly and, subsequently, be compared meaningfully across diverse countries.. Based on the conceptualisation of DI in the framework of Differentiation in secondary education from international perspectives

(https://www.rug.nl/gmw/lerarenopleiding/onderzoek/psychometrisch/differentiation?lang=en),
this study investigates the extent to which this scale of secondary school teachers' DI is invariant and can be compared meaningfully across 10 countries. This knowledge contributes to our understanding of the psychometric quality of the DI scale in different country settings, which is needed to make meaningful conclusions and comparisons regarding the quality of DI in different educational settings.

2. Perspectives

DI refers to pro-active and deliberate adaptations of content, process, product, learning environment or learning time based on assessment of relevant student characteristics (Smale-Jacobse et al., 2019; Tomlinson, 2014). It is a distinct and integrated domain of effective teaching behaviour. DI has been empirically shown to be one of the most complex teaching skills (Maulana et al., 2020; Van der Lans et al., 2018).

3. Methods

A total of 3,283 secondary school teachers from 10 countries were observed using a Differentiated Instruction Scale (Van de Grift et al., 2014) (see Table 1). The scale consists of 12 low-inference sub-indicators (rated 0 = not observed, and 1 = observed) categorised into 4 high-inference indicators (rated 1 = Predominantly weak – 4 = Predominantly strong). Categorical confirmatory factor analysis (CFA) and multi-group confirmatory factor analysis (MGCFA) on the high-inference indicators were performed to test measurement invariance (MI) at configural, metric, and scalar levels (Millsap & Yun-Tein, 2004; Van de Schoot et al., 2012).

4. Results and conclusion

The full measurement model of CFA in all included country data shows that the model fits well, except in the UK data, therefore. the unidimensional factor structure of DI is supported in the nine countries. Adequate support for partial scalar invariance was found, implying that the latent factor structure, factor loadings, and most of the thresholds (61.1%) are invariant, across the nine countries (see Table 2). These results indicate that comparisons of the latent means of DI across the nine countries are acceptable (Steenkamp & Baumgartner, 1998). Therefore it is valid to conclude that American teachers reveal the highest level of DI practices, followed by Mongolian, South Korean, South African, and Indonesian teachers, compared to Dutch, Pakistani and Chinese teachers (see Table 3).

5. Educational importance

MI of DI adds to the knowledge base showing that comparing DI practices across various country/cultural contexts is promising. This allows setting up professional development for improving DI at the international level. However, findings also indicate that unique cultural factors slightly influence different interpretations of DI items and practices, which should be taken into account.

6. Connection to the conference theme

This study is related to ICSEI sub-themes 4 and 5.