The Impact of STEM Teacher Preparation and Professional Development on Im/Migrant and Humanitarian Migrant (IMHM) Youth Outcomes

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PROBLEM & PURPOSE
Research identifies a gap between: (a) STEM teacher training and professional development and (b) the diverse challenges and unique needs of adolescent immigrants and migrants (i.e., im/migrants), and more specifically, humanitarian migrants in secondary schools. Despite significant emphasis on language learning for teachers working with im/migrant populations, STEM teachers largely remain ill-prepared to deal with the diverse challenges of this population of students. Through an examination of STEM teacher preparation data and im/migrant and likely humanitarian migrant (i.e., refugee and asylee) student data in PISA 2015, this research aims to inform policies regarding secondary school STEM teachers’ pre-service training and professional development and the needs of im/migrant students in mainstream classrooms. Some of the greatest STEM success stories are attributable to im/migrants, which can also lead to long-term significant economic and community advantages both for im/migrants and their communities. Investing in the successful transition of im/migrant youth, especially humanitarian migrant (i.e., IMHM) youth, into mainstream communities is a proven way to facilitate this success.

LITERATURE REVIEW
The research focuses primarily on the needs of immigrant students related to language learning and the impact of youth trauma on classroom experiences. Research examines the importance of teacher compassion and ethical pedagogy with refugees, but not on the impact that teacher preparation programs have on mainstream teachers’ capacity to teach IMHM youth in their classrooms. Most importantly, there is no existing research examining the ways that mainstream pre-service teacher training and in-service professional development prepares teachers to meet both the academic and non-academic needs of refugee and asylum-seeking youth.

RESEARCH QUESTION
How does STEM teacher training and professional development prepare secondary school STEM teachers to meet both the academic and non-academic needs of im/migrant youth, especially humanitarian migrants?

DATA & METHODS
To investigate the nested relationship between STEM teacher backgrounds, training, professional development, and interactions with student level characteristics and outcomes, hierarchical linear models (HLM) are estimated for high-refugee-receiving countries, like Germany, which inform US policymaking. The STEM teacher characteristics which potentially influence IMHM youth are potential predictors of mainstream students’ academic and non-academic outcomes. Therefore, to isolate the impact that teacher characteristics and experiences have on student outcomes, we include STEM teacher characteristics as cross-level interaction variables with the student proxy indicator for likely IMHM status (i.e., first generation immigrant in country less than two years). A cross-level interaction is an interaction where one of the predictors is restricted in its variability to units at level 2. By including these STEM teacher characteristic variables as interaction effects with students’ likely IMHM status, the effect that teacher-level indicators have on IMHM students’ academic STEM and non-academic outcomes is estimated within the larger mainstream student population. As the country with the most recently resettled refugees among all OECD countries during the 2015 data collection, the results for Germany are shown in the HLM table.

FINDINGS
Based on these analyses, receiving countries in the OECD (like the US) would be wise to work with refugee and asylum-seeking students using primarily teachers who have training in teaching in multicultural settings as well as in the use of cross-curricular skills. The evidence also suggests that these teachers should engage in formal mentoring and coaching and keep up a healthy informal dialogue with their colleagues about how to improve their teaching. One of the key problems that persists, however, is how to prepare teachers to handle and improve refugee and asylum-seeking students’ non-academic outcomes such as their motivation to learn and their sense of belonging.