



Plugging the Leaky Pipeline: Perceptions of Primary Teachers and Students towards STEM Education

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Abstract

One metaphor that has been used in recent years in reference to movement from STEM education to a STEM career is the 'leaky pipeline'. This pipeline it has been hypothesised leaks due to social or cultural forces that steer people who are studying a STEM subject in university to then choosing to go in another direction rather than pursue a STEM related career. The leaking of the STEM pipeline is occurring worldwide (OECD, 2014). For example, only 15% of university students earn engineering degrees while over 30% earn social science social science degrees (OECD, 2104). When you look at this by gender, the numbers are even more dismal with only 20% of these degrees being completed by females. For example, in Kazakhstan in 2016 female students from age 18-22 made up 57% of all students enrolled in college but only 37% of them were studying engineering (www.state.gov.kz). In order to patch up the leaks, it is imperative to find a way to interest females in STEM related professions. However, research has revealed that by the time students are college age it is too late to interest either gender in science or engineering professions (DeWitt, Archer, & Osborne, 2014; Jenkins, & Nelson, 2005). Research has reported that attitudes towards science and the ambitions of pursuing a STEM related career decline once science is no longer a required subject, with this decline being even more pronounced for females (e.g., Barmby, Kind & Jones, 2008, Bennet & Hogarth, 2009, Murphy & Beggs, 2005; Robnett, Chemers, & Zurbriggen, 2015). It is this evidence that has led us to believe that it is essential to learn about how STEM is viewed and understood by primary aged students in Kazakhstan, and what activities are currently being offered in the curriculum to support an increase in students' interest. Our research used semi-structured focus groups with teachers and students at the primary grade levels in three regions of Kazakhstan. In this presentation, we will present our research and the preliminary findings.

Keywords: *Primary school, science education, engineering education, STEM.*

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