

Instructional Strategies Mathematics Classroom Teachers use to Intrinsically Motivate Grade 7 – 12 Students

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Abstract

There have been numerous research studies specifically exploring self-determination theory (e.g., Jang, Reeve & Deci, 2010; Niemiec & Ryan, 2009; Ryan & Deci, 2017), motivation in the classroom (e.g., Benware & Deci, 1984; Guay & Vallerand, 1997; Skinner, 2012), and difference in urban and non-urban schools (e.g., McCracken & Barcinas, 1991; Owens, 1996; Young, 1998). For the purpose of this research, a different area was explored; this research investigated the idea of intrinsic motivation and comparing how students in urban and non-urban schools are intrinsically motivated differently by their teachers. The research questions underlying this study are: a) What practices do secondary mathematics teachers use to promote autonomy, relatedness, and competence in urban and non-urban classrooms? and b) To what extent do secondary mathematics classroom teacher practices supporting autonomy, relatedness, and competence align with their self-reported practices? Findings from this research will help to tie together three individual areas (i.e., autonomy, relatedness, and competence) to better explain the motivational differences that students face in the classroom due to their school setting and teachers' actions.

Keywords: intrinsic motivation, self-determination theory

Mathematics education continues to evolve and change. Classroom teachers try new strategies in their classrooms in order to provide the opportunity for their students to better grasp mathematical concepts under discussion; with one end goal being the improvement of their students' mathematical achievement. As the National Council of Teachers of Mathematics (2014) states, "we must examine the progress that has already been made [within mathematical standards],

the challenges that remain, and the actions needed to truly ensure mathematical success for all students" (p. 1). There has been much to celebrate in terms of the progress and achievements that have been made in the realms of mathematics education (e.g., curriculum advancements, federal focus and development on STEM subjects, teacher resources). But, along with these achievements, there are areas in mathematics education where there is room for growth.

The National Assessment of Educational Progress; NAEP (2019) reported that the national mathematics scores for eighth graders in 2019 were lower than that of 2017.

Self-determination theory is a notion that focuses on human personality and motivation through empirical methods and organismic metatheory (Ryan & Deci, 2000). The basic psychological needs that Ryan and Deci elude to in their definition of self-determination theory are defined as autonomy (i.e., relates to the ideas of encouraging choice, relating to students, allowing for the opportunity for independent work), competence (i.e., encouraging students with optimally challenging task while providing appropriate and relevant feedback), and relatedness (i.e., creating a sense of belongingness for all). For the purpose of this research, the ideas behinds self-determination will be considered alongside intrinsic motivation, one's internal drive to want to learn about a given topic, with a particular focus on whether mathematics teachers are promoting intrinsic motivation through their daily lessons, plans, and actions.

The aim of my study was to better understand how self-determination theory, motivation, and urban vs. non-urban settings fit together as a coherent whole and take note of the difference in the way teachers intrinsically motivate their students in urban vs. non-urban settings. Motivation as a large overarching topic is generally broken down into the two subgroups of intrinsic and extrinsic motivation. When a student is intrinsically motivated, they act in a way that their behavior is influenced by the fact that something is enjoyable and interesting; it is something they want to do. On the contrast, students that are extrinsically motivated are influenced by an external reward or punishment. In regard to the importance of exploring differences in urban and non-urban schools, there are many socioeconomic

factors, student achievement differences, and environmental influences that play a role on the students' academic achievement and motivation. It is important to investigate the differences and work toward equal opportunity for all students. Therefore, in this study, the following research question is investigated:

1. What are the similarities and/or differences in secondary mathematics teacher's self-reported instructional strategies/practices regarding intrinsically motivating students in urban and non-urban classrooms.

Methods

The methods for this research involved two different data collection techniques; survey and interview. The researcher began by having the cooperating teacher complete a Likert style survey related to the teacher's current motivational strategies. Following the survey, there was then a phone interview in which the participant and researcher discussed the self-reported strategies from the survey and elaborated further on the details of the teacher's practices related to intrinsic motivation.

Results

The results found from this study will provide teachers with better insight on how they can alter their practices to better help intrinsically motivate their students. It will also note any major differences in how motivation is done in urban and non-urban settings and what can be done to change any significant differences. Parents could be informed on what motivates their children and how they can contribute to bettering their child's education. As a society, we can all benefit from taking time to better understand what motivates us; we are faced with many decisions every day and the way in which we respond is based off our underlying conscious of motivation.

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