



# Science teacher attitudes towards English learners

Margarita Huerta <sup>a,\*</sup>, Tiberio Garza <sup>a</sup>, Julie K. Jackson <sup>b</sup>, Manognya Murukutla <sup>a</sup>

<sup>a</sup> The University of Nevada, Las Vegas, 4505 S. Maryland Parkway MS 3001, Las Vegas, NV, 89154-3001, USA

<sup>b</sup> Texas State University, Round Rock Campus, 1555 University Blvd, Round Rock, TX, 78665-9017, USA

## HIGHLIGHTS

- Bi/multilingual teachers had more positive attitudes towards ELs than monolingual English speaking teachers.
- PreK-elementary teachers had more positive attitudes towards ELs than secondary teachers.
- Training to work with ELs in science resulted in more positive attitudes towards ELs.

## ARTICLE INFO

### Article history:

Received 8 June 2018

Received in revised form

11 September 2018

Accepted 17 September 2018

### Keywords:

English learners

Science education

Teacher attitudes

## ABSTRACT

Access to science education is important given scientific understanding is foundational for individuals to deal with demands of increasingly technological societies. Unfortunately, English Learners (ELs) often struggle with achievement in science education. For teachers, implementing effective pedagogy for ELs is not easy, and teacher educators and researchers would benefit from understanding teacher attitudes related to practice in this field. We analyzed 553 PreK-12 teachers' attitudes toward ELs in the context of science education accounting for demographic, contextual, and educational variables. Results indicated above average attitudinal scores for the sample with specific variables showing statistically significant effects on participants' scores.

© 2018 Published by Elsevier Ltd.

## 1. Introduction

Science position papers worldwide discuss the importance of science education being accessible to all students (International Council for Science [ICSU], 2011; NGSS Lead States, 2013). Access to science education is important given how foundational scientific understanding is for individuals to deal with the complex demands of increasingly technological societies (ICSU, 2011). Unfortunately, English Learners (ELs) often struggle with achievement in science education, scoring below average on national test scores. This is concerning given there are currently 4.5 million ELs attending public schools in the United States alone (National Center for Education Statistics [NCES], 2017).

The challenges for ELs to achieve in science has been attributed to different though inter-related reasons. On the one hand, ELs struggle with science achievement because both science as a

subject and science assessments rely heavily on academic language structures (Fang, 2006; Kieffer, Lesaux, Rivera, & Francis, 2009). On the other hand, ELs' success in the science classroom is tightly connected with practice: when teachers effectively integrate academic language and science content in their classroom to maximize learning, ELs' achievement increases (Lara-Alecio, Tong, Irby, Guerrero, Huerta, & Fan, 2012; Lee, Deakro, Hart, Cuevas, & Enders, 2005; Lee, Maerten-Rivera, Penfield, LeRoy, & Secada, 2008; Llosa et al., 2016; Maerten-Rivera, Ahn, Lanier, Diaz, & Lee, 2016).

### 1.1. Challenges to teacher training in science education

Training teachers to implement effective integrated academic language and science content instruction, however, requires intensity, time, and attention to teacher development. For example, researchers concerned with EL science achievement report professional development for teachers within intervention studies ranging from an intensity of 2–5 full-day workshops throughout the year and/or summer (e.g., Hart & Lee, 2003; Lee et al., 2016; Lee & Maerten-Rivera, 2012) to additional bi-weekly meetings throughout the school year (e.g., Lara-Alecio et al., 2012). Teachers

\* Corresponding author.

E-mail addresses: [margarita.huerta@unlv.edu](mailto:margarita.huerta@unlv.edu) (M. Huerta), [tiberio.garza@unlv.edu](mailto:tiberio.garza@unlv.edu) (T. Garza), [julie.jackson@txstate.edu](mailto:julie.jackson@txstate.edu) (J.K. Jackson), [murukutl@unlv.nevada.edu](mailto:murukutl@unlv.nevada.edu) (M. Murukutla).

in these interventions do not always reach the level of reform-oriented practices (i.e., including attention to academic language alongside content) needed to promote EL achievement based on U.S. national content area standards. For example, Lee and colleagues concluded teachers were not able to engage students in inquiry and argumentation – processes requiring written and oral language production and key features of the U.S. based *Next Generation Science Standards* (Lee, Lewis, Adamson, Maerten-Rivera, & Secada, 2008; NGSS Lead States, 2013; Santau, Secada, Maerten-Rivera, & Lee, 2010). Researchers proposed teachers did not reach the ideal level of reform-oriented practice in these studies because (a) teachers needed more time to adopt and understand the practices (Lee et al., 2008; Santau, Secada, Maerten-Rivera, Cone, & Lee, 2010) and (b) the possibility that, because the intervention was a school district-wide initiative, non-volunteer teachers may not have been open to improving education for ELs (Santau et al., 2010) – that is, some teachers may have had negative attitudes towards ELs and/or negative attitudes about the pedagogical practices they were being asked to implement in their classrooms.

### 1.2. Teacher attitudes and beliefs related to ELs

Teacher attitudes and beliefs about students and instruction affect teacher practice (Borg, 2003; Fang, 1996; Farrell & Kun, 2008; Pajares, 1992; Pettit, 2011b). When working with ELs, teacher beliefs about their students can affect what ELs learn in the classroom (Peregoy & Boyle, 1997), ELs' academic achievement and overall learning (Mantero & McVicker, 2006; Peregoy & Boyle, 1997), and what teachers' see as productive pedagogy in working with ELs (Shim, 2014). For example, researchers have noted mainstream teachers, without training or proper school supports for working with ELs, can harbor negative and misinformed attitudes about their students such as believing ELs should not be in their content classrooms, the idea that it is not their responsibility to modify coursework for ELs, and ideas that it is not their responsibility to value or support ELs' native language (Choe & McDonnough, 2009; Flores & Smith, 2009; Karathanos, 2009; Lee & Oxelson, 2006; Reeves, 2006; Song & Samimy, 2015; Youngs & Youngs, 2001). On a positive note, the same researchers recommended and/or demonstrated the positive impact proper training can have on teacher attitudes and beliefs towards ELs. Here it is worth noting that beliefs/attitudes and practices are two sides of the same coin: beliefs/attitudes can influence the degree to which teachers are receptive to professional development (Karabenick & Noda, 2004) and professional development can also change teacher beliefs/attitudes (Lee & Oxelson, 2006; Pettit, 2011a).

### 1.3. Teacher attitudes in science education

Within science education studies concerned with ELs, researchers have briefly explored teacher beliefs related to practice with small samples (Hart & Lee, 2003; Lee, 2004). For example, Hart and Lee (2003) reported 53 teachers' beliefs to show positive change after a professional intervention, and Lee's (2004) qualitative study found six Hispanic teachers' beliefs and practices with ELs in the science classroom also changed over time, with extensive training, support, and time for teacher reflection. More recent studies in science education have focused on self-reported teacher science content knowledge, perceptions about school resources, and (some observed) teaching practice (Lee et al., 2016; Lee & Maerten-Rivera, 2012). All the studies report overall positive outcomes as a result of grant-funded interventions (i.e., higher teacher science content knowledge; better perceptions about school resources; improved teaching practices).

While these studies are insightful regarding the impact of

professional interventions on teacher knowledge and practice when working with ELs in science, they have not attended to teacher attitudes as a construct (see “Untangling Teacher Beliefs and Attitudes” below) nor with larger samples. As noted, teacher attitudes can influence teacher practice (e.g., Borg, 2003; Fang, 1996; Farrell & Kun, 2008; Pajares, 1992) and can also influence how receptive teachers are to training (Karabenick & Noda, 2004; Santau et al., 2010). Renewed attention to teacher attitudes when working with ELs in science would lend insight into research and practice benefiting both teachers and students most at risk in science education.

### 1.4. Purpose

In this study, we measured and analyzed PreK-12 teachers' attitudes toward ELs in the context of science education. In doing so, we sought to contribute to the existing literature regarding teacher attitudes in science education as well as to inform future and current teacher research, education, and policy. This information is important for researchers and educators wishing to refine their teacher training courses or professional development in a way which addresses teachers' attitudes towards ELs in science education as a way to lead to more effective teaching and student learning.

## 2. Review of the literature

### 2.1. Untangling teacher beliefs and attitudes

The constructs of beliefs and attitudes related to teacher practice is admittedly messy but important in educational research (Pajares, 1992). As Flores and Smith (2009) discussed, the idea of teacher beliefs has been given many “analogous phrases” including “views”, “perceptions”, “perspectives”, and “attitudes” (p. 325). In their study, Flores and Smith (2009) chose to use the term “attitudinal beliefs” as their main construct of interest (p. 325). Though we acknowledge beliefs and attitudes are intertwined, a clearer definition is needed for the purpose of analysis and discussion.

In this study, we operationally define teacher beliefs as a construct composed of cognitive (i.e., knowledge), affective (i.e., can arouse emotion), and behavioral (i.e., action may be required) components as proposed by Rokeach (1968). Concretely, teacher beliefs can be inferred from responses to phrases preceded by “I believe that ...” (p. 113). These belief statements can include knowledge based on theory and research about working with ELs (e.g., “I believe a student should be allowed to use his/her first language to clarify their understanding); statements arousing emotion (e.g., “I believe to be a citizen of my country a person should speak English”); or statements eliciting behavior (e.g., “I believe adapting my assessments for ELs is good for their learning progression”). A cluster of these beliefs, can then be defined as an attitudinal construct. As Pajares (1992) explains, attitudes can be “... clusters of beliefs ... organized around an object or situation and predisposed to action ...” (p. 113). Concretely, then, teacher attitudes about ELs can be comprised of a series belief phrases.

### 2.2. Teacher attitudes related to ELs: attitudes about what?

In discussing the studies below, we wish to make the reader aware of two things. The first is the use of different terms in the literature to describe ELs including *non-English-proficient*, *limited-English proficient*, *ESL student*, and *ELs*. These terms have different connotations (For readers interested in these discussions see, for example: García, 2009; Pettit, 2011b). In this article, we chose to use the term EL because it is currently the term used by the

Download English Version:

<https://daneshyari.com/en/article/10225692>

Download Persian Version:

<https://daneshyari.com/article/10225692>

[Daneshyari.com](https://daneshyari.com)