An Exploratory Study of Self-Efficacy Among K–12 Teachers in Puerto Rico

Estudio exploratorio de autoeficacia entre maestros K-12 en Puerto Rico

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Abstract

This exploratory study focused on strategies that K–12 teachers in Puerto Rico use to demonstrate self-efficacy in the classroom. A qualitative methodology was employed using the theoretical framework of Social Cognitive Theory (SCT) and Albert Bandura's theory of self-efficacy (1986; 2001). Semi-structured interviews were conducted with six teachers at the K–12 level at public and private schools in Puerto Rico. Five were from public schools and one was from a private school. The interview questions centered on three central aspects of self-efficacy: (1) teachers' notions of self-efficacy, (2) strategies teachers use to demonstrate self-efficacy in the classroom, and (3) variables that affect their ability to carry out their definition of self-efficacy. The results demonstrate strategies of self-efficacy used in Puerto Rico and their relationship to Puerto Rican culture is discussed. Recommendations for future research in the area of self-efficacy among educators in Puerto Rico are explored including curricular change, active learning techniques, integration of the social and economic backgrounds of students' communities and exploring the benefits of collective efficacy for school sites. Some of these recommendations are explored in the context of education in Puerto Rico post Hurricane Maria.

Keywords: Self-efficacy, Social Cognitive Theory, educators, Puerto Rico, Hurricane Maria

Resumen

Se realizó un estudio exploratorio sobre las estrategias que los maestros de K–12 en Puerto Rico utilizan para demostrar la autoeficacia en el salón de clase. Se empleo metodología cualitativa y se consideró como marco teórico la Teoría Social Cognitiva y la Teoría de la Autoeficacia de Albert Bandura (1986; 2001). Se llevaron a cabo entrevistas semi-estructuradas con seis maestros del nivel K-12 en escuelas públicas y privadas en Puerto Rico. Cinco fueran de escuelas públicas y 1 de una escuela privada Las preguntas de las

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entrevistas se enfocaron en tres aspectos centrales de la autoeficacia: (1) las nociones de los maestros acerca de la autoeficacia, (2) las estrategias que los maestros utilizan para demostrar la autoeficacia en el salón de clase y (3) las variables que afectan la capacidad para poner en práctica lo que los maestros definen como autoeficacia. Los resultados demuestran estrategias de autoeficacia que pueden ser características de la cultura y la sociedad puertorriqueña. Se exploran recomendaciones para investigaciones futuras en el área de la autoeficacia entre los educadores en Puerto Rico incluyendo cambio curricular, técnicas de aprendizaje activo, integración de los antecedentes sociales y económicos de las comunidades de estudiantes y exploración de los beneficios de la eficacia colectiva para las escuelas. Algunas de estas recomendaciones se exploran en el contexto de la educación en Puerto Rico después del huracán María.

Palabras claves: La autoeficacia, la Teoría Cognitivo Social, Educadores, Puerto Rico, Huracán María

The purpose of this exploratory study was to gain a better understanding of variables that contribute to Puerto Rican K–12 teachers' success through self-efficacious practices. This study was constructed using qualitative methodology, specifically, semi-structured interviews with six teachers at the K–12 level at both public and private schools. Five teachers were from public schools and one was from a private school. Bandura's (1986) Social Cognitive Theory (SCT) was the theoretical framework used. SCT is designed to explain human cognition, motivation, and emotions through the overarching assumption that people are capable of self-reflection and self-regulation. Furthermore, SCT maintains that people are not passive in their environment but rather actively shape it (Maddux, 2013).

Within the framework of SCT, Bandura (2006) proposed a triadic model of human functioning that involves interaction between and among one's behavior, environment, and interpersonal communication. More specifically, teacher self-efficacy develops through four venues: (1) When teachers experience success (mastery); (2) when teachers see their peers succeeding (vicarious experience); (3) when they are encouraged to try new practices (social

persuasion); and (4) when they experience less stressful teaching situations over which they feel they have more control (physiological factors) (Bandura, 1997). Each of the variables explored in the current study is demonstrated in all three realms of the educator's behavior in school.

Educational research must account for the context in which the study is conducted, including social and economic influences, to be understood appropriately. For many students in Puerto Rican schools, their academic performance may not be related to future success. In Puerto Rico today, a young person who finishes high school and obtains a degree in higher education has little guarantee of obtaining adequately paid employment on the island, considering factors such as student loan debt (Marcus, 2019). Additionally, according to Milligan (2018), teachers, policemen, engineers, and health care professionals are not getting paid for their services. Thus, they tend to leave the island because their cost of living is very high. Milligan (2018) further states that Puerto Rico lost 100,000 people to migration from July 2016 to July 2017. So, the country has failed to launch an economic recovery, further increasing the gap between wages and the cost of living and accelerating the migration. Furthermore, the main reason for this is the decade-long financial crisis of the country, stemming from its massive, unpayable debts. This information is especially relevant given the youth unemployment rate in 2018 in Puerto Rico was 25.82%; this statistic refers to "the share of the labor force ages 15-24 without work but available for and seeking employment" and an overall unemployment rate in 2018 of 11.44%. This compares to a US unemployment rate in 2018 of 3.93% (MacroTrends, 2020).

Post-Hurricane Maria, the median salary in Puerto Rico is under $20,000 per year (Long-García, 2018). According to Meléndez (2018), as of 2016, the unemployment rate in Puerto Rico was more than double the U.S. national average. Furthermore, only about four out of ten adults participate in the labor force and nearly half of the population lives in poverty; this is a rate that is

substantially higher than any state. These low salary and employment rates potentially magnify the issues students from low socioeconomic backgrounds come to school with and may necessitate increased strategies to demonstrate higher levels of self-efficacy to successfully educate these students on the part of the teacher.

High dropout rates also play a role in teachers' abilities to demonstrate self-efficacy in the classroom, as it may be indicative of problems in students' behavior and/or problems at school sites. According to the data provided by the Puerto Rico Department of Education [DEPR for its Spanish acronym], "the dropout rate for the 2016-2017 school year in public high schools was 8.4%. The dropout rate in Puerto Rico is higher than the 6.3% that is estimated at the national level in the United States, as reported by the [then] Secretary of Education Julia Keleher" (Del Valle, 2005, p. 8). The dropout rate among students is of central concern both economically and socially in Puerto Rico (Allison & McEwan, 2005; Irizarry & Quintero, 2005).

Irizarry and Quintero (2005) stated that the dropout rate may be due to: conflict with teachers, lack of support on the part of school personnel, academic difficulties, absenteeism, cutting classes, little pertinence of the classes to student interests, falling behind in school, school suspensions, and discipline problems. Caro (2006) included being an adolescent parent and economic needs as other potential factors involved in the high dropout rate in Puerto Rico. An additional drop in enrollment has occurred since the closing of hundreds of school sites since Hurricane Maria hit the Island in 2017 (Ujifusa, Juan & Rico, 2018). Lynn (2018) describes that even before the storm hit, education officials had begun closing schools on Puerto Rico to save money. After Hurricane Maria, thousands of Puerto Rican families fled to the U.S mainland and many students ended up attending schools in Florida or other states along the East Coast. Those students were put in classes with students of lower grade levels because they did not have the

English language skills to survive in an English-only school in the States because in Puerto Rico they were speaking Spanish in class. The impact of Hurricane Maria and the study of self-efficacy will be explored more extensively in the discussion section.

Obtaining adequately paid employment in relationship to high cost of living and high dropout rates are some of the factors that impacted the ways in which some teachers experienced and expressed self-efficacy in this study. For example, the influence of students' backgrounds on their behavior in the classroom and parents' levels of support and engagement resulted in a teacher requiring higher levels of self-efficacy to work with these students who presented challenging behaviors in the classroom. These factors will be described in the results section.

An open definition of self-efficacy was used for this study in terms of permitting the participants (educators) to create their own meaning in order examining themes that emerge. This decision is in line with the framework Creswell (2013) describes: "Those who engage in this form of inquiry [qualitative] support a way of looking at research that honors inductive style, a focus on individual meaning, and the importance of rendering the complexity of the situation" (p. 5).

Education in Puerto Rico and Teacher Self-efficacy

Teacher self-efficacy is defined as: "a teacher's efficacy belief is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Armor et al., 1976; Bandura, 1977, as cited in Tschannen-Moran & Hoy, 2001). Teacher self-efficacy impacts the field of education, specifically teachers' classroom tactics, in important ways. Creating environments favorable to learning is possible for teachers who possess high self-efficacy in regard to their instructional capabilities (Bandura, 1993).

Bandura (2006) described several aspects of how self-efficacy impacts life: education, health, organization, and technology. Teacher self-efficacy is specifically related positively to student achievements, motivation, innovative instructional techniques, and the establishment of a positive climate inside the classroom (Hoy & Woolfolk, 1990). As Quintero (1999) explained, and this study demonstrates, these factors are vital for students in Puerto Rico as they experience hardship in all aspects of their lives.

Scant research was found on the specific topic of self-efficacy among K–12 teachers in Puerto Rico. Some research suggests that this lack of research may be due to low response rates of survey data on the Island ("Eugenio María de Hostos", 2018). Suggestions for improving response rates of survey data in Puerto Rico will be explored in the discussion section. However, research on similar topics has been conducted in other Hispanic and Latin-American countries. The benefits of self-efficacy among teachers in Mexico found that teacher appraisal and feedback can be important instruments to raise self-efficacy and public recognition can reinforce this relationship. Also, some teaching practices are more closely associated with classroom climate and self-efficacy than others (OECD, 2020).

In a study conducted among 95 professors from five public universities in Spain, Rodríquez, Núñez, Valle, Blas, and Rosario (2009) found three levels of perceived self-efficacy: a teacher's ability to involve the student in learning, to optimize the teacher's own creativity, and to manage a classroom. Teachers' self-efficacy was also found to affect their motivation, self-esteem, and professional engagement in the teaching field. In a second study with a sample of 625 Spanish workers from different occupational fields, including secondary education teachers, it was found that self-efficacy played a role in coping with job stress. In sum, it was found that when job demands are high, individuals in the sample with higher levels of self-efficacy utilized a problem-

centered coping style; this coping style is associated with managing emotions and stressful events (Salanova et al., 2005).

Age and length of teaching experience did not appear to be confounding variables in terms of strategies related to self-efficacy for teachers in the current study. However, future research with more participants may support other conclusions, as will be explored in the results section

Bandura (1986) defined perceived self-efficacy as: "People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has, but with judgments of what one can do with whatever skills one possesses" (p. 391).

Utilizing Bandura's (1986) definition of perceived self-efficacy, the objectives of this pilot study focused on three central aspects: teachers' notions of self-efficacy, strategies teachers use to demonstrate self-efficacy in the classroom, and variables that affect their ability to carry out their definitions of self-efficacy.

Method

Sample

The participants in this study were recruited through convenience sampling. Teachers were from a variety of disciplines (science, social sciences, English, and electives (Psychology and a course on values). These K–12 teachers were contacted via email or called on the phone to assess their willingness and availability to be interviewed. This study consisted of six participants, one male and five females, ranging in age from 31–65 years old. Three participants were from public high schools in Puerto Rico and one was from a private high school. The other two participants came from public elementary schools. All participants were Puerto Rican and held college

degrees, some advanced. Experience ranged from nine to 26 years in both public and private schools.

Instrument

A consent form was presented and explained to each teacher who participated in this study. The educators were interviewed using seven open-ended, semi-structured questions. Interviews were intended to last from 45 minutes to 60 minutes; however, one interview lasted 120 minutes. The interview questions included four demographic variables: Sex, age, experience, and current grade-level taught. Seven questions directly related to teacher self-efficacy were asked. Examples include: (1) what is your concept of self-efficacy as a teacher? (2) to what extent do you think you carry out your idea of self-efficacy in your classroom? And, (3) which strategies do you use to demonstrate self-efficacy in your classroom? (See Appendix A for a complete list of the interview questions used.)

Procedure

The six interviews were recorded using audio equipment and transcribed verbatim afterwards. The transcribed interviews were then analyzed through content analysis (Krippendorff, 2012) by the author to find emerging common themes and understandings. These data were interpreted through the lens of research on self-efficacy (Bandura, 1997; Tschannen-Moran & Hoy, 2001) and education in Puerto Rico (Allison & McEwan, 2005; Quintero, 1999). The semi-structured interviews consisted of seven open-ended questions and lasted from 45 minutes to 120 minutes. The interviews were carried out at locations convenient for the participants; four were carried out at school sites and two at the participants' homes, upon their request.

Results

Wolcott's (1994) procedure for analyzing data was utilized for the analysis in this study. Wolcott (1994) described three steps in the process of analyzing data: *description*, *analysis*, and *interpretation.* Description involves treating the data as facts that speak for themselves. This means detailing what we (or participants) have actually seen rather than making inferences based on behavior. Next, analysis involves the "examination of data using systematic and standardized measures and procedures" (Wolcott, 2009, p. 29). This analysis can be done through such procedures as content analysis, as carried out in this study. Lastly, according to Wolcott's (1994) procedure, interpretation:

> …is not derived from rigorous agreed-upon, carefully specified procedures, but from our efforts at sense-making, a human activity that includes intuition, past experience, emotion-personal attributes of human researchers that can be argued endlessly, but never proved nor disproved to the satisfaction of all. (p. 30)

The content analysis carried out was v*ertical analysis*, as defined by Piñuel Raigada (2002). This type of content analysis involves a corpus of data that is reduced, typically not analyzed in a quantitative fashion, and does not go through a specific sampling methodology, as was the case for the educators chosen for this study. The analysis included transcribing all interviews verbatim and rigorously analyzing them to draw out categories and sub-categories that participants' statements fit into. Although this is an exploratory study, valuable information involving teacher self-efficacy among K–12 teachers in Puerto Rico can be gained. Question seven, which involved additional training in self-efficacy is not discussed in this article. The decision to exclude analysis of this variable was done due to lack of substantive responses to adequately analyze this question and because the teachers' responses centered primarily on the first six questions. Thus, a richer

description of these responses was able to be carried out. Throughout this results section, M indicates male, F indicates female, and Public and Private indicate the type of school the educator teaches at.

Teacher's Notions of Self-efficacy

The findings suggest that teachers' notions of self-efficacy can be characterized under three central themes: *intrinsic characteristics*, *the use of best practices in teaching*, and *positive teacher-student relationships*. Specifically, using Wolcott's (1994) procedures, the researcher created these categories by first letting the data speak for itself, or rather, taking the interview data at face value; next, performing an analysis through organizing the data into primary and sub-categories using current research in the field of education; lastly, labeling categories and ascribing meaning to them through a combination of current educational research and common themes that emerged based on this research.

Intrinsic characteristics are described as characteristics that relate to the essential nature of the problem studied or are inherent in it (Intrinsic, 2014). Specifically, in terms of the educators in this study, these characteristics came from the teacher him or herself, or rather, what the educator "brought to the table." This can be from previous experience or personality traits the participant described to the researchers. The uses of best practices in education are described as practices based on rigorous research to demonstrate their effectiveness in class and with students (Goodwin et al., 2016; Killian, 2019). Lastly, positive teacher-student relationships in this research refer to interactions and ways the teacher related to the students that were effective in their personal and professional growth.

Evidence of perceived self-efficacy as being an intrinsic characteristic can be observed when a participant described efficacy as an avatar that you create in a video game. He described

efficacy as, "Your teaching persona that will then serve you" (M, Public). Further evidence of efficacy as being an intrinsic characteristic or as coming from experience comes from a participant who stated, "I know I can manage a room because of my experience of many years" (F, public).

Self-efficacy from making use of best practices in education comes from several statements made by the interviewed educators. For example, one female elementary science teacher in public school explained, "Self-efficacy has to do with implementing strategies or activities that are meaningful to students" [La autoeficacia tiene que ver con llevar o implementar estrategias o actividades que sean significativos para los estudiantes"] (F, public). Another female high school English teacher, also from a public school, explained self-efficacy as a teacher involved being updated with the latest trends in teaching.

Lastly, perceived self-efficacy as arising from positive teacher-student relationships can be seen in several participant statements. One participant explained efficacy as, "making *them* [the students] feel like they can do it and they can achieve what they really set their mind to" (F, private). Another participant explained this theme in terms of respect "At my school everybody respects me… I have won the respect of everybody" (F, public). Lastly, a public school teacher underscored this theme when he stated that efficacy relates to the idea that a teacher must "Build a relationship with the kids" (M, public). Gaining students' respect and building relationships with students may connect with teachers having an awareness of and working with students' social and economic backgrounds; these being cultural facets of teacher self-efficacy in Puerto Rico that will be expounded on in the discussion section in connection with community.

A Teacher's Ability to Carry out their Notions of Self-Efficacy

Three themes emerged that appeared to affect teacher's ability to carry out their notions of self-efficacy: s*tudent respect*, *personal exhaustion*, and *personal beliefs in their own performance*.

One female participant from a public school described how student respect helped her to maintain her perceived level of efficacy in teaching and in the classroom. However, this same teacher further explained that personal exhaustion and subsequent lower levels of motivation affected her ability to be as efficacious as she would like. More specifically, this teacher said that, although she sees room for improvement, it was difficult to improve because of exhaustion.

Several statements made by these educators demonstrated teachers' personal beliefs in their own performance as a teacher. These personal beliefs were indicated, in part, by self-reflection in their performance as a teacher. For example, one public school history teacher explained that "there's time when you're 'flat' as a teacher and you're lecturing too much." He stated, "The efficacy of that kind of presentation diminishes rapidly as you repeat it" (M, public). He explained that self-reflection is needed to make any necessary changes such as, "revamping units" in his class.

In sum, participants explained that having an awareness of the discrepancy between their actual perceived notions of self-efficacy and their ability to carry them out successfully aided these educators in making corrections to their practice. These corrections included: creating more opportunities for discussion among their students, using more group activities, employing less *traditional lecturing* as a means of delivering material to students, carrying out more class projects, and revamping curricular units.

The differences that exist between public schools and private school are important to mention in that they may play a role in the abilities of teachers to correct these gaps in their perceived notions of self-efficacy and abilities to carry them out. Although the curriculum between private and public schools in Puerto Rico is similar, there are differences in resources available at a school site. Resources in private school may include buildings, library collections, more

individual attention, and computers. Furthermore, the atmosphere in private schools may be more tranquil and have smaller classes (Puerto Rico - Secondary Education, n.d.).   The personal exhaustion described by the public school teacher earlier in the results section may be accounted for by the amount of work she must do to make up for lack of resources. This teacher described, for example, how she must bring books she can find at home for her students to use in the classroom because her school does not provide these materials.

Strategies of Perceived Self-Efficacy

The strategies of perceived self-efficacy that these educators utilized in the classroom are described in the category of *best practices in teaching*. Best practices included: being prepared; measuring students' abilities at the beginning of units and the beginning of the teaching of new material; the use of more real-world and hands-on activities with students; engaging students in creative class presentations; and finally, building positive relationships with students (Aquino, 2017). One teacher explained the importance of real-world activities she carries out with students to engage them in the learning process: "Research projects through field trips" [Proyecto de investigaciones por los viajes de campo"] (F, public). These included excursions, for example, to forests and nature reserves. These real-world activities will be expanded on in the discussion section in connection with self-efficacious learning activities that may be directly related to Puerto Rican culture.

The second category that emerged was labeled *self-reflection and change,* as a strategy of a teacher with high self-efficacy. Self-reflection and change involved gathering student feedback through a variety of means. One female public-school teacher described in detail various practices she used to obtain student feedback and enact change in the classroom. These practices included the use of rubrics to evaluate students' work and making changes based on the feedback she

received, dialogues with students to obtain their opinions, observing the class daily, and having students to write down what they feel about the class and lesson material. This teacher's practice of modifying her teaching in accordance with student feedback will be explored in the discussion section as a potential cultural facet involving curricular change that may be specific to Puerto Rico.

A third category emerged under the previously mentioned heading of self-reflection and change, labeled *self-education*, through reading and keeping up to date on the latest trends and strategies in the field of education. A female public-school English teacher explained that for her, this meant reading journals and attending conferences in the field. The up-to-date trends she employed included researching the latest novels to use in class, using current events, working graphic novels, and overall keeping up with what the latest trends in teaching.

Strategies that Worked Best and Least in Demonstrating Self-Efficacy in the Classroom

Educators were probed as to strategies that worked best to demonstrate high self-efficacy in the classroom; these were then grouped under the headings: s*elf-discovery of learning*, *real-world and hands-on learning*, and *positive teaching strategies*. Self-discovery of learning included activities such as encouraging creativity, engaging students in carrying out their own research, as well integrating current events in students' lives through student projects. For example, one teacher stated, "I think that's number one, where I facilitate the teaching and learning experience. Where they discover their own talents and their limitations as well. So this way they can understand where they need to work more on" (F, public).

Real-world and hands-on learning included expanding the exploration of topics studied in class to outside atmospheres, such as described above for the teacher who brought her students on class excursions to nature reserves. A teacher called these "experiential activities" (M, public). A female private school teacher explained how she achieves this through having students look up

information on their own and using student self-discovery of learning. This self-discovery of learning may be facilitated by the resources available to this teacher in the private school setting. A discussion on private and public school resources in relationship to collective efficacy will be explored in the discussion section.

   Positive teaching strategies as a form of self-efficacy that functioned best for teachers indicates strategies that best facilitate the teaching and learning process for students in and outside the classroom. These included high expectations and, as one male public school teacher put it, low barriers; this meant being accessible to students through their ability to call and send him text messages. As indicated, this category also included making use of current trends in technology to reach students. *Decentering the classroom*, as one male public school teacher expressed it, was very important to his teaching repertoire. This participant explained this as creating a classroom that is less teacher-focused and more student-focused. Training and employing specific listening and speaking strategies among students were important, as well as establishing a connection with students from the beginning of the school year.

Strategies that Worked Least for Teachers

   Teachers were probed further as to the strategies of demonstrating efficacy as a teacher that worked least for them. Traditional lecturing, the use of a teacher's authority alone, homework, and the traditional practice of writing on the board and having students copying into their notebooks were strategies that participants found worked least in terms of being a teaching with high self-efficacy. One teacher stated:

   Copying from the blackboard and responding, copying from the board and answering the

   questions. That does not work. Nowadays that does not work. You cannot tell students to

   copy from the blackboard and answer. Enough, that's not for me, no. [En copiar de la

pizarra y contestar, copiar de la pizarra y contestar las preguntas. No funcionan. Hoy día

no funciona. No puede decir a los estudiantes copiar de la pizarra y contestar. Ya eso para

mí, no]. (F, public)

Regarding homework, one participant explained that:

Students are in engaged in so many extracurricular activities. They don't have the time.

It's not that I don't assign homework because I do. And I think they may find it tedious.

And it all depends on the type of homework. (F, public)

Another participant who responded to the question using both English and Spanish in her

responses expanded on the theme of homework by saying, "So even now no hago [make] projects

for them to do at home. Small projects" (F, public), indicating she would only assign small project

for students to complete at home.

In terms of teachers using their authority in terms of having power or leverage over students

in and of itself as a strategy, a male public school teacher demonstrated reasons this strategy lacks

efficacy:

You can't rely on your authority. You have to construct your authority, you have to base

your authority on different things because of that fact that you're teacher and you're a

grown up and you know more than they do and you're giving them a grade. Send them to

the office, sanctions. Which means, that's what I think really builds relationship with kids,

you get to know them. (M, public)

A second area of teacher authority is giving grades. One teacher explained that giving

failing grades was not effective either: "Not giving Fs [failing grade] so they aren't punished for

lack of support from mommy and daddy at home" (F, Public).

Variables Affecting Educator's Ability to Carry out his or her Definition of Self-efficacy

Although two participants found self-efficacy to be an intrinsic characteristic, several indicated that self-efficacy was an external characteristic as related to context and was found to affect teachers' abilities carry out their notions of self-efficacy in several interesting ways. First, the student's own sub-culture and the society from which they come must be taken into account. For example, one teacher (F, Public) explained the impact on students she teaches in her public school who come from low socioeconomic areas and disadvantaged backgrounds.

In this study, the factors of a student's subculture and social background were found to create special challenges for these students' teachers, including the level of parental support and engagement in their education, as well an effect on the student's behavior in the classroom.

Administrative support was a second factor found to affect self-efficacy among teachers. The degree of support for continuing education, concerns over how school and district funds were being utilized, a student's grade level, and level of protection the teacher felt at his or her school site were all factors that affected a teacher's expression of efficacy in this study. One participant explained this by saying, "It's not a quality of an individual. It's a quality of an individual in a particular, it's a quality of a situation which focuses on a particular individual" (M, public). Two female public-school teachers explained the vital importance of administration support or lack thereof and how connected that support was to a teacher's ability to carry out efficacious practices in their classrooms.

Discussion

Curricular change, active learning techniques, awareness of and involvement of students' communities, and exploring the benefits of collective efficacy of school sites are some culturally relevant sources where teachers' self-efficacy in Puerto Rico may be garnered from. Methods for

increasing the sample size and, thus, the generalizability of this work in connection with an educational landscape that has changed in Puerto Rico post Hurricane Maria will be explored last.

In explaining positive curricular change that needs to occur in Puerto Rico, Quintero (1999) explained that the curriculum should aid the student in gaining self-understanding and an understanding of the world that surrounds him or her. The need for this type of change was especially put forth by one female English teacher who explained the special circumstances and challenging backgrounds some of her students come from, such as those from disadvantaged backgrounds. This educator explained that curricular change is needed so that the lack of parental support and engagement in the student's education, as well as the behavior some of these students present in the classroom, can be attended to.

Factors involving a teacher's perceived self-efficacy and curricular change also appear to corroborate dimensions implied in perceived self-efficacy as found by Tschannen-Moran and Woolfolk (2002), in which they explained a teacher's perceived self-efficacy as involving dimensions of student management, instructional practices, and classroom management. The interview data and some current research on preservice educators in Puerto Rico suggest teachers should engage in a process of self-reflection and adaptability to meet the challenges of being an educator (Arcelay-Rojas, 2018). These processes of self-reflection and adaptability as involving instructional practices were exemplified by the teacher who made changes in her teaching practices based on feedback she received from students.

Furthermore, learning must be an active and dynamic process for students in Puerto Rico, in which the connection between learning change and theories are reformulated. In addition, teachers in Puerto Rico should associate new knowledge with students' realities and experiences (Quintero, 1999). Active learning and connecting new learning to students' surrounding realities

was expressed thoroughly by the participating science teacher who explained the value of taking the students on excursions to connect learning to real-world experiences, such as going to nature reserves. Active learning techniques, such as the science teacher above demonstrated, are student focused. (Quintero, 1999) explains that education that is student-focused and employs effective research-demonstrated strategies in education is imperative for students from populations such as Puerto Rico. Some research, in fact, shows a positive relationship between teachers that utilize a student-focused approach to teaching and their self-efficacy beliefs in teaching (Cao, Postareff, Lindblom, & Toom, 2018).

Curricular change may be enhanced by gaining an understanding of and working with a students' communities, specifically, their social and economic backgrounds. This link between education and community is demonstrated below through the interviewees' responses. More specifically, several of the educators who participated in these interviews may be helping to connect education and community by making education relevant to students' lived experiences, such as the teacher who takes her students on excursion to surrounding nature reserves and the English teacher who considers her students' subculture and social background in her teaching and behavior management techniques. Going on field trips to nature reserves is also a way in which students are actively engaged; thus, connecting with the curricular change of active learning as described in the preceding paragraph. This connection between a student's community and educational experience is also important because, on a broader level, if education is not improved in Puerto Rico, this territory's economic growth and ability to repay debt also suffer (Commentary, 2013). Further research about specific cultural variables related to self-efficacy among teachers in Puerto Rico may contribute to promoting curricular change for both teachers and youth of this American territory.

Finally, teachers perceived self-efficacy may increase through building on a school sites collective efficacy. According to Bandura's (1997) concept of collective efficacy, "A group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (p. 477). This may be a future avenue for studies involving teacher self-efficacy in Puerto Rico in order to help ameliorate some of these problems, given that a school's collective efficacy impacts future achievements, management of resources, and strategies used by a school to carry out future plans, among other benefits (Bandura, 1997).

This concept may be especially interesting to examine in relationship to private and public schools in Puerto Rico, due to the differences that exist between them in regards to collective efficacy. Recent research specifically explores the development of teacher self-efficacy and collective efficacy, as well as school-wide efficacy and collective classroom efficacy—all factors that may assist in understanding and developing Puerto Rican teacher self-efficacy during a changing educational landscape post-Hurricane Maria (Putney & Jones, 2019; Lake, 2019). A public school that lacks the resources a private school has may find their collective efficacy through pooling together their physical resources, such as books and materials or building on educators' expertise to produce high levels of attainment for their students.

In addition to uncovering specific self-efficacious practices teachers engage in through these interviews and connecting them to potential cultural practices in Puerto Rico, an additional goal of this work is to disseminate these findings to teachers both within and outside of Puerto Rico who may teach in similar demographic and cultural scenarios in order to enhance their practices in the classroom. This work also contributes to the knowledge base on teacher self-efficacy within a specific cultural group, where little information is currently available, specifically within SCT theory, as was discussed in the introduction section.

Although it was important for participants to understand the definition of perceived self-efficacy, given this was an exploratory study, it was decided to leave the concept open when statements teachers made appeared to stray from the original definition of self-efficacy Bandura (1986) put forth. This allowed me to obtain additional information pertinent to this study, especially to further account for and expand on the unique cultural features that teaching in Puerto Rico entails. The conclusions made from this work may act as a base for future research exploring teacher's self-efficacy in which investigators may wish to keep consistent with Bandura's definition.

A teacher's ability to examine their own perceptions of their own teaching practices was vital, as reported in the results. For example, some teachers in this study reported the necessity of recognizing the discrepancy between their notions of their own self-efficacy and their ability to actually carry these notions out. Additionally, some teachers reported the importance of the changes they needed to make to lessen this discrepancy, such as making use of more classroom projects, not lecturing as much, and encouraging more discussion among their students.

To balance the subjective nature of the materials chosen, this author would suggest using a methodology of a triangulation design (Fielding, 2012) in order to enhance the validity of results found. This design would enable a comparison of various perspectives on the same unit of analysis through the use of various descriptions, explanations, and evaluations of the content under study. Given that only six cases were studied, the corpus of material used for analysis is reduced, which can be problematic for further analysis.

Additionally, the sampling methodology used in this analysis was focused on availability instead of a more rigorous sampling methodology. This selection justifies this type of analysis as vertical. Future studies of this problem could employ other sampling methodologies and more

alternative means to arrange and produce relevant categories into which to organize participant statements.

Nonetheless, recent research into the benefits of high self-efficacy has advantages for K-12 educators in Puerto Rico. Bandura (1997; 2001) explained that individuals who possess higher levels of self-efficacy have higher levels of confidence in their ability to manage environmental demands and perceive stressful situations more as challenges as opposed to an uncontrollable threat, such as student demographics and/or classroom behavior. According to interview data collected for this study, this perceptual change is very beneficial for K-12 educators in Puerto Rico, given the challenges these educators face.

Since the interviews for this research were carried out in 2014, these issues have been compounded by the effects of Hurricane Maria, which hit the island of Puerto Rico in September of 2017. Researchers must keep these effects in mind in carrying out future lines of research on this topic. For example, there are even fewer educational resources available to teachers to be self-efficacious. Among the impacts of this hurricane are extensive damage from the storm to school sites, the closing of hundreds of school buildings, shifts in school assignments, and system-wide reorganization (Ujifusa, 2018). More specifically, "closing more than 260 schools over the summer in response to an ongoing and significant drop in enrollment worsened by the hurricane" (Ujifusa, Juan, & Rico, 2018, para. 16).

Lynn (2018) explains that in Puerto Rico only about sixty percent of classroom seats were filled, thus, the government ended up closing nearly 300 schools. The student then had to travel outside their neighborhood to attend school. Parents had to find transportation to and from the school and the children also had new teachers and classmates to get used to. These parents are concerned about closing schools in the future because children who are having good schools may

lose them. Now nearly 80 percent of the students aged between 5 and 17 report attending public schools.

Behavior at school sites has been especially difficult since Hurricane Maria hit the Island. One teacher reported, for example, that students are "more distracted, more aggressive" since coming back to school in November, post hurricane Maria. Additionally, even in schools where power, water, and the Internet are back on, students can be found "milling in the hallways during class," (Ujifusa, 2018, p. 10).

The effects of Hurricane Maria on students' social-emotional well-being and its impact on behavior in the classroom compounds the high levels of effectiveness teachers need in order to keep a well-behaved classroom and overall school site. According to Lynn (2018), after Hurricane Maria, 12 percent of students had problems concentrating, 10 percent had lower levels of academic performance and 8 percent showed a lack of interest in studying while 6 percent were observed to have other behavior issues.

Contextualizing this work within the changed educational landscape in Puerto Rico helps set the stage for future studies exploring teachers' definitions of self-efficacy with a larger sample size by exploring factors that are relevant to them in forming these definitions, such as resources at their educational institution and personal factors such as student respect, among others.

Research has suggested that post Hurricane Maria making survey data more accessible may be a method to increase response rate. For example, in attempting to increase the response rate for one study, it was suggested to connect with the Rio Piedras [a municipality of San Juan and home of the University of Puerto Rico] system alumni associations, so individuals filling out the questionnaires can have them available on their website and in their offices on paper. Another suggestion made in this same report was to contact the Puerto Rico Department of Education, so

they can share it through a memorandum of understating (MOU) to encourage respondents currently working as teachers in public schools. Frequent reminders to respondents to fill out the survey as well as showing them the importance of their answers were also mentioned; specifically, showing that their responses will be used to improve the University of Puerto Rico Teacher Preparation Program. Reducing the questionnaire's length to less than 15 minutes and providing encouragement were other possible beneficial methods (Eugenio María de Hostos, 2018).

Although this current study was carried out through interviews, future research on the island of Puerto Rico may benefit by implementing some of the above suggestions to increase response rates of general survey data in order to expand generalizable power. It is the hope that this work may serve as a basis for future explorations of these notions of self-efficacy among educators in Puerto Rico.

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Appendix A

The semi-structured interview questions

Demographic variables:

1. Tell me a little about your experience being a teacher. For example, how long have you been a teacher? What types of schools have you taught at (public, private, charter, etc.)?

2. Which grade level do you teach at?

3. Age of participant

4. Sex of participant

Questions on self-efficacy:

1. What is your concept of self-efficacy as a teacher?

2. To what extent do you think you carry out your idea of self-efficacy in your classroom?

3. Which strategies do you use to demonstrate self-efficacy in your classroom?

4. Which strategies work best for you? Why?

5. Which strategies work least for you? Why?

6. To what extent do you believe that self-efficacy depends on context?

7. To what extent do you believe receiving training in strategies involving self-efficacy would be beneficial for you as a teacher? Can you give examples of training that you would be interested in?