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Improving Achievement in Schools Through an Examination of School Types

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Abstract: *This is one study done by a small group of researchers to compare measurements of Collective Efficacy (CE) across three different educational systems in three separate states. Using data collected from an approved CE survey tool this study advances current knowledge using statistical analysis. The CE surveys were completed at a public school in Colorado; a public school in Montana; a parochial school in Montana; and two Bureau of Indian Education (BIE) schools in the Western Great Plains. Data was collected from certified and non-certified teachers to answer research questions that compared the differences in mean collective efficacy from the different school system types. The study also analyzed school type (Native American vs. Non-Native American populations) collective efficacy comparisons.*

Keywords: *collective efficacy, school type, Indian education, social cognitive theory*

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“Collective efficacy is a group’s shared belief in its conjoint capabilities to organize and execute courses of action required to produce given levels of attainments” (Bandura, 1997, p. 477). Bandura was instrumental in creating social cognitive theory (SCT). In this theory choices are made based on the efficacy of self (Goddard, Hoy, & Hoy, 2000). Goddard et al. (2000) use Bandura’s definition of self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce to given attainments” (p. 807). In an organization, the idea of self-efficacy is expanded to the entire entity, thus creating collective efficacy. A 21-question Likert survey was used to measure educator’s collective efficacy. Three questions in this article are posed. The first question asked if collective efficacy differs in different schools in different states: Colorado (CO), Idaho (ID), and Montana (MT). The second question asked if collective efficacy differs by school in these three states. The final question asked if collective efficacy differs by Native and non-Native school systems.

This study surveyed educators from three states that served Native and Non-Native American students. At a Colorado public school (K-5), the student population is 490. Demographics include 50% African American, 26% Hispanic, 23% White, and 1% other. The teacher/student ratio is 1:25. Two BIE schools from the western plains region (6-12 grade) has 150 students who are 100% Native American. The teacher/student ratio is 1:11. For both schools surveyed in MT: one public school has 824 K-12 grade students where 91.6% Native American, 2% Asian, 1% Hispanic, 3.8% other and 1.6% White. The teacher/student ratio is 1:16. A parochial school in Montana K-12th grade serves 631 students with demographics of 50% Native American and 50% White. The teacher to student ratio is 1:8. Ten schools (public, parochial, and BIE) in three western states were compared using ANOVA and Independent *t*-test data. The methods include surveying 108 teachers using an instrument developed by Goddard et al. (2000) entitled *Collective Teacher Efficacy*. The use of IBM Statistical Package for the Social Sciences was used to measure the fluctuating sample size and other variables of schools.

LITERATURE REVIEW

Goddard et al. (2000) define teacher collective efficacy (CTE) as the belief of teachers that as a central unit a positive effect will be had on the students in their school community. Researchers link collective efficacy as an essential factor to student achievement (Hoy, Miskel & Tarter, 2013). When everyone in the community believes that a difference can be made by each member achievement is higher. Goddard et al. (2000) referenced researchers Gibson and Dembo (1984) who developed surveys for measuring collective efficacy. Goddard et al. (2000) modified the original items to develop a 21 question Likert Long Scale and a 12-question Likert Short Scale survey.

Collective efficacy has been researched in various aspects. According to Hoy et al. (2013) collective efficacy in student achievement research and support for research is limited, yet continues to grow. Researchers have found CTE to be an important predictor “of differences in student achievement between schools” (Parker, Hannah, & Topping, 2015, p. 115). When most teachers are highly efficacious in a building it will encourage others to rise to this same level of efficacy. Goddard et al. (2000) believe

when efficacy of the organization is high, positive change will surmount over factors that could negatively affect the outcome. A strong school culture of efficacy seems to engage high student achievement. Hoy et al. (2013) supports seminal studies dating back a decade that are evidence to conclude this finding (p.193).

Nearly two decades ago, Bandura suggested, "...a collective sense of efficacy and responsibility can convert academic malaise into educational interest, challenge, and achievement" (1997). He and others suggested Collective Efficacy as a model for reforming schools serving disadvantaged students. However, Bandura citing Comer (1985) also suggests that developing collective efficacy in a school requires major restructuring that is rarely undertaken. This study was also designed to contribute to the knowledge base regarding collective efficacy in school and tests the assertion claimed by Bandura and Comer that school structure matters. Specifically, does teacher collective efficacy differ in different types of school systems in Montana (MT), Idaho (ID), and Colorado (CO)?

METHOD

PARTICIPANTS

The population sampled included certified and non-certified teachers who voluntarily agreed to answer the survey. They were surveyed between the months of January 2013- July 2013. The researchers obtained permission to survey staff for the study. *For the purpose of this study the researchers defined "Native American School" as schools having 50% or more of the student ethnicity population identified as Native American/Alaskan Native American.* Participants were in Kindergarten through grade 12 (K-12) schools identified mostly as Native American schools. Participants worked in the schools that were located in MT, ID and CO, on and off Indian reservations. All participants and schools remain anonymous.

INSTRUMENT/DATA COLLECTION PROCEDURES

Hoy and Goddard (2003) modified Gibson and Dembo's (1984) Teacher Efficacy Scale that collected information regarding individual efficacy to a Long Scale and Short Scale survey for collective teacher efficacy. Hoy and Goddard (2000) then validated the assessment tool through pilots and a larger group sample, which consisted of 452 teachers in 47 randomly selected elementary schools (Goddard, Hoy, & Hoy, 2000). The long tool was used in this particular study conducted by the researchers. The researchers in this study are geographically dispersed in MT and CO. Samples of convenience were used in identifying the schools to survey within each state and each type of school system based on the researchers discretion.

The surveys were dispersed in various ways; some were handed out at staff meetings, others emailed to participants. The survey participants remained anonymous when surveys were delivered back to the researcher. The researchers collected and reviewed the data sets via webinars, on-site meetings and teleconferences. Excel spreadsheets for data sets were used to organize information and shared amongst the

group. The surveys were scored using the directions developed from Hoy (2003) Collective Efficacy (CE) reversed score key to find the mean scores of CE.

ANALYSIS

This study was analyzed using two different comparative designs and one independent t-test to answer the research questions. A three dimensional comparative design (3 X 2 X 2) was used with the independent variables being the state (MT, ID, CO); school type (Bureau of Indian Education School located in the Northwestern Plains [BIE], public school, and parochial school); and school type (Native American School or Non-Native American School).

RESULTS

Descriptive statistics were used to answer the research questions (1) Does teacher collective efficacy differ in different types of state school systems in Montana (MT), Idaho (ID), and Colorado (CO)? (2) Does collective efficacy differ by school type?, and (3) Does school collective efficacy differ by Native and Non-Native school systems? A survey was used from Hoy and Goddard (2000). Descriptive statistics were reported for each group and a One-Way Analysis of Variance (ANOVA), to compare the three school types. The one-way ANOVA compared the means of two or more groups of participants that varied on a single independent variable that was Collective Efficacy (CE).

Research question (1) Does teacher collective efficacy differ in different types of state school systems in Montana (MT), Idaho (ID), and Colorado (CO) was answered by using a one way Analysis of Variance (ANOVA) to compare the mean collective efficacy scores from the schools in Colorado, Montana, and Idaho. Results indicate no significant difference between state school systems, $F(2, 105) = 2.5, p = .087$. Cohen's effect size value ($d = .33$) between MT and CO, ($d = -0.01$) between CO and ID, and ($d = 0.2$) between MT and ID suggested low significance among all the groups. Results are presented in Table 1.

Table 1. Means and Standard Deviations for Different States

State	M	SD	N
MT	84.91	13.08	81
CO	80.57	8.24	21
ID	80.67	17.26	6
Total	83.83	12.57	108

Research question (2) Does collective efficacy differs by school type was answered using a one-way ANOVA to compare mean collective efficacy scores for Bureau of Indian, Parochial, and Public schools. Results indicate no significant difference between school type, $F(2, 105) = 0.544, p = .582, \eta^2 = .10$. Results are presented in Table 2.

Table 2. Means and Standard Deviations for School type

School type	M	SD	N
BIE	86.00	13.52	12
Parochial	86.03	12.42	69
Public	77.26	10.50	27
Total	83.83	12.57	108

Finally, for research question (3) Does school collective efficacy differ by Native and Non-Native school systems, an independent samples *t*-test was used to compare mean collective efficacy scores for Native and Non-Native American schools. An independent-samples *t*-test was conducted to compare Native American and Non Native American schools. There was no significant difference in the scores for Native ($M = 84.62, SD = 13.33$) and Non-Native systems ($M = 80.57, SD = 8.24$); $t(106) = 1.33, p = .19$. These results suggest that there is not an effect on the difference of school type. Specifically, our results suggest that the collective efficacy amongst teachers does not vary amongst school type. Cohen's effect size value ($d = .33$) between Native and Non-Native schools suggested a low significance.

DISCUSSION

The researchers questioned if school type (Native vs. Non-Native) was a factor on the collective efficacy in schools. The results of the study indicate that school type is not a factor on teacher collective efficacy. In order to further this study, the team recommends surveying a wider population of schools, both Native and Non-Native. The findings of this study lead the researchers to question student achievement and collective efficacy. If school type wasn't a factor, the researchers would need to analyze student achievement data and compare the information to the level of collective efficacy in Non-Native schools and schools that serve students who live in poverty.

As a school leader an important aspect for improving perceptions of collective efficacy is to help teachers interpret performance results. A detailed performance is necessary to build an organization with high collective efficacy. Focusing on building collective efficacy can provide school leaders the opportunity and means to achieve that goal. According to Beard, Hoy, and Hoy (2010) "if teachers believe they are able to affect student learning, teachers set higher expectations, exert greater effort, and are more resilient when things are difficult" (p. 1137).

LIMITATIONS

There were some limitations to this study including inequitable data sets. The researchers collected data through samples of convenience only and did not survey schools outside of regional districts. Out of ten schools, the researchers defined only one as Non-Native American school, which affected the results due to small sample size.

Another limitation included the researchers availability to convene on-site more often. Technology was the main communication to conduct, collect, and, analyze the data, which could have contributed to overall study accuracy.

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