What is this research about?

This research examines the effects of prior student achievement and school processes on collective teacher efficacy. In this study, collective teacher efficacy is defined in terms of teachers’ perception of their ability to improve student learning as an instructionally focused team within the school.

The assumption guiding the study is that collective teacher efficacy will be higher in schools with higher prior student achievement and in schools with greater cohesion and support for teachers.

What did the researchers do?

Ross, Hogaboam-Gray, and Gray (2004) invited all teachers and a minimum of ten grade 6 students from all elementary schools within a large Ontario district to participate in the study. After deleting 19 schools with less than 5 teacher respondents, the study ended up with a sample of 141 schools (which represented 88% of the population of schools), and 2,170 teachers (which represented 65% of district teachers). Ross and colleagues designed a 6-point Likert scale survey; with responses

What you need to know:

The researchers tested two models, A and B and observed that prior student achievement and each variable representing school processes contributed to collective teacher efficacy. While the findings reveal a greater effect of school processes than prior student achievement, a parsimonious distinction between both models tested in the study, illustrated that, the school processes with the greatest contributing effect on collective teacher efficacy were accounted for by variables from Model B (shared school goals, school-wide collaboration, fit of plans with school needs, and empowering school leadership).
ranging from strongly disagree to strongly agree. The outcome variable, collective teacher efficacy was represented by 14 items adopted from Goddard et al.’s study (2000) on the premise of two dimensions of collective teacher efficacy (Tschannen-Moran et al., 1998). The researchers combined into a single scale, the seven items with the highest ranking on the perceptions of the task factor in Goddard et al.’s study and the 7 items with the highest ranking on the perceptions of teaching competence factor. This combination resulted from a high degree of correlation observed between the two factors.

The researchers identified two categories of predictor variables; school cohesion and support, and prior student achievement. They hypothesized that a latent variable, school cohesion and support, represented by five observed school process variables (shared school goals, school-wide collaboration, fit of actions with school needs, teacher learning opportunities and empowering school leadership) would predict collective teacher efficacy.

Prior student achievement was represented by grade 6 mathematics scores after the researchers had eliminated the effects of family income, one of the strongest predictors of achievement in Canada.

The researchers calculated the means and standard deviations for the variables and used structural equation modeling (SEM) to test two models; Model A and Model B. They began by testing the fit of collective teacher efficacy against school achievement and one school process variable at a time. Next, they tested Model A and finally, Model B. In Model A, the five school process variables representing measures of the latent variable, school cohesion and support were tested as well as their fitness with prior student achievement as determinant of collective teacher efficacy. In Model B, the researchers tested four of the five school process variables of Model A, without testing for teacher learning opportunities. These four variables represented measures of the latent variable, teacher ownership of school processes. They also evaluated the fit indices of this variable with prior student achievement as a determinant of collective teacher efficacy. They paid particular attention to two of the five criteria for measuring goodness of fit; the Adjusted Goodness of Fit (AGFI) due to its potential to adjust to the sample size of the study and the Root Mean Square of Approximation (RMSEA) due to its potential to adjust to number of variables in the model. For this study, the AGFI and RMSEA were >.90 and <.08 respectively.
What did the researchers find?

The researchers reported three major findings of the study:

- Prior student achievement predicted collective teacher efficacy.

Statistically, prior student achievement was a significant but slightly weaker predictor of collective teacher efficacy.

- School processes influenced collective teacher efficacy.

Statistically, all of the five school process variables were significantly correlated with each other as well as with collective teacher efficacy. In both Models A and B, school processes had a greater effect on collective teacher efficacy than prior student achievement. In Model A for example, school cohesion and support had a stronger predictive effect than prior student achievement. In Model B, while the four school process variables on teacher ownership of school processes indicated similar correlations as in Model A, all the paths in this model were statistically significant at P<.001.

- The school process variables that figured in the best model, each emphasized teacher ownership of the successes and failures of the school.

Statistically, Model A failed the AGFI and the RMSEA tests, the study’s most important tests of goodness of fit indices. On the other hand, Model B was successful in all five goodness of fit criteria. Also, Model B represented by aggregate variables (shared school goals, school-wide collaboration, fit of plans with school needs, and empowering school leadership) of teacher ownership of school processes explained better the contribution on collective teacher efficacy than similar variables on Model A aggregated as school cohesion and support.

How can you use this research?

At a practical level, the research suggests specific areas of teachers’ professional lives that could be targeted by policy makers and implementers of school improvement. The research findings suggest a refocus of policies on teacher professionalism by deliberately including teacher ownership of school practices in policy development.

At the level of school leadership, findings of the study reveal specific practices (goal setting, facilitating teacher collaboration and fitting school plans with school needs) through which principals could collaborate with their staff on shared decision making in order to bring about higher levels of teacher efficacy.

Finally, for school improvement research, the researchers identified the possibility of using collective teacher efficacy (represented as an outcome variable in this study), as a mediating variable in
school in accounting for “moving” and “stuck” schools, the successes of site-based decision making in some schools and not in others, and finally the necessary conditions for the creation of productive professional learning communities within schools.

About the researchers:

Dr John A. Ross is Professor Emeritus of Curriculum, Teaching and Learning at the Ontario Institute for Studies in Education at the University of Toronto and head of the Institute’s field centre in Peterborough, Ontario. His research interests are mathematics education, student assessment and program evaluation.

Dr. Anne Hogaboam-Gray is senior research officer at Trent Valley Center, Ontario Institute for Studies in Education of the University of Toronto.

Dr. Peter Gray was a doctoral student at the time this research was conducted. His research interests are in student assessment and models of school change.

References