

Review of collective teacher efficacy research: Implications for teacher development, school administrators and education researchers

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Abstract

Out of around two hundred different variables that are known to have some relation with student achievement, Collective Teacher Efficacy (CTE) was reported to be among the most influential. Hence, CTE has received attention of many researchers as a topic investigation. The purpose of the present review is two-fold; (a) to present an overview of research on CTE, and (b) to draw some implications and suggest some recommendations for teacher development, school administration and further research on the topic. This paper engaged the methodology of systematic literature review to collect data from Google Scholar database. Sixty-six sources were employed in the review. During the analysis, the reviewed papers were sorted into categories and themes based on their major focus. The results revealed four major factors that influence CTE; (i) principle's leadership, (ii) teacher professional learning, (iii) teachers' self-efficacy, and (iv) organisational factors. Furthermore, it was also found that CTE has a significant impact on (i) student learning, and (ii) teacher learning. The findings imply that (i) teacher development should providing avenues to improve teacher efficacy, (ii) school administrators need to focus on what might enhance teacher learning in school in order to foster positive CTE beliefs, and (ii) further research is needed in investigating the indirect link CTE has with leadership and relational/structural conditions in schools. Learning process as essential components of distance learning (synchronous or asynchronous).

Keywords: *Collective teacher efficacy; School administration; Student achievement; Teacher professional learning*



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INTRODUCTION

Collective Teacher Efficacy (CTE) is reported as the second most influential variable known to be positively associated with student achievement. Subsequently, CTE, and teacher efficacy in general, is an extensively researched topic in education. In this regard, the meta-analysis studies by Eells (2011) and Hattie (2015) showcase researchers' interest in the topic. These studies were, however, focused on examining the impact of CTE on student achievement. More recently, the reviews by Donohoo (2017, 2018) paid attention to the impact of CTE on teacher professional learning and other positive teacher behaviour patterns associated with CTE. Nevertheless, none of the previous reviews highlighted the implications of CTE to the management and administration of schools. Furthermore, those reviews also paid insufficient attempts in showing future directions to research on CTE.

Previous studies did not adequately address the implications of the accumulated CTE research on teacher development, school administration as well as on research. Hence, the purpose of this review is two folds: (i) (a) to present an overview of research on CTE, and (b) to draw some implications and suggest some recommendations for teacher development, school administration and further research on the topic.

LITERATURE REVIEW

The literature search identified few reviews of CTE research which mainly focused on the impact of CTE on various outcomes. The first of these is the work of Eells (2011) wherein the author conducted a meta-analysis engaging correlational data/results from 26 studies. These studies included dissertations as well as published articles that reported correlations between CTE and student achievement. The results revealed that there is a strong positive correlation between CTE and student achievement. The effect size of the relationship reported in the employed studies ranged from 0.537 to 0.628 with an average of 0.617. Furthermore, when analysed for the predictive power of this relationship, an effect size of 0.626 was recorded. Hence, the author concluded that the impact of CTE on student achievement is strongly positive.

The next review that confirmed the impact of CTE on student achievement is the work of Hattie (2015). The research, considered as a mega meta-analysis, was based on 1200 meta-analyses. Together, these meta-analyses incorporated results from more than 65,000 studies relating to 150,000 effect sizes. The objective of Hattie's (2015) investigation was to find out which of the variables engaged in those studies had the greatest influence on student achievement. When the 195 variables that are known to influence student achievement were ranked, CTE came to the second of all, with a very large effect size of 1.57 (Hattie, 2015). This figure is little lower than the top-ranked factor (teacher estimates of achievement) which had an effect size of 1.62. These results clearly indicate the strong impact of CTE on student achievement.

While the above two were concentrated on the impact of CTE on students, more recent reviews were focused on CTE and teacher behaviours. In this regard, Donohoo's (2017) work was a critical review of 10 years research (between 2007 and 2017) on CTE and teacher professional learning. After careful examination of studies that were collected and screened systematically, the author argued that although it seemed that professional learning and CTE are positively associated, it was not clear what features of the professional learning contributed to the development of CTE. Consequently, the author stressed the importance of investigating contextual and environmental factors in schools that could influence CTE.

On the hand, the later review by Donohoo (2018) was focused of the consequences of CTE specifically on teacher behaviours and other teacher related factors. This study, which also engaged the methodology of systematic literature review reported that CTE was associated with a number of positive teacher behaviours including "implementation of school improvement strategies, increased teacher leadership, high expectations and a strong focus on academic pursuits, greater risk taking, and a receptiveness to new ideas on the part of educators" (Donohoo, 2018, p. 340). Unlike the above-reported studies that were focused on specific outcomes or factors, the present review employed a broader perspective in an effort to understand the scope of research conducted on CTE.

RESEARCH METHOD

The seminal paper on the meaning and measurement of CTE by Goddard et al. (2000) marked a significant milestone in CTE research. Until then, there was no strong tool to measure teachers' general sense of collective efficacy. Furthermore, the CE-SCALE developed by the authors incorporated the two major schools of thought on teacher efficacy that have prevailed in scholarly work; one that is attributed to Rotter (1966) and the other to Bandura (1977a).

Owing to the trustworthiness and recognition attracted by the paper, the literature search for this chapter was limited to the articles which cited Goddard et al. (2000). The search for the literature that was conducted using Google Scholar generated more than 2000 articles. The search was then limited to those articles which were published after 2015, thereby reducing the number to a little more than 900 sources.

The search was further filtered by the terms ‘collective efficacy’ or ‘collective teacher efficacy’ which resulted in a total of more than 450 sources. Further screening was used to choose only journal articles and conference papers that contained either of those two search terms in their titles. Finally, from these results, only those studies that were conducted in the context of schools were chosen for inclusion in the review. Taking into account all of the above criteria, the search ended up with a total of 66 studies that were considered for review in this study.

Data analysis

The content of the selected 66 studies were examined and analysed in attempt to understand the broad categories of topics that have been investigated. Accordingly, two categories were identified: (i) that which involved some kind of investigation of what factors might influence CTE, and (ii) that which explored what influences CTE might have on students, teachers, and schools in general. Thus, 50 of the chosen studies belong to the first category, while 21 were placed in the second. As some studies fit into both categories, the sum of the studies (71) exceeds the total number of studies involved in the review (66). In addition to this, four studies considered the possibilities of either to develop scales to measure CTE or to present some theoretical explanations of the construct.

The 50 studies that explored the association between certain variables and CTE (the dependent variable) was collapsed into five sub-groups: (1) leadership, (2) professional learning, (3) self-efficacy, (4) organisational factors, and (5) sources of CTE. While leadership is the most investigated variable, there are several studies in each of the other groups as well, with the exception of the final group: sources of efficacy. The 21 studies that explored the effect of CTE on certain variables can be further grouped into two: (1) those that explored the CTE effect on students and (2) those that were focused on the impact of CTE on teachers. There is a small number of studies that focused on variables such as organisational effectiveness in relation to CTE; however, owing to that small number of those studies they have received less attention in this review than the more researched/published categories. Following are the overall findings reported in the reviewed studies and relevant discussions of those findings. The section is organised according to the two broad categories of research that were identified from the analyses; (i) factors influencing CTE, and (ii) impact of CTE.

FINDINGS AND DISCUSSION

Factors influencing CTE

The reviewed literature under this theme was concentrated on exploring the relationship between a few major variables and CTE. In short, the variables that influence CTE are: (a) leadership, (b) teacher professional learning, (c) self-efficacy, and (d) organisational factors.

Leadership

The overall findings of the reviewed studies suggest that there is a positive association between good leadership practices of principals and collective efficacy beliefs of teachers. For example, the qualitative study by Nordick (2017) explored attitudes, behaviours and practices demonstrated by principals from four schools that were known to have high levels of CTE. According to Nordick, the specific leadership practices commonly demonstrated by these principals included “establishing an environment of openness and support, establishing shared expectations, facilitating teacher voice, providing opportunities to collaborate, and promoting continuous learning” (Nordick, 2017, pp. iii-iv). Moreover, the qualitative multi-case study by Serediuk (2017) also identified certain leadership competencies that have

positive impact on CTE. These competencies include: (i) embodying visionary leadership, (ii) fostering effective relationships, (iii) leading a learning community, and (iv) providing instructional leadership. Hence, generic leadership practices of principals could be positively associated with CTE.

Nevertheless, previous research that involved specific known leadership styles reported mixed results regarding their impact on CTE. For instance, among the studies that involved transformational leadership, results of the hierarchical regression analysis, conducted by Ninković and Florić (2018), showed that transformational leadership and teacher self-efficacy were independent predictors of CTE. Moreover, Stump (2016) also found that transformational leadership was a significant predictor of CTE. On the contrary, as explicated by Stump, much of the variance in CTE was explained by other variables in the study. Additionally, similar types of statistical analyses revealed that transformational leadership practices, when controlled for other variables, did not show up as significant predictors of CTE (Ryba, 2018).

Similar patterns of mixed findings are reported in the case of instructional leadership. In this respect, effective school leadership behaviours and teachers' self-efficacy beliefs were identified as significant predictors of CTE (Al-Mahdy et al., 2018; Cansoy & Parlar, 2018). The researchers reported that there was a robust, direct impact of a principal's instructional leadership on CTE. On the other hand, in the multi-level SEM analysis from Goddard et al. (2015), the researchers confirmed that instructional leadership is indirectly related to collective beliefs through teacher collaboration. Furthermore, based on the findings of their research, Fancera (2016) recommended that principals should focus on the variables that showed significant impact on CTE, thereby indicating that school leaders can influence CTE indirectly by means of other variables.

Teachers' professional learning

Studies that examined the association between teachers' professional learning and CTE fall into two categories: (a) pre-service teacher training and (b) in-service teacher training. Both these categories show that, in general, teachers' professional learning and CTE are positively related. For instance, after exploring the characteristics of learning that pre-service science teachers were engaged in when preparing lesson plans, Atasoy and Cakiroglu (2018) identified that certain characteristics played a crucial role in developing teachers' collective efficacy. These characteristics are: (a) collaborative work, (b) sharing the same goal, (c) attitudes towards group work and (d) group cohesion (Atasoy & Cakiroglu, 2018). Similarly, in the context of in-service training, results of the work by Schneider (2018) are in strong agreement with the above four points. Schneider (2018) found that instructional coaching is a significant predictor of collective efficacy after controlling for the other variables used in the study. Moreover, the mixed methods study of Schluntz (2018) concluded that job-embedded professional development of teachers may contribute to the development of CTE.

Studies under this theme seem to depict a consistent interest in investigating the relationship between professional learning communities of teachers (as a means for teachers' professional development) and CTE. These studies also reported findings parallel to the above. For instance, the qualitative intervention by Zonoubi et al. (2017) discovered that by taking part in PLCs, teachers became more efficacious as a group in aspects such as teaching strategies, language proficiency, and classroom management. According to the researchers, the various activities teachers were involved in during the PLC activities opened up opportunities to foster CTE, particularly by means of mastery experience, vicarious learning, social persuasion, and emotional state (Bandura, 1977). The corresponding quantitative investigations also produced comparable results. In this respect, the work of Bailey (2016) employed the universal

dimensions of PLCs (Hord, 1997) to explore the relationship between PLCs and CTE. Bailey's study revealed that the six identified dimensions of PLCs have a positive influence on CTE at all stages of students' schooling. Moreover, using SEM, Voelkel and Chrispeels (2017) revealed that PLCs, in general, positively predict CTE.

Self-efficacy

The vast majority of studies on self-efficacy focused their attention on simple correlations rather than predictions. There is a significant level of consensus among these studies, with the majority reporting a strong positive relationship between self-efficacy and collective teacher efficacy. For instance, in the mixed methods study of Dimopoulou (2016), it was indicated that self-efficacy and collective efficacy beliefs are higher in schools identified as 'outstanding'. The quantitative analysis by Zakeri et al. (2016) also reported a significant relationship between each teacher's self-efficacy and their collective efficacy. Furthermore, teacher self-efficacy has been identified as a significant positive predictor of CTE (Cansoy & Parlar, 2018; Ninković & Knežević, 2018; Zakeri et al., 2016). However, the reverse was reported by Guidetti et al. (2018) who revealed that teachers' collective efficacy positively affects teachers' self-efficacy. As such, despite the consistent positive association between the two concepts, research is yet to discover the direction of the impact between self-efficacy and the collective efficacy of teachers.

Organisational conditions

The variables under this theme are of two broad categories: (1) those variables which are more concerned with supportive conditions, and (2) those variables which are more relevant to human interactions within organisations. With regard to the first category, socio-economic composition or socioeconomic status (SES) of schools is known to be directly related to CTE (Bandura, 1993; Belfi et al., 2015). The multilevel SEM analysis of Belfi et al. (2015) claimed that the level of school-based social capital can provide partial explanations of the relationship between school socioeconomic composition and CTE. According to Goddard (2003), school-based social capital refers to norms, values, and relationships among the school staff that support student learning. Unfortunately, the effects of such organisational factors as provision of time, materials, and communication structures do not seem to have been investigated in previous research.

With regard to the category of human interactions, researchers have ventured into direct evaluation of the level of relationships within schools. On this matter, Radford (2018) investigated the connections between three types of relationships and CTE. These are (1) teacher-to-student relationships, (2) teacher-to-teacher relationships, and (3) relational teacher self-efficacy. The correlation analysis revealed that all three types of relationships have a significant positive association with CTE (Radford, 2018). In addition to simple correlations, the path analysis showed that both teacher-to-student relationships and teacher-to-teacher relationships have a significant but moderate positive impact on CTE (Radford, 2018). Furthermore, trust is often considered as a means of assessing relationships within organisations, with the underlining assumption that the stronger the level of trust the healthier the relationships. In this regard, Gray (2016) reported that when collegial trust and trust in the principal are taken together, they have a strong positive effect on CTE.

Impact of CTE on other variables

The impact of CTE – based on the findings reported in the reviewed studies – can be divided into three groups: (1) impact on students, (2) impact on teachers, and (3) impact on the organisation. As there

are few studies falling into the last category, the relevant findings for that category are not present here. Subsequently, outlined next are the findings from the studies that belong to the first two categories.

CTE and student achievement

Studies that investigated the relationship between CTE and student achievement consistently find a strong positive association between the two variables. Regarding this relationship the multi-level modelling analysis by Zhang and Yin (2017) revealed a positive association between CTE and student motivation and learning. Additionally, in the mixed mode study of Goddard et al. (2017), the researchers discovered that positive CTE was associated with an increase in mathematics achievement. The researchers also highlighted that increased CTE reduced the achievement gap for academically disadvantaged students by fifty per cent. This finding has been supported by previous research by Goddard et al. (2015) who reported that achievement differences among schools were predicted directly by the collective efficacy beliefs of teachers. All these studies stressed the importance of enhancing CTE, while some of them suggested increasing teacher collaboration as a plausible strategy to foster positive collective efficacy beliefs among teachers.

Impact of CTE on student achievement was also confirmed by a number of meta-analyses. For instance, a recent meta-analysis by Çoğaltay and Karadağ (2017) employed 35 research studies to examine the effect of CTE on student achievement. The results of the random effect model revealed that CTE has a large positive impact on student achievement (Çoğaltay & Karadağ, 2017). In another recent meta-analysis, Norris (2018) utilised a technique called robust variance estimation, wherein the researcher conducted a meta-regression analysis. It was found that there is a strong positive correlation between CTE and student achievement in both mathematics and reading. Furthermore, this outcome holds true across several different contexts, as none of the many moderator variables (except the country of origin) showed any significant influence on the relationship (Norris, 2018).

Of the studies that are vital due to their high relevance to the subject, but were not included in the original review, Bandura's (1993) study on various factors that might influence pupils' academic achievement was the first to show the powerful impact of CTE on student achievement. According to Bandura (1993) teachers' beliefs in their collective efficacy regarding teaching make a significant contribution to their schools' level of academic achievement. The next important study is the meta-analysis by Eells (2011) in which correlational data/results from 26 studies were synthesised. The results indicated that CTE and student achievement enjoyed a strong and positive correlation, where significant predictive power was registered. The final study that confidently demonstrated the impact of CTE on student achievement – and to a great extent, provides the rationale for investigating predictions of CTE, is the work of Hattie (2015). In the work of Hattie, when the 195 variables that are known to influence student achievement were ranked, surprisingly CTE came second, with a very large effect size of 1.57.

CTE and teacher behaviour

Findings of the studies that investigated the relationship between CTE and its effects on teachers generally depict a direct association with positive teacher behaviour. For instance, the very recent literature review by Donohoo (2018) examined the consequences of CTE specifically on teacher behaviour and other teacher related factors. It was found that CTE was associated with a number of positive teacher behaviour such as “(a) increased teacher leadership, (b) strong focus on academic pursuits, (c) greater job satisfaction, and (d) positive attitudes towards students” (Donohoo, 2018, p. 323). In another study, Chu and Garcia (2018) found that there were significant relationships among CTE, beliefs of culturally

responsive teaching, and outcome expectation. Likewise, positive associations between teacher efficacy and specific aspects of teaching, such as teaching strategies and classroom management, were also reported in the work of Khany and Haghi (2017).

The work of Stephanou and Oikonomou (2018) was fully devoted to investigating the influence of efficacy on teachers' emotions. According to the researchers the objectives of the study include, among others, (a) examining the effects of self-efficacy on developing collective efficacy belief and (b) the influential role of efficacy beliefs on teacher emotions. The quantitative analysis revealed that high levels of teacher self-efficacy and collective efficacy had positive impacts on teachers' emotions. Moreover, self-efficacy was found to be the most significant factor influencing most of the emotional indicators (Stephanou & Oikonomou, 2018). Notably, the investigators reported that primary school teachers reported much stronger positive emotions, as well as a stronger sense of CTE, compared to secondary school teachers. This is a particularly interesting result that could be further explored in order to unveil the reasons behind these differences between the two groups of teachers.

In addition to the above, the impact of CTE on teachers informed by organisational components such as 'empowerment' and 'leadership' has also been studied. On this subject, using surveys and interviews, Baleghizadeh and Goldouz (2016) explored the relationship between collective efficacy perceptions of teachers and their perception of teacher empowerment. The quantitative analysis of the study showed that high levels of CTE are associated with enhanced perceptions of teacher empowerment. In a different quantitative study involving 443 teachers, Flood and Angelle (2017) explored the relationships between trust, collective efficacy, and teacher leadership. It was found that schools that had high levels of CTE and trust fostered the necessary conditions and cultures to realise high levels of teacher leadership which, in turn, resulted in favourable outcomes for those schools (Flood & Angelle, 2017).

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

The purpose of the present review is two-fold; (a) to present an overview of research on CTE, and (b) to draw some implications and suggest some recommendations for teacher development, school administration and further research on the topic.

The present review identified four major factors influencing CTE; (i) principle's leadership, (ii) teacher professional learning, (iii) teachers' self-efficacy, and (iv) organisational factors. With regard to leadership and organisational factors, this review of literature revealed that it might be more accurate to claim that the relationship between these two variables and CTE is indirect. On the other hand, there is a consistent direct positive relationship between teacher professional learning and CTE reported in the literature. The study also revealed that CTE has a significant impact on two important variables: (i) student learning, and (ii) teacher learning. These findings are in line with previous reviews of literature on the topic which reported positive impact of CTE on student achievement, teacher learning, and other positive teacher behaviours.

These findings lead to several implications to teacher development, school administrators as well as researchers. First, the review, on one hand, indicated that teachers professional development is a critical factor affecting teachers' collectively efficacy beliefs while, on the other hand, it showed that CTE is associated with a number of positive teacher behaviour. These relationship calls for careful planning of teacher development programmes, both during pre-service and in-service training, to ensure enhanced collective efficacy beliefs of teachers. This could be done by considering the four sources of efficacy – (i) mastery experience, (ii) vicarious experience, (iii) social persuasion, and (iv) physiological state –

(Bandura, 1977). Such planning would ultimately result in positive teacher behaviour as is suggested by the findings of this review.

Second, school administrators wishing to enhance teachers' collective efficacy beliefs are required to concentrate on the variables within their organisations (other than the leadership practices) that can foster CTE. One such variable identified from the review is teacher professional learning. Hence, school administrators are recommended to look into the ways of enhancing the experience of continuous, job-embedded professional learning of teachers so as to improve collective efficacy beliefs of teachers. In other words, attention has to be paid to leadership aspects that promote teacher learning rather than those that are reportedly associated with CTE.

In addition to the leadership practices and behaviours, the organisational conditions (both physical and human) within schools are also expected to catalyse professional learning of teachers. Existing research suggest that organisational condition (both physical and relational) and leadership are significant factors influencing teacher learning (Gray & Summers, 2015, 2016; Li et al., 2016). In this regard, it is suggested that school administrators attempt to create and promote a collective set of norms and values within the school that would facilitate teacher learning. Maintaining healthy relationships within and among staff is also crucial in this respect. Furthermore, implementation of PLCs as proposed by Hord (1997) is expected to provide an environment conducive for teacher professional learning that in turn enhance CTE (Bailey, 2016). Nevertheless, school administrators are recommended to deliberate on what works in their respective schools, preferably guided by the dimensions of PLCs, as PLCs can be especially context specific (Sai & Siraj, 2015).

Finally, with regard to implications to researchers, investigation of the indirect influence of leadership and organisational conditions on CTE, via the PLCs of teachers, is deficient in the existing scholarly literature. Furthermore, although there have been a few recent studies that investigated the relationship between PLCs and CTE, an initiative which considered all six of PLCs' universal dimensions (Hord, 1997) is not obtainable from the literature search. Hence, future researchers may aim to investigate these indirect relationships.

Furthermore, studies that engaged advanced statistical techniques like SEM in investigating the relationship between CTE and other variables are rare. Hence, future researchers can engage more advanced statistical analysis to analyse specific details of those relationships. Particular attention to examine the nature and direction of the relationships is recommended in this regard. Furthermore, those wishing to investigate the prediction of CTE by various factors are recommended to use Partial Least Square Structural Equation Modelling (PLS-SEM) as this method is found to be powerful in explain the variance in the target variable (Hair et al., 2017).

Limitations

The findings of the review of literature reported here are limited by the inclusion criteria that were engaged. Review of articles that have specifically cited a particular work might have hindered capturing of alternative perspectives on research on CTE. Hence, a review that considers scholarly work other than Goddard et al. (2000) would enhance the findings from this work.

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