

Background



Bandura (2006) defines efficacy as a multifaceted appraisal that reflects the level of difficulty individuals believe they can surmount. Hoy and Spero (2005) define teacher efficacy as one's beliefs in one's capacity to organize and execute the courses of action required to produce given attainments. Specifically, teacher efficacy has been defined as a measure of teachers' evaluations of their own success in teaching (Duffin, French and Patrick, 2012). Skaalvik and Skaalvik (2010) define teacher efficacy as a teachers' beliefs in their own ability to plan, organize, and carry out activities that are required to attain given educational goals.

Duffin, French and Patrick (2012) recognized three related but distinct aspects of teacher efficacy. They are: Efficacy for Classroom Management (CM), Efficacy to promote Student Engagement (SE), and Efficacy in using Instructional Strategies (IS) (Duffin, French and Patrick, 2012). Understanding and developing teacher self-efficacy is important because there are many implications, including an ability to foster feelings of self-efficacy, achievement, motivation, persistence, and positive behaviour in one's students as well as colleagues (Hoy and Spero, 2005).

There are many implications of measuring teacher efficacy. Firstly, teachers with a high level of efficacy often invest more in their teaching, in terms of their level of aspiration and the goals they set (Hoy and Spero, 2005). By measuring the teacher efficacy and how we can foster it, we can understand how to better do so in teacher-education programs, to foster the development of teachers that are better suited to teach in the ever-changing, diverse world that surrounds us today. Secondly, there are implications to educational reform that can occur through measuring teacher efficacy. Hoy and Spero (2005) note that efficacious teachers are more likely to follow-up their doubts with reflection, motivation to learn, responsiveness to diversity, productive collaboration, and change-provoking disequilibrium. Lastly, there is a strong relation between teacher self-efficacy and teacher burnout (Skaalvik and Skaalvik, 2007). Therefore, it is also important to know how to better maintain feelings of teacher self-efficacy to improve teachers' working conditions, which in turn, better student education and the potential for educational reform.

Research Purpose and Methods

This multiphase study investigates how the University of Ontario Institute of Technology's enhanced Initial Teacher Education Program (ITEP) facilitates the development of teacher candidate (TC) self-efficacy. To do this, we measured the initial levels of self-efficacy of 222 TC participants, drawn from three cohorts enrolled in UOIT's ITEP. Participants completed *Bandura's Teacher Self-Efficacy Scale* (TES), comprised of 28 Likert-scale questions. The TES was shared with participants four times throughout the 16-month program, at the ends of each semester (1, 2, 3 and 4). The reason for this was to explore the effects of courses, workshops, Foundations Fridays, and other academic planning on the development of teacher efficacy. In addition, participants also responded to open-ended questions regarding their learning and development as teachers. Data analysis included exploratory factor analyses, independent sample t-tests, and descriptive analyses using SPSS software. Content analysis of open-ended responses using a coding framework based not only on the theoretical constructs guiding this study but the topics that arose inductively via pattern-coding (Miles & Huberman, 1994).

Teacher Self-Efficacy Scale

This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please rate how certain you are that you can do the things discussed below by writing the appropriate number. Your answers will be kept strictly confidential and will not be identified by name.

Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0	10	20	30	40	50	60	70	80	90	100
Cannot do at all					Moderately can do					Highly certain can do

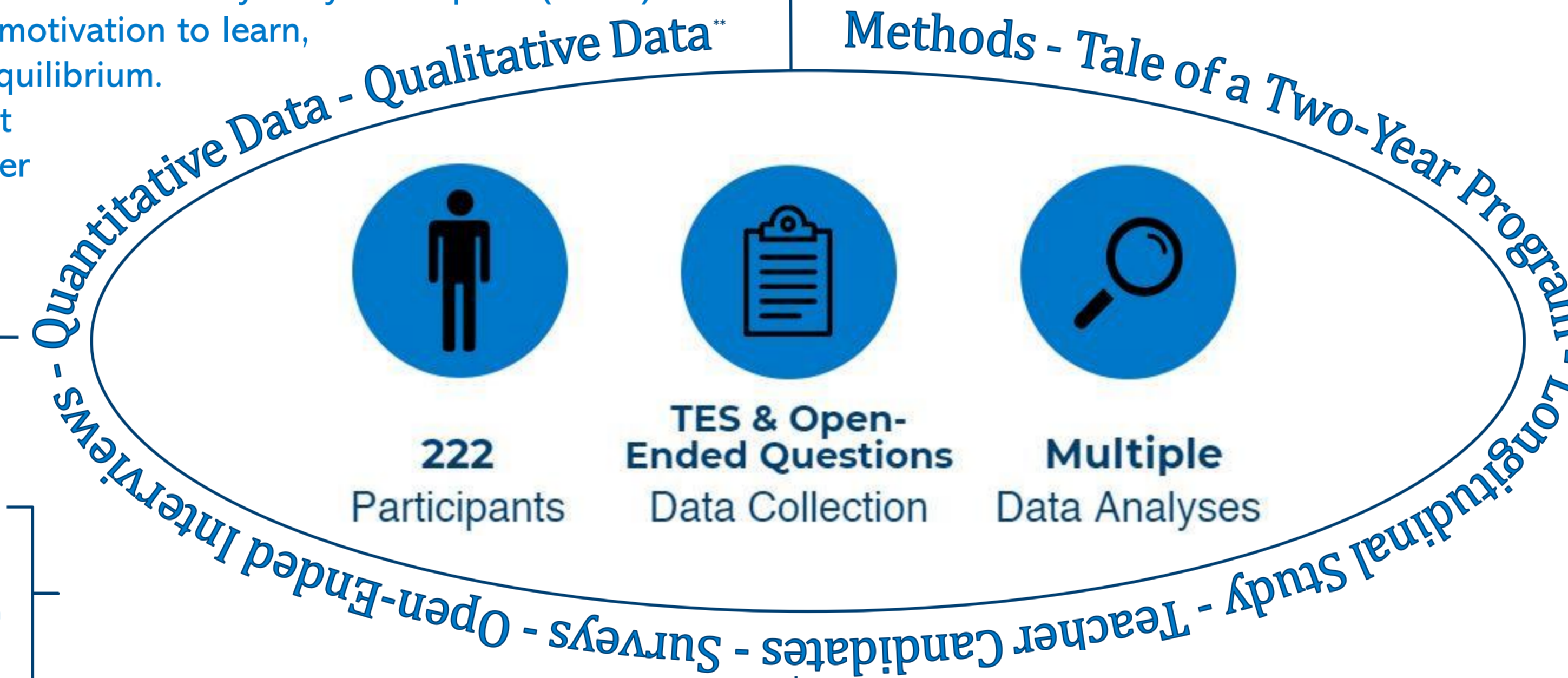
Confidence (0-100)

Efficacy to Influence Decision Making	_____
Influence the decisions that are made in the school	_____
Express my views freely on important school matters	_____
Get the instructional materials and equipment I need	_____
Instructional Self-Efficacy	_____
Get through to the most difficult students	_____
Get students to learn when there is a lack of support from the home	_____
Keep students on task on difficult assignments	_____
Increase students' memory of what they have been taught in previous lessons	_____
Motivate students who show low interest in schoolwork	_____
Get students to work well together	_____
Overcome the influence of adverse community conditions on students' learning	_____
Get children to do their homework	_____
Disciplinary Self-Efficacy	_____
Control disruptive behavior in the classroom	_____
Prevent problem behavior on the school grounds	_____
Efficacy to Enlist Parental Involvement	_____
Get parents to become involved in school activities	_____
Astute parents in helping their children do well in school	_____
Make parents feel comfortable coming to school	_____
Efficacy to Enlist Community Involvement	_____
Get community groups involved in working with the school	_____
Get businesses involved in working with the school	_____
Get local colleges and universities involved in working with the school	_____
Efficacy to Create a Positive School Climate	_____
Make the school a safe place	_____
Make students enjoy coming to school	_____
Get students to trust teachers	_____
Help other teachers with their teaching skills	_____
Increase collaboration between teachers and the administration to make the school run effectively	_____
Reduce school dropout	_____
Reduce school absenteeism	_____
Get students to believe they can do well in school work	_____



Figure 1: UOIT Faculty of Education's (2018) Conceptual Framework, that guides the ITEP.

Figure 2: Bandura's (2006) Teacher Self-Efficacy Scale (TES), containing 28 Likert-Scale Questions.



Preliminary Findings

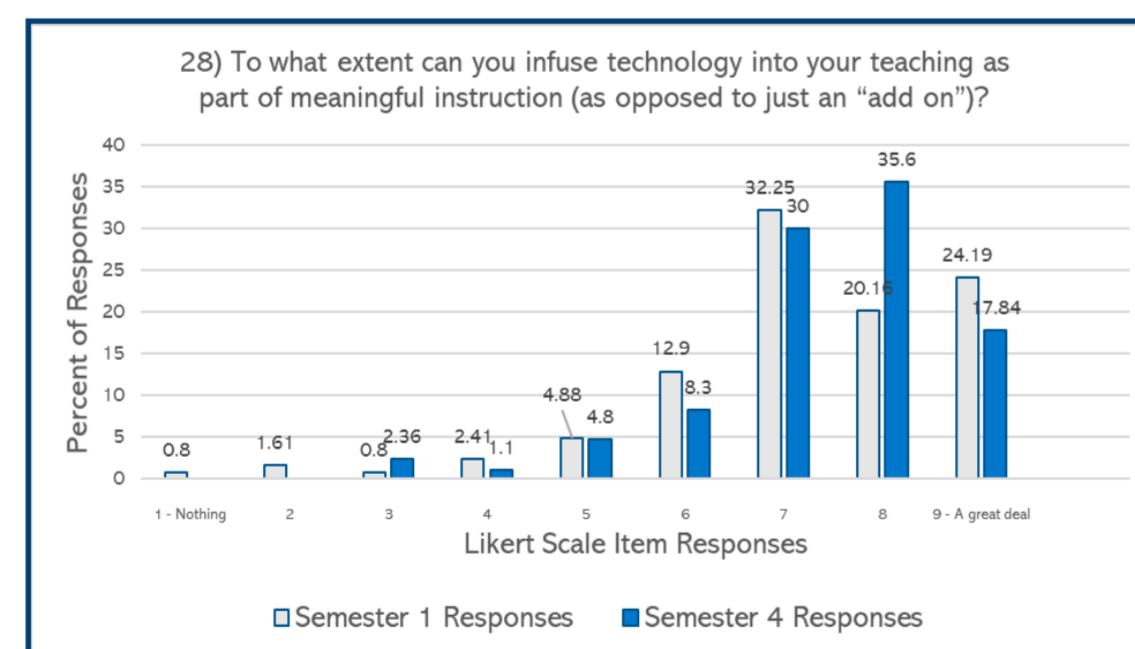


"I have developed since the start of this program because I have a different perspective on the use of technology in the classroom."

"I learned a lot of teaching strategies and uses of technology in the classroom."

"My confidence has grown so much since I've started this program. It further solidified why I want to be a teacher. I really love all that I've been able to participate in through this program."

Exploratory Factor Analysis (EFA): Multiple EFA were conducted to determine the variance and correlation between the 28 individual Likert-scale questions of the Teacher Efficacy Scale (TES). While most questions grouped together into factors that fit into generalized categories such as professionalism and classroom management, one item consistently behaved as an outlier: 28) *To what extent can you infuse technology into your teaching as part of meaningful instruction (as opposed to just an "add on")?*



Preliminary Content Analysis (PCA): Initial descriptive analyses showed an increase in self-reported beliefs regarding participants' abilities to infuse technology into teaching as part of meaningful instruction between semesters one and four of the program; where 76.6% of TCs reported strong levels (responses from 7, 8, 9 combined) of efficacy regarding technology and meaningful instruction in semester one. This number increased to 83.44% at end of semester four.

Figure 3: A comparison of the responses at the ends of Semesters 1 and 4 to the question, "28) To what extent can you infuse technology into your teaching as part of meaningful instruction (as opposed to just an "add on")?"

"I believe I have become more confident in my abilities as a teacher. My strengths are bolstered and my weaknesses have been addressed and managed. I feel more emboldened in my passion for teaching."

"I think that my development in this program has been astronomical. I have gone from a TC who did not feel confident to ready to face a class on my own."

"I have grown in the way that I perceive education and the education field. I feel like I have grown both as an individual and an educator. I have more confidence and a better feel for students and student needs, and how to meet them."



Independent Sample t-test (IST): An IST was performed to determine if the increase in digital literacy efficacy between semesters one and four was statistically significant. This analysis showed that the differences are not significant, despite the infusion of technology throughout the 16-month program. Consequently, we decided to investigate the reason(s) preventing statistical significance from occurring.

Preliminary analysis of the open-ended responses suggest participants learned a good deal about how to integrate technology with instruction even after the first semester. Due to issues related to obtaining the required approvals to conduct the research, we believe that the fact that survey data was not collected before the start of the program, is the main attribute to the statistical insignificance of the data.

Next Steps



Program improvement:

- Continue to focus courses and assignments in B.Ed. on digital literacies, STEM initiatives, digital learning portfolios, and self-reflective activities
- Consider feedback from open-ended responses

Research study improvement:

- Move to pre- and post-program data collection (due to survey fatigue)
- Content analysis of open-ended responses
- Semi-structured interviews and focus-group interviews

Longitudinal study:

- This study is part of a broader longitudinal study
- Extend data collection to graduates
- In Canada, there are very few studies that explore the outcomes, successes, and challenges of teacher candidates as they begin, progress, and complete their ITEPs and begin working in the field.

References

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* Created with WordClouds.com.

** Created with Piktochart.com.