A Nontraditional Instructional Model: Examining its Efficacy of Professional Development

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Abstract: The purpose of this study is to examine the efficacy of a nontraditional instructional model developed as a means of professional development, with multi-faceted theoretical and practical knowledge foundations. As the deliverables of the model, a training session and a web application were produced. In this study, the model was applied to 12 in-service teachers in a Canadian education context, using a quasi-experimental, convergent mixed-methods design. Quantitative data were collected with an evaluation questionnaire and analyzed by one sample t-test. Meanwhile, qualitative data were gathered from field notes and analyzed through the interpretative phenomenological analysis (IPA). The model was evaluated as an effective means to increase participants' teacher efficacy (t(10) = 1.81, p < .001). Methodological limitations and recommendations were addressed. The model's external validity can be further investigated with its application to a wider audience.

Keywords: instructional model, professional development, teacher efficacy, reflexivity, external validity

Introduction

The effectiveness of educational professional development is determined by the degree of educators' relatedness to the topic, opportunities for reflection, and active learning with learner-centeredness (Bowe & Gore, 2017; Camburn & Han, 2015; Girvan et al., 2016). This paper examines the efficacy of a nontraditional instructional model that was applied as educational professional development. The model was developed with multi-faceted theoretical and practical knowledge foundations, producing two interrelated deliverables of a training session and a web application (Kruanopphakhun, 2020). The model was originally applied to Thai educators in an attempt to increase teacher efficacy in teaching students with Asperger's Syndrome (AS; Kruanopphakhun, 2020). This original application prompted that the model's efficacy be further examined through an investigation of external validity (Kruanopphakhun, 2020). External validity concerns the generalizability of original research findings when a replicating study is implemented to the larger population, diverse contexts, or different time frames (Bernstein, 2018). Subsequently, the model was applied to 12 in-service teachers in a Canadian education context. The findings corroborated that the model was effective in increasing teacher efficacy in the education of students with exceptionalities, AS specifically, by exploring how these educators were open-minded, reflective, and active participants in discussions. Given the limitations and recommendations for this study, the model's external validity can be examined further in prospective research with diverse topics and its application to wider populations.

Literature Review

Educators' engagement in professional development equips them with evidence-based knowledge foundations and the most current intervention strategies (Hinton et al., 2008; Morrier et al., 2011). However, it has been assumed that educators with high proficiency may be exempted from professional development, as their past experience is expected to shape their teaching practice (Alfaro et al., 2015: Syriopoulou-Delli et al., 2012). Syriopoulou-Delli et al. (2012) emphasized that regardless of their levels of proficiency, educators' engagement in professional development is crucial in upskilling with the current teaching standards.

The other systemic issue of professional development is a disconnect between the needs of in-service teachers and perceptions of administrators (Bowe & Gore, 2017). Lindsay et al. (2013) suggested that in-service educators would voice dissatisfaction when administrators tended to dismiss their requests to have more opportunities for professional development to create inclusive classroom learning environments. Similarly, Bowe and Gore (2017) discussed another concern, where levels of professional development programs have been incongruent with educators' current knowledge levels. Also, upon implementation, administrators seemingly have failed to modify the structure and/or contents of the program to suit local education contexts (Bowe & Gore, 2017). As a result, educators have tended not to adapt their learning to their daily teaching practice (Bowe & Gore, 2017). Consequently, professional development has become a short-term event that is less appealing to educators (Borko, 2004; Bowe & Gore, 2017).

Girvan et al. (2016) discussed the significance of transforming the format of professional development into more active, learner-centred, and inquiry-based learning. The traditional format of professional development has been less active and less learner-centred (Girvan et al., 2016; Gregson & Sturko, 2007). With this traditional format, the skills and/or knowledge acquisition of educators can remain superficial (Gregson & Sturko, 2007). This superficial learning can create ambiguity in their degree of skills/knowledge application to their practice (Gregson & Sturko, 2007). Therefore, educators' learning from traditional professional development can bring less impact on their students' learning outcomes (Girvan et al., 2016; Gregson & Sturko, 2007).

Within active, learner-centred professional development, reflection is considered a valuable asset (Girvan et al., 2016). Instilling reflexivity in educators to improve their teaching practice is a growing research theme in educational professional development (Camburn & Han, 2015; Girvan et al., 2016). Syriopoulou-Delli et al. (2012) regarded reflection as an integral element of educational practice. Through reflection, educators were able to examine their personal and professional experiences comprehensively (Syriopoulou-Delli et al., 2012).

Camburn and Han (2015) indicated that the structure of professional development as well as relatedness to the content were determinants of educators' engagement in reflection. Educators tended to engage more in reflection when professional development contained learning structures that enhanced active learning and peer-interactions (Camburn & Han, 2015; Girvan et al., 2016). Similarly, educators reflected more on their learning experience when the topic of professional development was related to methods and/or strategies to improve classroom instructions (Camburn & Han, 2015). Therefore, in order to develop educators' reflexivity, professional development needed to be designed with an instructional program that allows active, learner-centred, and inquiry-based learning; has high relevance to their daily teaching practice; and contains structured opportunities for reflection (Camburn & Han, 2015; Girvan et al., 2016).

For an instructional program to be effective in creating desirable learning environments, it is beneficial for the program to incorporate principles of instructional design (Larson & Lockee, 2020). Instructional design is defined as a comprehensive, systematic, and systemic educational process that shapes the quality of instructions (Larson & Lockee, 2020). Gagné et al. (1992) identified five principles of instructional design as: 1) customization of learning to the needs of each individual; 2) short- and long-term effectiveness; 3) fundamental assets to personal and professional development; 4) consistency and compatibility with learners' current levels of knowledge; and 5) congruence with the principles of learning. According to Kobak et al. (2011), when instructional programs were developed with principles of instructional design, degrees of program compliance and knowledge retention/transfer increased. Indeed, planning for effective professional development involves a foundational work that requires sophisticated, systemic, and systematic considerations (Larson & Lockee, 2020).

Nontraditional Instructional Model

Overview

To overcome obstacles of professional development, the current nontraditional instructional model was created with multi-faceted theoretical and practical knowledge bases to encompass all the domains of learning (Kruanopphakhun, 2020). According to Kruanopphakhun (2020), the model integrated Gagné's Nine Events of Instruction (Gagné et al., 1992); principles of action models (Nilsen, 2015); and a philosophical foundation of the dialectical constructivist learning theory (Wu et al., 2014) – which allowed the model to be systematically structured, flexible, and easily applied to practical contexts.

From this model, two interrelated deliverables were produced: a training session and a web application (Kruanopphakhun, 2020). Originally, this model and its deliverables were developed to increase Thai teachers' efficacy in teaching students with AS (Kruanopphakhun, 2020). In the Thai education context, AS was an unfamiliar condition to educators, and the quality of education provided to students with AS has been problematic due to the scarcity of research and resources (Kruanopphakhun, 2020).

The training session was designed to contain five corresponding components that were organized as follows: 1) *Expert Knowledge Presentation*, which invited a local psychologist to present on clinical manifestations and intervention strategies of AS; 2) *Theoretical Background*, covering the historical and cultural contexts of AS; 3) *Presentation of Lived Experience*, a presentation by an individual with an official diagnosis of AS to challenge educators' presumptions; 4) *Hands-on Activities*, integrating role-playing activities to promote interactive learning; and 5) *Asynchronous Learning*; involving an introduction to and a trial of a web application (Kruanopphakhun, 2020). The contents of the web application were designed to correspond with the training session and intended to serve as a means of a knowledge reinforcer and a unified resource reference (Kruanopphakhun, 2020). It is important to note that neither deliverable was intended for diagnostic purposes of AS (Kruanopphakhun, 2020).

Application of the Instructional Model to a Diverse Education Context

The original application of the model (occurred between January to March, 2019) was effective in increasing Thai educators' efficacy in teaching students with AS (Kruanopphakhun, 2020). However, given the novelty of the learning subject, it was uncertain whether these educators' increase in efficacy was as a result of the application of the model, or due to the immediate responses to the knowledge acquisition (Kruanopphakhun, 2020). This inquiry necessitated the need of applying the model to diverse education contexts in order to establish its efficacy through an examination of external validity (Kruanopphakhun, 2020).

A request for the application of the model was accepted by a professor (henceforth 'the Professor') of a university in Atlantic Canada. The model was applied to the Professor's graduate students in September, 2019. All of these students were in-service teachers who enrolled in a specialized program concerning educational theories and practices of students with exceptionalities. Given these students' backgrounds, AS remained as the primary topic of the training session. However, to respect their professional knowledge and experience, several components of the training session were modified, with the principles of the model being maintained. First, the *Expert Knowledge Presentation* was changed to a video recording of an interview with Dr. Tony Attwood (AutismCareUK, 2012). Second, for the *Presentation of Lived Experience*, two culturally- and linguistically-diverse individuals shared their experiences. Third, scenario-based discussions were adapted to the *Hands-on Activities* in lieu of role-playing. Lastly, for the *Asynchronous Learning*, the web application was introduced as demonstration-only. Notably, the current study was the first replicating study concerning the application of the model.

Methodology

Research Method

This study utilized a quasi-experimental, convergent mixed-methods design (Creswell, 2012; Leavy, 2017). The research resulted in a quasi-experimental study, given the small sample size due to the registrational restrictions of the graduate program. According to Harris et al. (2006), adapting a quasi-experimental study is more appropriate than a randomized control trial when "only a small sample size will be available to test the efficacy of an intervention" (p. 17).

In order to have the model's efficacy evaluated thoroughly, a convergent mixed-methods design was employed (Creswell, 2012; Leavy, 2017). This research design integrates both quantitative and qualitative data, which can be collected simultaneously or in sequences, to have the findings cross validated (Leavy, 2017). Subsequently, the overall results of the study become comprehensive explications to further research inquiries (Leavy, 2017). Therefore, for this study, the convergent mixed-methods design was considered suitable. It is important to note, however, that comparing outcomes among different groups or before and after the application of the model is outside of the scope of this study. The outcome comparison concerning the application of the model is discussed in Kruanopphakhun (2020) as well as Kruanopphakhun and Ditcharoen (2022).

Participants

Participants were recruited using an availability sampling method (Etikan et al., 2016). This practical sampling method is one of the commonly used recruitment methods (Etikan et al., 2016). Recruited participants are assumed to share certain commonalities, so that they represent the target population fairly (Etikan et al., 2016). For this study, the Professor assisted in recruiting prospective participants. Given the limited capacity of this graduate program, the sample size became small and it was impossible to assign a control group. These limitations may have affected the generalizability of the research findings. On the day of implementation, 12 graduate students participated in the training session. All were in-service teachers who were learning about pedagogical theories and practices of individuals with exceptionalities. At the start of the session, a consent form was circulated, which explained the purposes of the research project; the voluntary participation; and strict maintenance of confidentiality. Consent forms were collected immediately after each participant signed.

Data Collection Methods

Evaluation questionnaire: This questionnaire was designed to evaluate the efficacy of the instructional model. Cronbach's Alpha was calculated to test the questionnaire's reliability, with a score of 0.86. This score represents a high/reliable measure (Taber, 2016). Prior to the implementation, contents of this questionnaire were also verified with the Professor and two local educators who were in the resource roles at their schools. Serving as a post-test for this one-time session, the form was paper-based and was distributed to participants at the end of the training session. The form consisted of two sections. The first section contained five-scale, Likert style questions (Losby & Wetmore, 2012), having participants rate their most applicable responses on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). The style of questions was adapted from Lindsay et al. (2013) and Rodríguez et al. (2012). The format of questions was modified from the original (see Kruanopphakhun, 2020), with suggestions from the Professor to suit the current research context. Meanwhile, the second section was a space for open feedback, which allowed participants to provide their comments and suggestions with their own expressions.

Field Notes: Throughout the training session, field notes were taken to record the rigorous exchange of ideas, perspectives, feedback, and suggestions. Field notes are considered as a qualitative data set, which consists of "a process of systematic note taking" (Leavy, 2017, p. 136). Field notes can be in written, audio-recorded, or other analogized and/or digitized formats to capture researchers' observations in the field (Burkholder & Thompson, 2020; Leavy, 2017). For this study, these notes were taken on an "on-the-fly" basis (Leavy, 2017, p. 136) to record observations and interactions as accurately as possible.

Data Analysis Methods

For the analysis of quantitative data, one sample *t*-test was conducted (alpha = .05). This test can be used when a sample size is small, and a control group is absent (McDonald, 2014). Therefore, due to the scope of the current study, this statistical test was considered suitable. Meanwhile, for open feedback and field notes, the interpretative phenomenological analysis (IPA; Eatough & Smith, 2017) was employed. IPA values subjective knowledge of particular phenomena and focuses on deepening the understanding of each person's experience through comprehensive interpretations of individuals' unique expressions of reflexivity (Eatough & Smith, 2017; Peat et al. 2019). The received open feedback was mainly based on participants' reflection on their professional practice. Additionally, since field notes contained the subjective experience of participants, transcriptions from these notes were required to be analyzed thoroughly by clustering emergent themes; investigating patterns of commonalities and differences across clustered themes; and synthesizing themes for interpretation in order to complement the statistical data (Peat et al. 2019). Thus, this analysis method was considered suitable for the current study.

Procedure

On the day of the training session, participants were given consent forms first so that they could practice informed decision-making. After these forms were collected, the primary researcher led the training session as outlined in the *Nontraditional Instructional Model* section, with assistance from the Professor and their

colleagues. Field notes were taken throughout the session by the primary researcher and their colleagues. At the end of the session, the evaluation questionnaire was provided to participants to have the instructional model evaluated.

Results and Findings

Participants' Demographic Information

Twelve participants were demographically similar in-service teachers - the majority of whom have taught locally (75%) while some have taught outside of the province (25%; within Canada and internationally). Their teaching experience ranged from 3-25 years ($M = 14$). All of them (100%) were responsible for teaching students with various types and degrees of exceptionalities. Table 1 represents demographic characteristics of these participants.

Table 1

*Demographic Characteristics of Participants (*N = 12*)*

Variables	Category	Frequency (N)	Percentage (%)
Type of Educators	In-service	12	100
Professional Roles	Education of students with exceptionalities	12	100
Teaching Location	Within the province	9	75
	Outside the province (within Canada)	1	8.4
	Outside the province (International location)	2	16.7
Levels of Education	Graduate degree candidates	12	100
Gender	Male	6	50
	Female	6	50

Quantitative Analysis

The analysis indicated that the evaluation of the instructional model was statistically significant ($t(10) = 1.81$, $p < .001$, 95% CI [4.30, 4.50]). The sample mean score was 4.40 ($SD = 0.18$, $df = 10$). Table 2 depicts statistical item descriptions of the evaluation from this Canadian participant group.

Table 2

Statistical Item Descriptions for the Evaluation of the Teacher Training Session (N = 12)

Questions	Mean	SD
The level of understanding of the group regarding AS changed due to the training session.	4.17	1.19
The comfort level of the group to teach students with AS changed after the training session.	4.00	0.74
Having a training session provided by content specialists added value to the group.	4.58	0.67
Having the guest speakers share their experiences provided deeper levels of understanding about AS.	4.75	0.62
Small-group and whole-room discussions can be important techniques to learn about AS.	4.75	0.45
The web application supported the training session to promote learners' retention and transfer of knowledge.	4.33	0.45
Do you think the web application was user-friendly?	4.17	0.72
Do you think the images on the web application appeared relevant to the contents?	4.33	0.65
Do you think the cited information of the web application appeared credible and reliable?	4.58	0.67
Do you think the web application provided a sufficient amount of information for teachers to adopt in their teaching?	4.17	0.72
Overall, were you satisfied with the quality of this AS learning instrument?	4.58	0.67

Qualitative Analysis

Unless otherwise specified, all the following inserted remarks of participants were summarized from the original. Permissions for insertion were granted with consent.

General Feedback: Participants appreciated and admired the structure of the instructional model. Some participants expressed, "I am sincerely appreciative for the efforts that the researcher has made for this training session;" and "I was inspired by the researcher's enthusiasm for the target population [students with AS and their educators]."

Despite that these participants already had the wealth of knowledge and experience teaching students with exceptionalities, they acknowledged that the contents of the training session were informative,

empowering, and beneficial to their teaching practice. Several teachers commented, "The session was beneficial in bridging theory and practice;" and "The session allowed me to widen my practical knowledge base when working with students with AS."

Another in-service teacher praised the usefulness and resourcefulness of the web application, stating, "The web application seems very useful and resourceful. I could possibly share this tool with [my] colleagues so that we could collectively increase teacher efficacy towards students with AS." Also, certain participants were impressed with the model's emphasis on knowledge sharing. According to remarks from in-service teachers who acknowledged the importance of sharing knowledge with wider audiences, "I am sure that learners with AS, as well as their educators in Thailand and those in its neighboring countries can benefit enormously from this session;" and "Please keep sharing the knowledge with many [audiences] to raise awareness."

Analysis of Discussion Activities: For discussion activities, participants were first divided into three small groups. Each group was given a scenario to discuss issues in each context and possible intervention strategies to improve the outcome. After 15 to 20 minutes, a whole-room discussion was held so that each group could share their insights.

The first scenario was titled, "*Putting Things in the Car*." This scenario concerned a student with AS attempting to perform the same task despite its ineffectiveness. Educators identified issues as "Challenges with problem-solving skills;" and "Teaching abstract thinking skills to those who are concrete thinkers." These educators stated, "I could relate myself to one of my students who had difficulties shifting from one task to another;" and "It could be a challenging area of teaching when my students had varied cognitive abilities." The suggested intervention strategies and their respective rationales included, "The use of social stories, which are useful strategies to instill students with plans for future improvement;" and "Physical demonstration of the target task, which works effectively for students who tend to learn better with visual instructions."

The second scenario was "*A Chair and a Hairdryer*." The synopsis of this scenario was a student with AS needing thorough thinking regarding sequences of actions prior to performance. "Challenges in understanding socially-conventional problem-solving approaches;" and "Challenges in executive functioning" were identified by in-service teachers as issues in this context. They reflected, "Individuals with AS can be impulsive and they may tend not to consider efficiency or appropriateness of their performance choices;" and "Given their challenges with executive functioning, I can see that my students [with AS] can have difficulties with planning and prioritizing tasks." For intervention strategies and their respective rationales, these in-service teachers suggested, "Providing practical scenarios to practice target skills so that target students can have opportunities to practice how to multi-task or prioritize;" and "Practice skills with detailed instructions that are thorough and clear, in order for students with AS to follow step by step."

The third scenario was "*You Just Told Me to Come Eat!.*" This scenario focused on the need for a student with AS to understand multiple unspoken social norms at a semi-formal social gathering. Educators raised issues including, "Teaching students that social norms may not be always visibly presented;" and "Teaching students that social occasions usually involve multiple activities." They commented, "It is necessary to provide explicit explanation and instructions of social norms to students with AS so that they can understand and follow;" and "Students with AS need to be taught that they be conscientious and mindful of the occasion and surroundings." Intervention strategies and their respective rationales discussed among these educators were, "Providing clear and concise expectations of the occasion prior to the event to ensure students' knowledge and understanding regarding the given occasion until they understand;" and "Practice asking questions to improve skills of integration and to reduce false assumptions so that these students can challenge their assumptions proactively and make themselves integrated well in the given occasion."

The analysis processes of the discussion activities occurred as follows: first, field notes were organized based on the scenario. Second, transcriptions of each group's discussions were read thoroughly. Third, these transcriptions were categorized into four emergent themes of: identified issues; educators' reflections; suggested intervention strategies; and rationales for suggestions. Lastly, these emergent themes were clustered accordingly: 1) identified issues and educators' reflections on these issues; and 2) suggested

intervention strategies and rationales for these strategies. These analysis processes were adapted from Pietkiewicz and Smith (2014), and the analyzed data were synthesized with the quantitative data (see Peat et al., 2019) in the *Discussion* section.

Discussion

The purpose of this study was to examine the efficacy of an instructional model through an investigation of external validity, served as the first replicating study of Kruanopphakhun (2020). Upon the application, several components were modified given the participants' prior knowledge and experience, with the model's integrity being maintained. Educators evaluated that the model was effective in increasing their efficacy in teaching students with AS ($t(10) = 1.81$, $p < .001$, 95% CI [4.30, 4.50]). Through an integration of the study's findings, the definition by Bernstein (2018), and the discussion by Bowe and Gore (2017), the efficacy of this model has been validated. The evaluated efficacy of the model is likely due to three learner attributes: open-mindedness, practice of reflection, and engagement in discussions.

Open-Mindedness

Participating educators willingly attended the training session and became a part of the research project. Given their prior knowledge and experience, the contents of the model could have been perceived as redundant (Bowe & Gore, 2017; Gregson & Sturko, 2007). However, they engaged immensely in the session and took responsibility for their learning (Girvan et al., 2016). For instance, during the video presentation of Dr. Tony Attwood (AutismCareUK, 2012) at the *Expert Knowledge Presentation*, the majority of the participants took notes to record his remarks. Participants indicated that they had not heard about Dr. Attwood and his research work previously. After the video presentation, several of the educators mentioned that Dr. Attwood's knowledge and experience were beneficial for them to complement their current teaching practice. As discussed in Camburn and Han (2015), these in-service teachers' receptiveness to information was as a result of them perceiving the presented information relevant to improving their classroom practice.

Practice of Reflection

Participating educators reflected actively on their past and current teaching experience during the training session. One instance was during the *Theoretical Background* presentation. When the historical and cultural backgrounds of AS were presented, they acknowledged that the information was intellectually stimulating and enhanced their understanding of AS and its impact on their students. They admitted that in their baccalaureate and graduate programs, little was focused on the etiological origins of AS. These educators were able to integrate the newly acquired knowledge into their existing scheme to form a renewed set of knowledge foundation - which was indicated in Girvan et al. (2016) as a result of learner-centred, inquiry-based learning.

Another active reflection occurred during the *Presentation of Lived Experience*. With two presentations, participants related well to presenters. Educators reflected on not only their competency as teaching professionals, but also their students' competency as individuals with unique strengths. According to several educators, they reflected on how they could assist in optimizing their students' learning outcomes by supporting their strengths. This process of reflection mirrored principles of the Self-Determination Theory: relatedness, competency, and autonomy support (Ryan & Deci, 2000). Indeed, this inquiry about professional self-determination is an imperative aspect of effective professional development (Camburn & Han, 2015; Gagné et al., 1992; Syriopoulou-Delli et al., 2012).

Engagement in Discussions

During discussions, participants actively exchanged insights, suggestions, and feedback. All the discussions were conducted respectfully, in which everyone had equal opportunities to participate. As discussed in Girvan et al. (2016), with the structure of this instructional model, participants' learning was generated through active interactions with their colleagues. Particularly, one scenario, "*You Just Told Me to Come Eat*!," generated a rigorous knowledge exchange in terms of inclusion, integration, and potential discrimination towards individuals with exceptionalities. The central theme of the scenario is to have a student with AS understand

multiple unspoken social norms at a semi-formal social gathering. Several educators emphasized neurotypical individuals' responsibilities for creating inclusive environments for neurodiverse individuals. On the other hand, others stressed the importance of maintaining a balance between inclusion and integration. According to these participants, while ensuring the inclusiveness of environments, it was equally imperative for neurodiverse persons to learn how to integrate with their surroundings. As one in-service teacher commented, neurodiverse individuals needed to learn that at certain occasions, it might be impossible to accommodate situations to their needs. This part of the debate is congruent with the process of self-determination, where educators can assist in developing competency of their students as well as supporting their autonomy (Ryan & Deci, 2000).

Intriguingly, one educator cautioned the potential hazard for excessive inclusion and accommodation. According to this educator, when neurodiverse students were included and accommodated beyond their actual needs, they could become isolated and encounter unintentional discrimination. Also, this teacher further contended that excessive inclusion and accommodation could teach these students senses of entitlement and privilege instead of positive, necessary life skills. At the end of the discussion, the entire group agreed that inclusion and integration required careful balancing in order to prevent unnecessary isolation and discrimination.

Recommendations

Several recommendations have emerged from the current application of the instructional model. First, due to the recruitment method, the current study lacked a control group. In the future, to strengthen the study's scientific rigor, a control group needs to be included. Similarly, given the restriction with the program registration, the sample group became small ($N = 12$). The prospective studies can overcome this barrier by expanding the sample inclusion criteria to a wider, diverse population. Another recommendation for the application of the model is to incorporate activities for individual reflection (interviews, art-based expressions, or other means) in the training session. The current session lacked opportunities for each participant to reflect and share their individual insights. Therefore, each participant's individual worldviews may not have been fully acknowledged during the session. By having individual viewpoints fully represented in the learning process, participants can actively engage in professional and personal reflection (Camburn & Han, 2015). This engagement in reflection can enhance their competency and autonomy in acquiring and applying knowledge (Ryan & Deci, 2000). Lastly, the model's external validity can be further examined by using the model to teach diverse topics from other academic and/or vocational disciplines. This instructional model was designed to be adaptable and flexible (Kruanopphakhun, 2020), which allowed its application to the Canadian education context with minimal modification. When adapted to diverse disciplines, components in the model may require modifications in order to increase participants' relatedness to the topic and their sense of feasibility. By balancing efforts for adaptation and for maintaining the integrity, this model strives to contribute to improving the quality of professional development.

Conclusion

This study examined the efficacy of a nontraditional instructional model, which was applied as a form of professional development. Issues regarding educational professional development and essential elements for effective development programs were discussed. The original application of this instructional model in the Thai education context generated an inquiry that the model's efficacy be established through an examination of external validity. The model's deliverables (a training session and a web application) were implemented to 12 in-service educators in the Canadian education context, all of whom had prior knowledge and experience in teaching students with exceptionalities. The model was evaluated by these educators as an effective means to improve teacher efficacy. The effectiveness of the model was supported by participating educators' open-mindedness, reflexivity, and active engagement in discussions. It is hoped that this instructional model's external validity be further investigated by its application to larger-sized, demographically-diverse populations as an instructional means for varied learning topics.

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