

Factors Affecting Preservice Teachers' Efficacy to Assess Students in Inclusive Classrooms

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Abstract: This study aimed to determine the correlation between the factors affecting preservice teachers' efficacy in conducting assessments in inclusive classrooms. The study used a correlational survey questionnaire with 41 student teachers at a tertiary institution in Prince Edward Islands, Canada. The results from the survey were analyzed using the Statistical Package for Social Sciences (SPSS) 27.0. Using statistical software, data was interrogated and analyzed using descriptive statistics analysis and bivariate correlation. This study revealed a significant statistically positive correlation between several factors and teacher efficacy in conducting assessments in an inclusive classroom. These results complement existing findings and are discussed further.

Keywords: Self-Efficacy, Preservice Teacher, Factors, Inclusive Classrooms, Survey Questionnaire, Quantitative Study, Correlational

Introduction

Overview

Inclusion is represented as bringing together students of diverse self-defining attributes in all aspects of schooling to receive a holistic education. Over the past 29 years since the call to action was made for 92 governments and 25 international organizations, Article 24 of the UNESCO Salamanca statement has not been realized even with the introduction of inclusive schooling or the restructuring of regular schools and special schools (Ainscow, 1997; Kopfer & Oskarsdottir, 2019; Lupart & Webber, 2012). This gradual procedure termed “progressive inclusion” (Lupart & Webber, 2012, p. 8) required much support to remove barriers and enable greater participation through more effective teacher training (Dei 2000; Kopfer & Oskarsdottir, 2019), empowering novice teachers to make informed decisions in their instructional practice (Ingersoll et al., 2012; Nandlal, 2021)

It is the general notion that the education landscape is defined by the quality of preservice teachers (Grime-Farrell, 2017) and the training they receive (Sharma et al., 2013; Sharma et al., 2021). Teachers are charged with the vital responsibility to actively build the minds of tomorrow, cultivating global citizens who can uphold the values of the society they are a part of (Forlin, 2010; Massouti, 2019; Dewey, 1915). As preservice teachers' proficiency to support the practice of student education can be connected to the quality of education they receive, they must be prepared to meet all students' needs (Sharma et al., 2021). Several factors that would affect preservice teachers' effectiveness were explored (Izci, 2016), as well as developing teachers' assessment literacy to support inclusion better; however, there were no articles reporting on the factors that influence teacher assessment literacy (Oo et al., 2022) nor the predicting factors of teacher self-efficacy in an inclusive environment (Clark & Newberry, 2018) representing a significant gap to address. The purpose of this current study is to determine the correlation between factors affecting preservice teachers' efficacy in conducting assessments in an inclusive classroom.

A study of this nature could be significant for teacher educators, curriculum advisors, and education leaders who can impact teacher training. The results of this study have the potential to identify the factors affecting teacher education. In this context, there is a need to describe and measure the possible correlation between individual factors affecting preservice teachers' self-efficacy to conduct assessments in an inclusive classroom. The findings will strengthen the quality of preservice teacher development and, by extension, the quality of teachers in the future.

Theoretical Framework

Regarding the study's parameters, the theoretical framework was based on Bandura's (1994) epistemological work, Social Cognitive Theory. Bandura proposed four sources of self-efficacy to use in thinking about one's beliefs in their abilities. To create and strengthen self-efficacy, Bandura examines it through mastery experiences, vicarious experiences (provided by social models), social persuasion (boosting their self-beliefs) and a person's somatic and emotional states as a positive mood or negative mood affects the level of self-

efficacy. Therefore, constructivist epistemology, differing experiences, requirements of the curriculum and behaviour modelling need to be considered if preservice teacher self-efficacy in conducting inclusive classroom assessment is a concern. Although the research is sourced from all four sources of self-efficacy, this study is rooted in the second, vicarious experience; that is, the practice of either imagining yourself in the activity teaching or watching someone modelling the behaviour, as it was reflected in the literature to be a cornerstone when building the efficacy of preservice teachers.

Literature Review

Self-Efficacy: The Theory Behind the Practice

Stemming from the constructivist philosophical ideologies, the concept of self-efficacy evolved from the exploration of self-defining concepts and theories of motivation. Understanding self-efficacy means understanding what it signifies, the self (Barthes, 1981). The concept of the self presented by Bruner (1996) expresses that self-reflection is tied to introspection. When one is made aware of their thoughts, they begin to question their sight and whether others see them as they see themselves, introducing the concept of the looking-glass self-proposed by Cooley (1902), as well as the dimensions within the self, such as the id, ego, and superego (Freud, 1952). The development of this self-awareness promotes the modern humanistic psychological concept of motivation and self-actualization — the movement toward reaching one's potential to fulfill physiological needs (Maslow, 1943; Schunk & Pajares, 2005). Together these concepts promote how a person may utilize motivation as a catalyst of self-efficacy to reach their fullest potential (Bandura, 1977, 1986, 1997; Bandura & Wessels, 1994; Sharma et al., 2021).

Self-efficacy or perceived self-efficacy by Albert Bandura in his 1994 work titled *Self-Efficacy* defines the term as “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (p. 1). To produce greater levels of performance, Bandura (1994), Clark and Newberry (2018), and Sharma et al. (2021) emphasize the cultivation of intrinsic motivation that sustains self-efficacy with the capacity to overcome future adversities. Therefore, we consider the significant positive correlation between teacher education programs, their contribution towards cultivating efficacious teachers and how they can be influenced (Bandura & Wessels, 1994; Clark & Newberry, 2018). The relationship of self-efficacy has also been explored from teacher to student achievement (Mojavezi & Tamiz, 2012; Shahzad & Naureen, 2017) and student achievement across academic areas and levels (Pajares & Urdan, 2006).

Teacher Education Curriculum

As today’s classrooms become more inclusive, teacher education (TE) curricula are reformed to meet and support students of diverse backgrounds. A study of preservice teachers found that many had concerns about how equipped they were to successfully meet the needs of an inclusive classroom (Loreman, 2010; Specht et al., 2016). Such needs like that of social, academic, instructional and assessment (Loreman, 2010; Massouti, 2019) are challenging to define (Hansen, 2012; Qvortrup & Qvortrup, 2018) and even more so to realize (Haug, 2016; Verma, 2021; Woodcock & Woolfson, 2019).

Therefore, teacher education and honing teaching capabilities to their optimal focus must be considered. Loreman Loreman (2010) emphasized the degree of success of the TE programs and how it translates to their practice and that it has not always been addressed. The author describes the need to have such learning outcomes remain throughout the TE program as it is not enough to address the concern of inclusive education by including a course-specific study. Such challenges are further hindered by teacher attitudes towards their practical application of inclusive strategies, including the execution of assessments in the classroom environment (Woodcock & Woolfson, 2019; DeLuca et al., 2019).

Factors affecting Self-Efficacy in Inclusive Education

Limited research was found on the possible factors affecting teacher self-efficacy toward inclusive education (Wray et al., 2022). Within the study, five factors were noted to influence teacher self-efficacy. These were

“demographic factors, teacher internal attributes, teacher education and training, experience interacting with people with disabilities, and school climate (Wray et al., 2022, p. 5). Understanding that each factor examined comprised subcomponents and would vary by country and subject context. Wray et al.’s (2022) systematic review found that years of teaching experience to be a significant predictor. This finding was also endorsed by Ekins et al. (2016) and Oo et al. (2022), who further recommended that the curriculum be reformed to “consider [preservice teachers’] theoretical knowledge acquisition and practical skills development while building their confidence to design and implement various assessment strategies” (p. 367). Reformation of the curriculum to promote practical skill development has led to greater self-efficacy and teachers who exhibit more willingness to try varying methods to meet the needs of inclusive education (Romi & Leyser, 2006).

Assessment and Inclusive Education

Assessment is a core construct in the education process (Ainscow et al., 2012). Evident in the time dedicated to the practice of conducting assessments (Stiggins & Conklin, 1992; Butt, 2010), assessments serve the process of education by providing various types of feedback on the quality of learning, accountability, and possible channels of improving instruction to meet the needs of all students (Bourke & Mentis, 2013; Izci, 2016). Such feedback through assessment can determine not only the level and discipline education students receive but also the long-term consequences for their future (Goodwin, 2012). As made evident by Bourke and Mentis (2013), assessment can also categorize students. Although this may help access resources for an inclusive classroom, it presents the opportunity for exclusion, leading to a degree of marginalization (Qvortrup & Qvortrup, 2018). As it is widely regarded that teacher assessment literacy affects student learning, student teachers must be better equipped to implement assessments proficiently despite possible distractors (Daneen & Brown, 2016; Mellati & Khademi, 2018; Rogler, 2014).

Method

The research for this study was a small-scale quasi-experimental design that examined the relationship between individual factors and the scores of the student-teacher self-efficacy scale to conduct assessments in an inclusive classroom. Correlational studies researchers Tan (2014) and Lau (2017) suggested correlational studies seek to ascertain if relations exist between two or more variables with the understanding that it does not infer causation. Thus, given the nature of the research topic and questions, a correlational study was deemed most suitable to explore the relationship.

Participants

Considering the type of research and the parameters of the inquiry, 126 teacher students comprising 81 undergraduate education students and 45 graduate students in a public university in Atlantic Canada were approached to participate in the study. Using convenience sampling (Cranton & Merriam, 2015), a sample size of 44 responses was collected, 3 of which were not included in the analysis as half of the data was incomplete. The remaining 41 participants formed the sample for analysis, which included 10 undergraduate students, 8 who elected for instruction in English and 2 who opted for French instruction; the graduate sample group comprises 31 students in the Master of Education program facilitated in English by the institution. Students under 18 years of age following ethical guidelines were excluded if they could not provide informed consent since they are considered minors. Employing a power computation test (Cohen, 2002; Creswell & Guetterman, 2019) using G*Power 3.1.9.7 (Faul et al., 2009), it was noted that 82 participants were needed to establish an alpha equal to 0.05, effect size moderate at 0.3, and power equal to 0.80.

Participant Demographics

Of the 41 Canadian preservice teachers, 4 were between 23 and 27 years of age; 9 were between 28 and 33; 10 were between 33 and 37; 17 were between 38 and 42; and 1 were between 43 and 47 years of age. From the cohort of Bachelor of Education participants and Master of Education participants in this study, 18 had been enrolled for 3 months or less; 14 had been enrolled for 4-7 months; 0 had been enrolled for 8-11 months; 7 had been enrolled for 12-15 months and, 2 had been enrolled for 16-19 months. With regards to previous teaching experience, 5 of the participants had one year or less experience; 6 of the participants had between

1 and 3 years of experience completed; 7 of the participants had between 4 and 6 years of experience completed; 5 of the participants had between 7 and 9 years of experience completed; 8 of the participants had between 10 and 12 years of experience completed; and, 7 had 12 and more years of experience. Three of participants did not have any previous teaching experience.

Instruments

The instruments utilized were two scales from Torkzadeh and van Dyke's (2001) Internet self-efficacy scale and Anderson-Butcher et al.'s (2012) Perceived School Experience Scale (PSES), both modified for greater relevance to the research objectives (Bandura, 2006). Both scales were implemented in similar sample demographics and varying contexts, suggesting an internal-stable attribution of success, making it highly applicable and reliable to the sample population.

Torkzadeh and van Dyke (2001) Internet self-efficacy scale is a self-administered scale that assesses one's perceived self-efficacy experience using internet-related components. This scale given the scope of the study, was adapted and modified for measuring individuals' self-perceptions of their competency with assessment; therefore, for the relevance of this study, it would be titled the Inclusion Classroom Assessment Self-Efficacy Scale (ICAS-ES). The scale had an overall Cronbach Alpha score of 0.96 across the 17 items. A sample statement from the survey included the following: *In an inclusive classroom, I am confident in assessing students in writing.*

To measure the internal factors that relate to self-efficacy, Anderson-Butcher et al.'s (2012) Perceived School Experience Scale (PSES), containing 16 items was adapted and implemented, which examined concepts of connectedness with school, academic press and academic motivation. Modifications were completed for contextual relevance to the study. All three factors demonstrated adequate reliability with a Cronbach Alpha score of .88, .87 and .86, respectively. A sample statement from the survey included the following: *I am proud to be a student at this institution.*

Ethical Considerations

Creswell and Guetterman (2019) define ethics as awareness with anticipatory action to protect participants realized through three principles: respect, justice and beneficent treatment of participants. Following the Tri-Council Policy Statement (2022), this awareness can lead to the protection of the participants by obtaining their informed consent, minimizing risk during the data-gathering phase and maintaining anonymity (Creswell & Poth, 2016). Approval to conduct the study was sourced in two separate steps to address this concern. First, training and certification were completed following the Tri-Council Policy Statement, and second, attaching the certification received, an application was submitted, reviewed and approved by the associated Research and Ethics Board (REB). Ethics were also considered for the data gathering and reporting phases. Electronic surveys were made available via relevant platforms for participants to access and digitize afterwards. No names were recorded with the data collected. Participants had the chance to indicate if they would like to receive a copy of the research results upon completion.

Data Collection Procedure and Analysis

Before receiving authorization, coordinators and subsequent instructors were contacted concerning their interest in conducting a study with their students (student teachers). It was also communicated that no research would commence until ethics was approved. The preservice teachers were also informed that no identifying information would be gathered that could enable them to be associated with their responses. All responses were anonymous, and a unique identification number was allocated to each respondent (P1, P2, etc.). Students were also informed that they were required to be 18 years of age or older to partake, to carefully review all information, ask questions and clarify any areas of confusion.

The paper survey responses were digitized and transferred into an Excel spreadsheet in the raw summarized format. The electronic surveys were also added to the Excel spreadsheet that was then downloaded into Statistical Package for Social Sciences (SPSS) 27.0 and secured at two levels. A codebook was implemented to ensure consistency of data representation throughout the study, ensuring purification,

unidimensionality, brevity, simplicity, validity, and reliability. The survey questionnaire responses on SPSS were then explored to clean the data of “garbage items” (Churchhill, 1979, p. 276) or missing data. (Creswell & Guetterman, 2019, p.179-180). Any missing data were reported to allow readers to accurately interpret the results (George & Mallery, 2016). After all data was prepared, cleaned, and missing data were removed and reported, data analysis to describe the trends commenced with the consultation of a statistician.

The first analytical approach is descriptive and frequency statistics utilizing SPSS 27.0. These responses were then used to identify factors and patterns within the participants’ responses (see Table 1). The second analytical approach employed was the use of correlations. Puth et al. (2014) justified the use of bivariate correlation to explore the associations between variables and not predict “functional dependence” as with simple linear regression (Puth et al., 2014, p.184). Correlation was used to examine the relationship between the external and internal factors to the student-teachers’ self-efficacy to conduct assessment in inclusive classroom scores. These scores were collected using the Inclusive Classroom Assessment Self-Efficacy Scale. Cohen’s standard was used to evaluate the relationship, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988).

Results

The study examined the relationship between factors and student-teacher self-efficacy to conduct assessments in an inclusive classroom. The results of the descriptive statistics suggested that preservice teachers had high teacher self-efficacy to conduct assessments in an inclusive learning environment since the mean score on the ICAS-ES was high.

The PSES (internal factors) scores were averaged as high, with the concept of Connectedness being the highest. The survey results analyzed through descriptive statistics also showed that external factors were of a more significant average overall. The descriptive statistics are provided in Table 1.

Table 1: Descriptive statistics for overall scores (N=41)

<i>Measure</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
<i>ICAS-ES Overall Scale Score</i>	10	48	33.85	8.84
<i>External Factors</i>	19	45	34.0	4.71
<i>Internal Factors</i>	16	34	27.73	4.82

Note. ICAS-ES Item Mean= 3.39, SD=1.28

Bivariate correlations of the predictor variables to the ICAS-ES are listed in Table 2. The correlations examined were based on an alpha value of 0.05. Inclusion Classroom Assessment Self-Efficacy scale (ICAS-ES) and External factors yielded results of $r = 0.38$ ($p < 0.001$) for participants. Correlations between Internal factors and External factors yielded results of $r = 0.22$ ($p < 0.001$), while Internal factors and Inclusion Classroom Assessment Self-Efficacy scale yielded the result of $r = -0.1$ ($p < 0.001$) from a total number of 41 participants. Variables (noted 1, 2 & 3) were normally distributed (having a bell-shaped curve), low linearity was present and homoscedasticity.

Table 2: Bivariate correlation matrix of predictors variables and ICAS-ES.

		<i>1</i>	<i>2</i>	<i>3</i>
<i>1</i>	<i>ICAS-ES</i>	1		
<i>2</i>	<i>External Factors</i>	.38*	1	
<i>3</i>	<i>Internal Factors</i>	-.1	.22	1

* *Correlation is significant at the 0.05 level (2-tailed).*

The cross-tabulation results indicated that external factors were statistically significant predictors of preservice teachers’ (N=41) self-efficacy levels to conduct assessments in an inclusive classroom.

Discussion

To better understand the relationship and answer the research question, this section examined the factors associated with the preservice teachers' self-efficacy levels to execute assessments in an inclusive classroom setting. In general, preservice teachers noted three factors that contributed to the ICAS-ES that affected preservice teachers' self-efficacy to conduct assessments in an inclusive classroom environment. These factors as part of the construct in the ICAS-ES scored in this study were moderately high, with the mean score noted at the upper end of the range ($M= 33.85$). Two factors were notably significant, connectedness with school and academic motivation, and experience in inclusive classroom settings, further discussed in this section.

Firstly, connectedness with school and academic motivation, the preservice teachers indicated, having a sense of belonging and a positive perception of their relationship with their educational institution enhanced performance. Supportive and caring relationships in the school environment have been shown to build teachers' competency in inclusion practices, resulting in greater levels of self-efficacy (Anderson-Butcher et al., 2012; Bandura, 1986). This finding aligns with Wray et al. (2022) internal attributes. Education institutions should recognize the importance of the school climate and the notable influence on teachers (Bandura, 1994; Clark & Newberry, 2018; Wray et al., 2022). Education institutions should consider ways to increase school collaboration and sense of belonging. It is reasonable to suppose that scaffolding practices such as, team teaching, supervision and student supports would provide opportunities to develop a connectedness with the school community.

Next, in examining ICAS-ES, preservice teachers felt greater self-efficacy about conducting an assessment in an inclusive environment when they have had experiences in an inclusive classroom setting, complementing Bandura's (1994) self-efficacy domain of vicarious experiences. Findings gathered from preservice teachers communicated the belief in their ability in an inclusive classroom to assess students' speaking, writing, reading and math skills, noted in the responses of multiple items. These responses could be considered consistent and a good indicator that preservice teachers believed they could always manage to implement the assessment. The ICAS-ES findings also suggested that participants who completed the course in their native language and had previous teaching experience in the field of Education had a notably greater sense of efficacy than those who did not complete the course in their native language. This observation indicated that this could be a result of the teacher training having been completed in a second language context. As performance is reliant on self-efficacy (Bandura, 1997; Raoofi et al., 2012; Wray et al., 2022) it is found that preservice teachers who had English as a second language had lower self-efficacy levels than preservice teachers who were native English speakers. It was surprising that the findings suggested participants did not consider self-confidence a notable internal factor as it was the lowest-scored item despite its importance in similar studies noting a strong correlation (Blanco et al., 2020; Marra et al., 2007). It could have been because most preservice teachers were months into their program and had not received practical experience, only theoretical exposure to the Canadian education context.

In completing the analysis, there was a statistically significant ($p = 0.001$) moderately positive correlation between external factors than the internal factors provided by preservice teachers' ICAS-ES scores. It was evident that preservice teachers felt greater self-efficacy in conducting assessments in an inclusive setting after having experienced similar conditions. The findings identified the importance of personal, work and teaching experiences in the analysis responses were consistent with numerous studies (Bandura, 1997; Prieto & Altmaier; 1994; Romi & Leyser, 2006; Tollerud, 1990). These factors correspond with identifying expectations (Bandura, 1978, 1982), further explaining the interactive nature of the experiences and the building of preservice teachers' self-efficacy levels.

A similar pattern was found as findings revealed yet another statistically significant correlation between preservice teachers and external factors with instructors. Preservice teachers felt greater self-efficacy to conduct assessments in an inclusive environment, having worked with an instructor who supported this process. The finding was also consistent with prior research, which identified that highly efficacious leaders

are more likely to promote self-efficacy in others (Chao et al., 2016; Mishal, 2016; Truelove et al., 2019). These results also reinforce Bandura's social efficacy theory (Bandura, 1993), emphasizing the combination of vicarious learning and verbal persuasion to overcome self-doubt and focus on goal achievement.

Limitations

The major limitation of the present study is the relatively small number of participants included for statistical analysis. A relatively small number of participants reduces power; thus, statistical outcomes are susceptible to Type II error.

Conclusion

In conclusion, preservice teachers' efficacy to conduct assessments in an inclusive environment requires greater attention. Two reoccurring sentiments continue to resurface; implementation of a standardized quality professional development program for preservice teachers tailored toward more practical in-class experiences; and building relationships within the school communities. Considering these implications, Bandura's Social Cognitive Theory framework does not explain the interactions between factors and further studies may benefit from the understanding of such concepts. Thus, future research must reconsider this study's present scope and scale, as it should expand beyond a single school to better represent these factors affecting pre-service teachers' ability to conduct assessments in an inclusive environment.

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