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Canadian Journal of Education
Revue canadienne de l'éducation

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Volume 44, Number 2, Summer 2021

URI: https://id.erudit.org/iderudit/1081948ar
DOI: https://doi.org/10.53967/cje-rce.v44i2.4601

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Publisher(s)

Canadian Society for the Study of Education

ISSN

0380-2361 (print)
1918-5979 (digital)

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Cite this article

Gilham, C., Neville-MacLean, S. & Atkinson, E. (2021). Effect of Online Modules on Pre-Service Teacher Mental Health Literacy and Efficacy toward Inclusive Practices. *Canadian Journal of Education / Revue canadienne de l'éducation*, *44*(2), 559–599. https://doi.org/10.53967/cje-rce.v44i2.4601

Article abstract

Mental health literacy (MHL) for pre-service teachers seeks to improve knowledge and help-seeking behaviours and decrease stigma. Increased MHL may also change perceived stress and self-efficacy for inclusive practices. This cohort study evaluates the impact of an online MHL resource for educators, embedded within a mandatory Bachelor of Education (BEd) course, on pre-service teachers' MHL, perceived stress, and teacher efficacy toward inclusive practices. Seventy-one pre-service teachers completed the course as well as pre- and post-surveys. Results demonstrated significant and substantial improvements on knowledge, help-seeking, and perceived efficacy for inclusive practices. Increased MHL may be an effective approach in meeting the requirements of inclusive education.

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Effect of Online Modules on Pre-Service Teacher Mental Health Literacy and Efficacy toward Inclusive Practices

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Abstract

Mental health literacy (MHL) for pre-service teachers seeks to improve knowledge and help-seeking behaviours and decrease stigma. Increased MHL may also change perceived stress and self-efficacy for inclusive practices. This cohort study evaluates the impact of an

Canadian Journal of Education / Revue canadienne de l'éducation 44:2 (2021)
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Keywords: mental health literacy, pre-service teachers, inclusive education, self-efficacy

Résumé

La littératie en santé mentale (LSM) pour les enseignants en formation initiale vise à améliorer les connaissances, les comportements de recherche d'aide et à réduire la stigmatisation. Une meilleure LSM peut également modifier la perception du stress et de l'autoefficacité vis-à-vis des pratiques inclusives en enseignement. Cette étude de cohorte évalue l'impact d'une ressource de LSM en ligne pour les éducateurs, qui s'intègre à un cours obligatoire du Baccalauréat en éducation (B. Éd.), sur la LSM chez les stagiaires, leur stress perçu et leur efficacité vis-à-vis des pratiques inclusives. Soixante et onze stagiaires ont suivi le cours et rempli des questionnaires avant et après l'emploi de la ressource. Les résultats ont démontré des améliorations significatives et importantes sur les connaissances, la recherche d'aide et l'autoefficacité perçue vis-à-vis des pratiques inclusives. Une amélioration de la LSM pourrait représenter une approche efficace pour répondre aux exigences de l'éducation inclusive.

Mots-clés : littératie en santé mentale, stagiaires en formation à l'enseignement, éducation inclusive, autoefficacité

Introduction

There are many definitions of mental health and illness. For the purposes of clarity, within this study, we use the following definitions of mental health and mental illness from *Mental Health: A Report of the Surgeon General* (U.S. Public Health Service, 1999):

> Mental Health is…the successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with adversity. Mental health is indispensable to personal well-being, family and interpersonal relationships, and contribution to community or society…from early childhood until late life, mental health is the springboard of thinking and communication skills, learning, emotional growth, resilience and self-esteem. (p. 4)

> Mental illness is the term that refers collectively to all diagnosable mental disorders. Mental disorders are health conditions that are characterized by alterations in thinking, mood or behavior (or some combination thereof) associated with distress and/or impaired functioning. (p. 5)

One in five Canadians will experience mental illness at some point in their life (Mental Health Commission of Canada, 2013a). Research has found that 70% of adults living with mental illness report development of symptoms before age 18 (Kessler et al., 2005). It is also estimated that approximately 14% of children and youth are living with some mental illness (Waddell et al., 2002, 2013). Given the high percentage of adults living with mental illness who developed symptoms at an early age, it is important to identify children and youth who are developing symptoms so that early intervention can occur, which could result in a better long-term prognosis. Since children and youth normally spend a large portion of their day in school interacting with teachers, teachers and schools are in a unique position to be able to identify students who develop symptoms (Kutcher et al., 2009; Rodger et al., 2014; Whitley et al., 2013).

Teachers are also well positioned to help facilitate conditions for mental health in their students. Establishing conditions for mental health and proper identification of symptoms of mental illness may be facilitated through increasing teacher mental health literacy (MHL). Increased MHL may also help teachers better understand the learning

needs of their students, thus helping them be more inclusive in their practices. Mental health literacy has been defined as understanding how to obtain and maintain good mental health, understanding mental disorders and their treatments, developing capacities to decrease stigma, and developing capacities to enhance help-seeking efficacy, or knowing when, where, and how to seek help (Kutcher et al., 2015, 2016).

Mental Health Literacy in Education

Teachers certainly think mental health needs are significant in their classrooms. A national survey of more than 3,500 teachers conducted by the Canadian Teachers Federation (CTF) in 2012 found that teachers identified attention-deficit/hyperactivity disorder (ADHD), learning disabilities (now specific learning disorders), and anxiety as pressing concerns in their schools (Froese-Germain & Riel, 2012). While some students already have a diagnosis, it is common for school systems to have lists of students waiting for psychological assessment (Njie et al., 2018). The CTF survey asked teachers to estimate the proportion of students they taught who may need mental health services but are not identified. Half of the teachers sampled estimated this was the case for 10% of students. Many students also experience mental health problems at school, and while such students are typically not in need of psychological assessment, they can require teachers' thoughtful attention and action. Teachers are responsible for the learning conditions for each of their students, and mental health problems can present challenges to student readiness for learning.

In meeting the needs of all students, teachers believe there are challenges to overcome. Of those teachers surveyed, 77% reported difficulty in identifying children with a mental illness (Froese-Germain & Riel, 2012). When asked about training, 87% of teachers agreed that a lack of adequate training in dealing with children's mental illness is a barrier to providing school- based mental health services. According to the survey, 70% of teachers had not received professional development specific to student mental health, and teachers with less than five years of experience were less likely to have received professional development regarding mental health than teachers with 25 years or more of experience.

Although the CTF survey found concerns around lack of training and ability to identify children with mental illness, the results also indicated a willingness to obtain

these skills. The majority of teachers felt it was important to receive additional training, knowledge, and skills in the following areas: recognizing and understanding mental health issues in children (97%), strategies for working with children with externalizing behaviour problems (96%), skills for engaging and working effectively with families (88%), and training in classroom management (84%). Improving teachers' MHL may address these concerns.

Indeed, increased MHL in teachers may lead to appropriate and timely supports for those students with the most intensive needs. Through such supports, there may be decreases in negative outcomes associated with undiagnosed and untreated mental disorders in young people, such as poor academic and vocational achievements, social dysfunction, and early mortality due to suicide (Gray et al., 2005; Han & Weiss, 2005; Koller & Bertel, 2006; Wei & Kutcher, 2014). The need for enhancement of teachers' MHL has been recently recognized in Canada (Froese-Germain & Riel, 2012; Kutcher et al., 2016; Mental Health Commission of Canada, 2013b; Wei et al., 2011), and several Canadian studies have demonstrated significant and sustained improvements in the MHL of teachers and students with the implementation of an easy-to-use, freely available, online MHL resource (Kutcher et al., 2015; Kutcher & Wei, 2014; McLuckie et al., 2014; Milin et al., 2016; Wei & Kutcher, 2014).

Mental Health Literacy of Pre-Service Educators

Pre-service teacher education is known to be critical for equipping teachers with the knowledge and skills to address mental health problems in the classroom (Froese-Germain & Riel, 2012; Koller & Bertel, 2006; Koller et al., 2004). However, Rodger and colleagues (2014) completed a scan of education degree programs across Canada and found only two universities that offered Bachelor of Education (BEd) courses that met the criteria for an MHL course. Recently, there has been an increased interest in pre-service teacher MHL, which has resulted in a growing knowledge base. The studies conducted have varied widely in methodology, ranging from quantitative designs, to mixed designs and descriptive studies, to qualitative investigations. Many of these studies involved vignettes, or case studies, as a primary feature of the BEd courses, an approach outlined by Jorm (2000). In the following paragraphs, we share key findings from these studies.

Atkinson (2013) used vignettes to determine if there were differences in MHL levels of first- and second-year BEd students. While no significant differences were found between first- and second-year students, the level of MHL in the sample was found to be higher than that of the Canadian population on average. Despite the advanced MHL level when compared to the general population, there were gaps in the pre-service teachers' knowledge. Specifically, there was a lack of knowledge regarding causes of mental disorders, appropriate professionals for supporting treatment of mental disorders, and harmfulness of treatments (i.e., electroconvulsive therapy).

Armstrong et al. (2015) used case studies to examine pre-service educators' knowledge of behaviours that indicate the onset of mental health problems, as well as their response and decision making with respect to these difficulties. Results indicated 80% of participants categorized the behaviours as belonging to the presentation of a particular mental disorder and identified it correctly, particularly when presented with a vignette describing major depressive disorder (MDD) or obsessive-compulsive disorder (OCD). While participants possessed some knowledge of behaviours related to mental disorders, they struggled with how to provide help, as only 18% were able to identify a follow-up action such as speaking to senior colleagues, speaking to the child's family, or referral to local mental health services (Armstrong et al., 2015).

Whitley and Gooderham (2016) also used vignettes describing children and adolescents to examine the MHL of pre-service educators, specifically, their beliefs and knowledge (teacher efficacy, academic expectations, problem severity, intervention priority, teacher strategies, and behaviour explanation) regarding inclusion of a student with mental illness. Pre-service teachers who completed the child vignettes reported similar levels of efficacy for each vignette except for one that described a child with oppositional defiance disorder (ODD), for which the efficacy was significantly lower. Similar levels of teacher efficacy were found for pre-service teachers who completed adolescent vignettes.

A qualitative study conducted by Atkins and Rodger (2016) outlined the development and effects of an MHL course for Canadian pre-service teachers. Case studies were also used in this course. The course was organized around seven learning outcomes, which included understanding mental health, the impact of mental health, the role of the teacher, MHL, self-awareness, stigma reduction, and capacity building. The expected outcomes were met, and pre-service teachers were willing to share their own experiences with mental illness with their peers. With the complex case studies provided, pre-service

teachers demonstrated empathy through their learning journals. The pre-service teachers already had a high level of confidence in supporting students with mental illness based on their passion for teaching and previous work and volunteer positions. It was also noted how the pre-service teachers had to change or "unlearn" their previous understanding of the role of a teacher and how this relates to supporting students with mental illness in their classroom. Furthermore, pre-service teachers needed to understand they were not to engage in work that is the domain of therapists and/or counsellors.

More recently, Pandori-Chuckal (2020) evaluated pre-service teachers' mental health knowledge, coping skills, and stress experience before and after taking a mandatory 10-week, online MHL BEd course. Significant gains were seen in mental health knowledge and coping skills, and substantial decreases were noted in stigmatized attitudes of pre-service teachers after taking the course. In this study, teacher candidates participated in weekly case vignettes similar to the studies described above, and they participated in guided and assessed online discussion forums.

With a shift of attention to studies where vignettes were the primary focus of BEd courses, Dods (2016) used descriptive data to examine the MHL of pre-service teachers as well as their mental health. Most of the participants had experience with someone with a mental disorder, as only 14% indicated no or minimal experience before entering their BEd program. While this experience was most often with someone in their personal life, such as a friend or family member, the pre-service teachers also reported other contexts, such as volunteering and paid work. The participants were found to have knowledge of internalizing disorders. Dods (2016) proposed this was likely because these pre-service teachers reported personal experience as the main source they relied on for this knowledge. While they were found to be knowledgeable in certain disorders, there were also areas in which they wanted more training, such as crisis situations (i.e., suicidal ideation, anger, aggression), because even though these experiences are infrequent, they involve a high amount of risk.

In Dods's (2016) work, pre-service teachers also reported they did not feel competent in supporting student mental health as they felt they lacked knowledge. Given that pre-service teachers relied heavily on personal experience for their knowledge base, the researcher suggests that increasing focus on mental health during practicum placements and knowledge specific to the classroom setting may help to build pre-service teacher self-efficacy in supporting the mental health of their students. While pre-service teachers

reported positive attitudes and beliefs toward mental health and supporting students, they were unsure of their ability to control factors in the classroom that would affect mental health, felt they had to be sure of what they were doing to support students, and believed that supporting mental health kept them from meeting the needs of other students in the class. Other barriers they identified that impeded them from acting on their beliefs about mental health to support students included time, workload, and privacy (Dods, 2016).

Carr et al. (2018) found significant improvements in pre-service teacher MHL following a one-day professional development session, and again three months after the session. The session focused on basic concepts of mental health and mental illness, as well as the classroom application of the classroom MHL resource, the Mental Health and High School Curriculum Guide (teenmentalhealth.org/curriculum). This guide is a freely available, web-based resource designed for teachers who wish to teach MHL to high school students. It has previously been shown to be effective in increasing mental health knowledge and decreasing stigma for teachers and their students (Kutcher et al., 2015; Kutcher & Wei, 2014; McLuckie et al., 2014; Milin et al., 2016).

Inclusion, Teacher Self-Efficacy, and Pre-Service Teacher MHL

All students are different in any number of ways. Teachers are challenged to meet their learning needs by creating equitable environments where all students believe they belong, have agency, and are positively engaged in their learning, as fully participating members of their learning communities. In Nova Scotia, Canada, where the current study took place, a new *Inclusive Education Policy* (Nova Scotia Department of Education and Early Childhood Development, 2019) emphasizes student achievement and, notably, well-being. Though well-being is not defined in the policy, we consider well-being as necessarily connected to mental health. The 10-page *Inclusive Education Policy* begins with this introduction:

> Inclusive education is a commitment to ensuring a high-quality, culturally and linguistically responsive and equitable education to support the well-being and achievement of every student. All students should feel that they belong in an inclusive school—accepted, safe, and valued—so they can best learn and succeed. (p. 1)

The introduction includes seven requirements to meet this commitment. One of these requirements directly relates to the need for increased pre-service teacher and teacher MHL, "teaching and supports, based on evidence, that promote students' physical, social-emotional, and behavioural well-being and achievement" (p. 1). BEd programs are responsible for preparing pre-service teachers to meet the expectations of this policy. Similar expectations are held throughout jurisdictions in Canada. To address this requirement, mandatory inclusive education courses are now common in Canadian faculties of education.

Given that we all have inter-related states of mental health and illness (Kutcher, 2017), and well-being can be interpreted as synonymous with mental health, the topic of increased pre-service teacher and teacher MHL is necessarily a topic of inclusive education. Inclusive education research on teachers' self-efficacy (i.e., the belief that one is a capable teacher) in creating inclusive learning conditions is important here (Sharma et al., 2012). Sharma et al. (2012), in their review of the literature on teacher self-efficacy, helped establish associations between teacher efficacy and successful inclusive classroom environments. They also reported that confidence in teaching is associated with positive teacher attitudes toward teaching in inclusive environments. Similarly, research on pre-service teacher self-efficacy toward inclusive practices has also demonstrated statistical and significant outcomes (Peebles & Mendaglio, 2014; Specht et al., 2016). In their study of 1,490 pre-service teachers across 11 faculties of education in Canada, Specht et al. (2016) reported:

> Faculties of Education are preparing teachers who express confidence in educating students with special education needs. Further, these teachers believe that students with special education needs have the ability to learn and they, as teachers, have the skills and ability to teach within the inclusive classroom. (pp. 11–12)

Considering the 2012 CTF survey, the research on pre-service teacher MHL, as well as pre- and in-service teacher self-efficacy, we believe there is an important intersection between pre-service teacher MHL and pre-service teacher self-efficacy. We posit that increased pre-service teacher MHL and self-efficacy toward inclusive practices are needed in BEd programs to meet the requirements of inclusive education, as outlined in the current Nova Scotia policy.

Method

Study Design

This cohort study (with pre- and post-surveys) was designed to observe a group of second-year pre-service teachers in the Faculty of Education at St. Francis Xavier University (StFX) early into and midway through the completion of a mandatory face-to-face BEd course that includes new online, interactive MHL modules for educators.

Intervention and Procedures

The purpose of the study was to examine changes in MHL, perceived stress, and teacher efficacy for inclusive practices in pre-service teachers, in elementary and secondary year streams, who took a mandatory 36-hour, nine-week, face-to-face BEd course called Inclusion Two. Inclusion Two, as described in the StFX Academic Calendar for 2020–2021, provides pre-service teachers with:

> an understanding of the learning strengths and challenges of students with exceptionalities. Emphasis will be placed on collaborative team planning, professional supports provided for students with diverse learning needs, the assessment and education referral process, and the development of individualized educational plans. (StFX, 2020, p. 73)

Inclusion Two is a second-year course in a two-year program, and it is usually comprised of three sections, or classes, of approximately 30 pre-service teachers each. Typically, the three instructors for each section plan the course together, meet regularly to de-brief the progress in each of their sessions, and adapt course content and flow as needed.

For the first time this course included the implementation of a new, freely accessible online series of seven interactive, asynchronous modules entirely based on MHL for educators known as Learn Mental Health (Teach Mental Health, 2020). The seven modules are Introduction and Background; Stigma and Mental Health; Human Brain Development; Understanding Mental Health; Mental Illness and Related Issues in Young People; What is Treatment? Seeking Help and Providing Support; and Caring for Students and Ourselves. Learn Mental Health was created through a partnership with key

personnel at teenmentalhealth.org (Dr. Stan Kutcher, Dr. Yifeng Wei, and Amy MacKay), Western University (Dr. Susan Rodger), the University of British Columbia (Dr. Wendy Carr), and St. Francis Xavier University (Dr. Chris Gilham). To our knowledge, this is the first evaluation of the impacts of all seven modules of Learn Mental Health on pre-service teachers' MHL in a BEd program anywhere.

For this study, completion of the modules for each section of Inclusion Two was estimated at 8–10 hours across the same four-week time span. Pre-service teachers started the modules during the second week of classes (mid-September) and finished three weeks prior to the end of Inclusion Two (mid-October). Students were responsible for taking the modules on their own time and had to complete assigned journaling questions on module content to help reinforce their learning and the course instructor's assessment of learning (this qualitative data will be analyzed and published). Part of one face-to-face class (week six, approximately one hour) was spent engaging in discussion on the experience of taking the online modules. Other than this one-hour discussion, Inclusion Two's weekly classes covered content described in the Academic Calendar. Inclusion Two's face-to-face course content had little to no overlap with the MHL content in five of the seven Learn Mental Health modules (Introduction and Background; Stigma and Mental Health; Human Brain Development; Understanding Mental Health; Mental Illness and Related Issues in Young People; What is Treatment?). Face-to-face class content in Inclusion Two overlapped somewhat with content in the last two modules of Learn Mental Health (Seeking Help and Providing Support; Caring for Students and Ourselves).

It was predicted that pre-service teachers' MHL and Teacher Efficacy for Inclusive Practices would be increased from the beginning to just past the midway point of the Inclusion Two course. It was also predicted that pre-service teachers' perceived stress would decrease.

Participants and Assessment Tools

Power analysis was conducted using the program G*Power (Faul et al., 2007). Given the significance level of $\alpha = .05$; power, $1 - \beta = .80$; the number of groups, $n = 1$ (one cohort of participants); the number of measurements ($n = 2$; pre, post); and the medium effect size for tests based on a past research finding for pre-service teachers, $d = .5$ (Carr et al., 2018), a sample size of $n = 34$ was needed to achieve power. All campus-based

second-year students (*n* = 93; six African descent, one Mi'kmaq, 86 White; 35 students in the elementary and 58 students in the secondary school streams) were required by the Faculty of Education at StFX in September 2019 to participate in the Learn Mental Health online course as part of their mandatory Inclusion Two course. All 93 students were eligible for the study, and this study was approved by the StFX University Research Ethics Board.

Of the 93 students, 76 completed the pre-survey (September) and 92 completed the post-survey (October). Participants completed surveys online via Office365 Forms. For the pre-survey, the pre-service teachers were informed of the study during Inclusion Two class time (early September) and were sent two reminder emails with links to the pre-survey. For the post-survey, students were reminded during Inclusion Two class time (mid-October) and were sent two reminder emails with links to the post-survey. To ensure anonymity, pre-service teachers were asked not to provide any identifying information on the survey forms. To match the pre-survey and post-survey, anonymous linking questions were asked (birth month, last two digits of telephone number, first three letters of the city of their birth). Of the initial 76 participants, 71 pre- and post-surveys (56 cis-female, 15 cis-male) were matched and complete, representing 76% of the total sample population.

Pre- and post-surveys were comprised of the following instruments: mental health knowledge (adapted from Wei et al., 2019); attitudes toward stigma (Milin et al., 2016); attitudes toward help seeking (Wei et al., 2017); Perceived Stress Scale, or PSS (Cohen et al., 1983); and Teacher Efficacy for Inclusive Practice, or TEIP scale (Loreman et al., 2007).

The questions for knowledge, stigma, and help-seeking were developed by a psychiatrist and mental health researcher and reviewed by educators and other mental health professionals, including a social worker and a psychologist, to finalize this portion of the overall survey. Mental health knowledge was measured with 40 questions that required participants to choose from one of three options: "true," "false," or "do not know." Six questions directly related to educators' roles; for example, "The presence of a responsible, supportive, and caring adult is one of the more important protective factors against the potential negative impacts of overwhelming stress for young people." Four questions directly relate to stigma, and 30 questions address brain functions, major mental disorders during childhood and adolescent years, and related treatments, including types of evidence. Each correct answer received one point, with the potential for a total score of 40. Questions that were incorrectly answered or scored as "do not know" and those with

missing answers were given a score of 0. Participants were encouraged to choose "do not know" to reduce the likelihood of guessing. The internal consistency was α = .81 at pre-survey and α = .71 at post-survey.

The stigma survey included eight questions that assessed participants' perceptions of people with mental illness, attitudes toward treatment, and intended behaviours toward people with mental illness. Participants were required to choose an option on a 7-point Likert-type scale ranging from "strongly disagree" to "strongly agree." Potential scores range between eight and 56, with higher scores indicating better attitudes/less stigma toward mental illness. These eight items demonstrated acceptable internal consistency in previous studies, α = .65 and .68 (Milin et al., 2016). The internal consistency in the current study was poor at α = .56 at pre-survey, and α = .52 at post-survey.

Participants also completed a help-seeking subsection within the pre- and post-surveys. The subsection included five questions regarding participants' intentions to help friends, family members, and peers who may be experiencing mental illness, as well as to seek help for themselves for a mental health problem. The help-seeking evaluation used the same 7-point Likert-type scale as detailed above, with a possible total score of 35. Higher scores indicated increased help-seeking intentions. The internal consistency on the pre-survey was α = .78 and α = .87 on post-survey.

The Teacher Efficacy for Inclusive Practices, or TEIP (Sharma et al., 2012) is composed of 18 items (item 18 was mistakenly omitted in this study). The TEIP evaluation used a 6-point Likert-type scale identical to the 7-point scale used above with the exception that the "don't know" option was not offered. This version of the TEIP has a possible total score of 102, with higher scores indicating that participants have a high sense of perceived teaching efficacy for teaching in inclusive classrooms. This instrument is divided into three factors, with questions assessing teachers' efficacy to use inclusive instructions, efficacy in collaboration, and efficacy in managing behaviour. This instrument was developed by inclusive education scholars and has established factor analysis (Ahsan et al., 2012; Savolainen et al., 2012; Sharma & Nuttal, 2016). The internal consistency at pre-survey was α = .88 and at post-survey was α = .91.

The Perceived Stress Scale, or PSS (Cohen et al., 1983), is a 10-item inventory requiring participants to choose an option on a 5-point Likert-type scale ranging from "never" to "very often." The inventory is a measure of the degree to which situations in one's life are appraised as stressful. The questions in the scale ask about feelings and thoughts during

the last month. PSS scores are obtained by reverse scoring items 4, 5, 7, and 8, and summing across all scale items for a total possible score of 40. Higher scores indicate higher levels of perceived stress. Factor analysis of the PSS is established (Lee, 2012). The internal consistency of the PSS at pre-survey was α = .90, and for the post-survey was α = .92.

Data Analysis

Frequencies were used to explore pre-service teachers' prior mental health learning, as well as answers on the knowledge questions pre- and post-survey. Boxplots were used to test for outliers. Paired samples *t*-tests were used to explore the impact of Learn Mental Health on MHL (comprised of three different instruments: knowledge, stigma, and help-seeking), PSS, and TEIP from the pre- and post-surveys. Statistical Package for Social Sciences 26 was used to perform all data analyses. The significance level of α = .05 was used when comparing the *p* values for each test.

Results

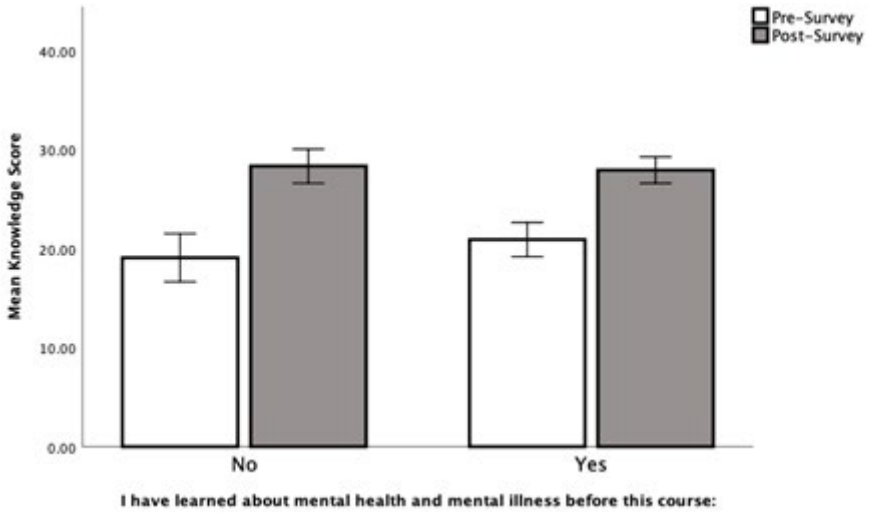
Descriptive Statistics

All pre- and post-survey total scores for each subsection of the survey were tested for normality. With knowledge scores, two moderate outliers were detected. Inspection of their values did not reveal them to be extreme, and they were kept in the analysis. In help-seeking scores, two moderate outliers were detected. Inspection of their values did not reveal them to be extreme, and they were kept in the analysis. However, two extreme outliers were detected. Via winsorizing, these extreme outliers were changed to the next closest score (Field, 2018, p. 198). Outliers were not deleted because these scores came from within the intended sample population of pre-service teachers (Field, 2018, p. 197). Field (2018) recommends removing outlier scores only when they are not from the intended population sample. In TEIP scores, three moderate outliers were detected. Inspection of their values did not reveal them to be extreme, and they were kept in the analysis. One extreme outlier was detected. Via winsorizing, this extreme outlier was changed to the next closest score. There were no outliers in the attitudes and PSS data.

In the pre-survey, 47 (66%) participants answered "yes" to "I have learned about mental health and illness before this course." Of these 47 participants, 31 (43.7%) learned in an undergraduate course, nine (12.7%) learned in a training program such as ASIST or Mental Health First Aid, two (2.8%) learned in a post graduate course, and five (7%) selected Other. As may be expected, mean scores for pre-service teachers with previous learning about mental health and mental illness is higher at pre-survey for knowledge, attitudes toward stigma, help-seeking, and TEIP. At post-survey, mean scores for both those with and without prior learning are similar, with the exceptions of help-seeking being higher and perceived stress being lower in the group with prior learning.

Figure 1

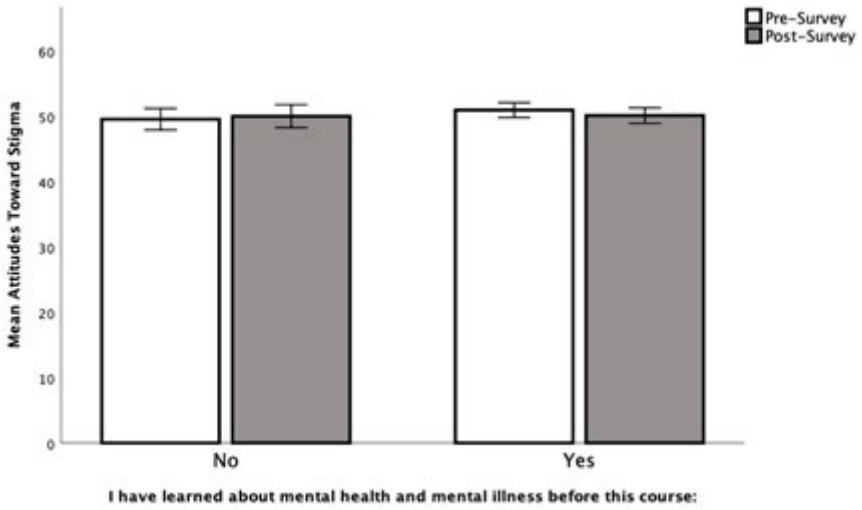
Change in Mean Knowledge Scores Based on Previous Learning



Note: Error bars represent 95% CI.

Figure 2

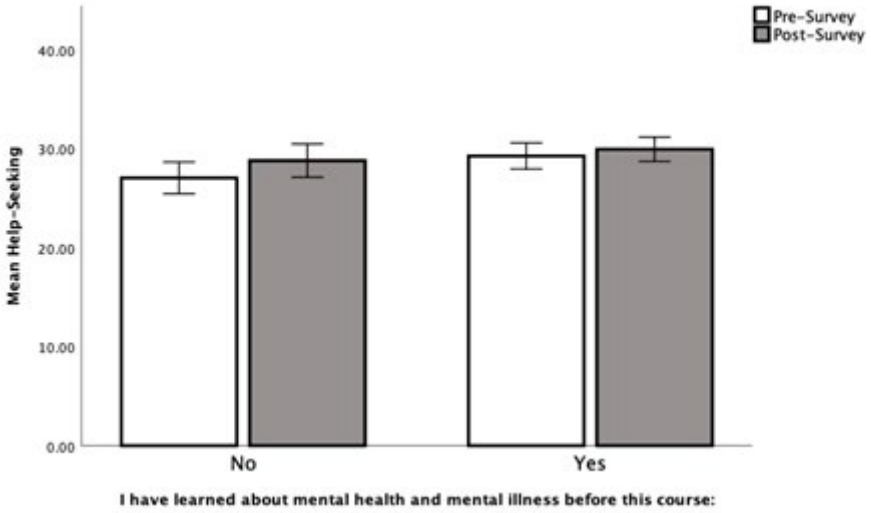
Change in Mean Attitudes Toward Stigma Scores Based on Previous Learning



Note: Error bars represent 95% CI.

Figure 3

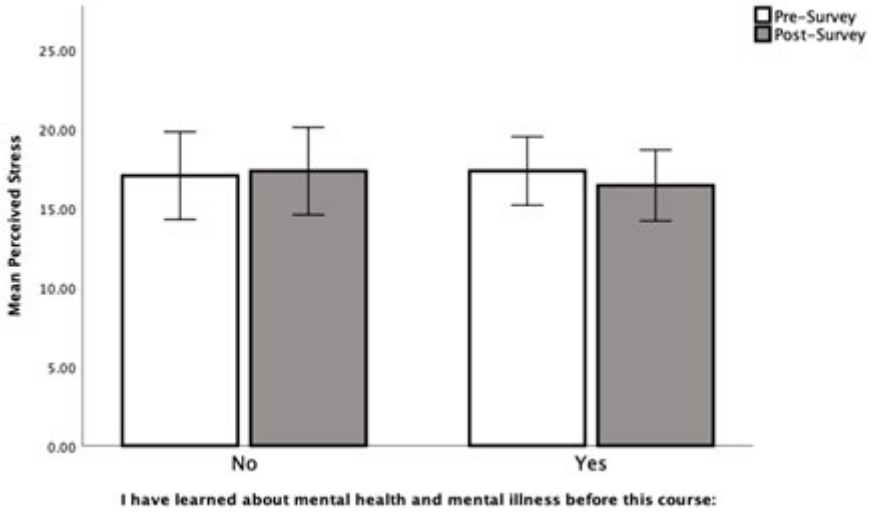
Change in Mean Help-Seeking Scores Based on Previous Learning



Note: Error bars represent 95% CI.

Figure 4

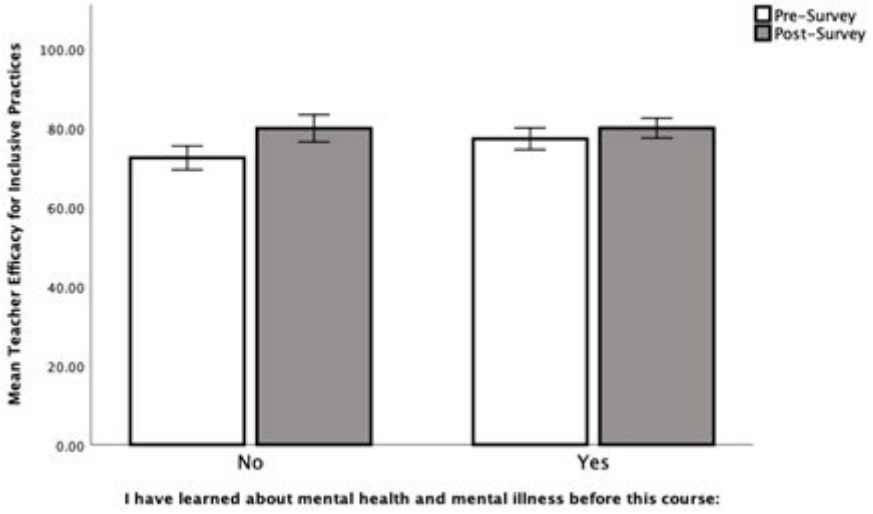
Change in Mean Perceived Stress Scores Based on Previous Learning



Note: Error bars represent 95% CI.

Figure 5

Change in Teacher Efficacy for Inclusive Practices Based on Previous Learning

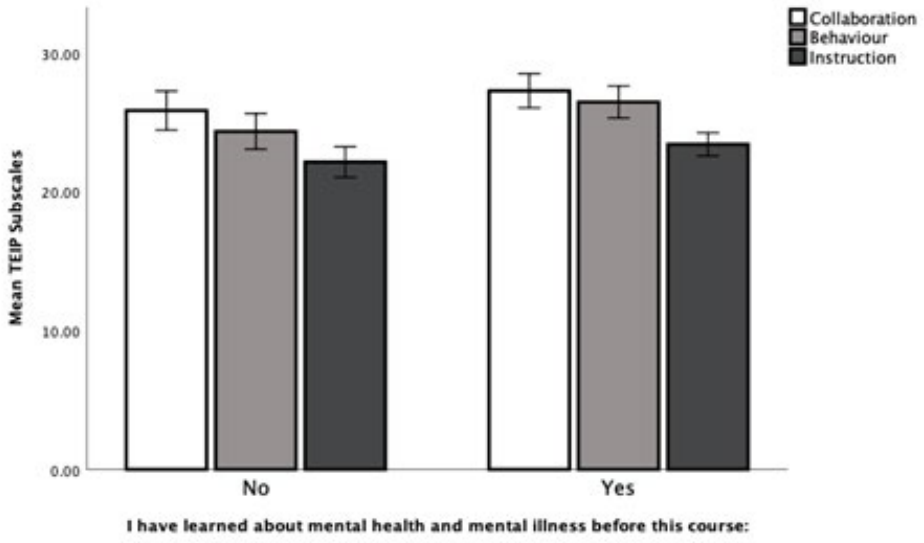


Note: Error bars represent 95% CI.

Those with previous learning also had higher mean scores for the three TEIP factors at pre-survey. At post-survey both groups had similar mean scores.

Figure 6

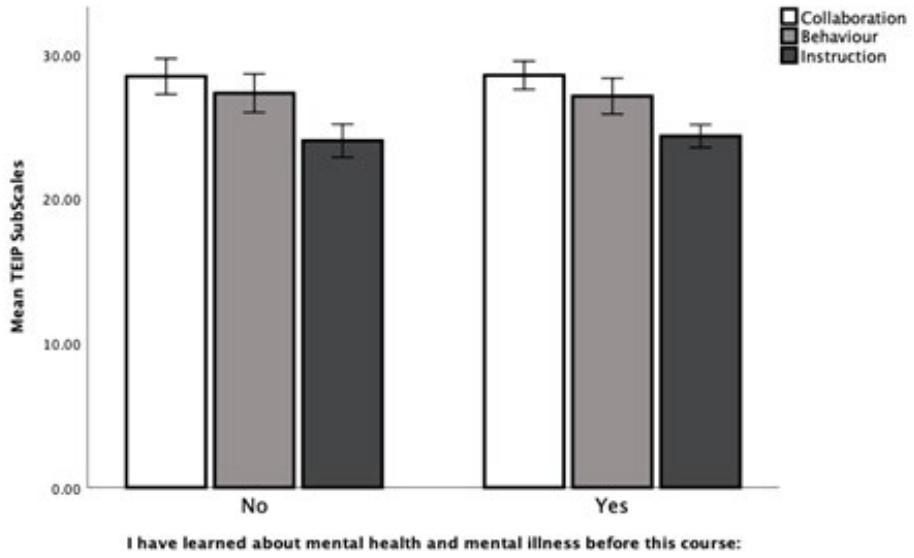
Teacher Efficacy for Inclusive Practices Subscales Based on Previous Learning at Pre-Survey



Note: Error bars represent 95% CI.

Figure 7

Teacher Efficacy for Inclusive Practices Subscales Based on Previous Learning at Post-Survey



Note: Error bars represent 95% CI.

Inferential Statistics

Paired samples *t*-tests were used to analyze the data for mental health knowledge, attitudes towards stigma, help-seeking, perceived stress, and teacher efficacy for inclusive practices.

There was a large increase in mental health knowledge from pre-survey (M = 20.30, MSE = 0.69) to post-survey (M = 28.07, MSE = 0.51). This positive difference, 7.77, 95% CI [6.55, 8.99], was significant, $t(70) = 12.74$, p = .000 and the effect size was large, $d = 1.51$.

There was a small decrease in stigma scores from pre-survey (M = 50.46, MSE = 0.46) to post-survey (M = 50.07, MSE = 0.48). This negative difference, -0.39, 95% CI [-1.37, 0.59], was not significant, $t(70) = -.80$, $p = .425$.

There was a small increase in help-seeking from pre-survey (*M* = 28.51, *MSE* = 0.51) to post-survey (*M* = 29.55, *MSE* = 0.48). This positive difference, 1.04, 95% CI [0.12, 1.97], was significant, $t(70) = 2.24$, p = .028; the effect size was small, $d = 0.27$.

There was a small decrease in perceived stress from pre-survey (*M* = 17.24, *MSE* = 0.83) to post-survey (*M* = 16.73, *MSE* = 0.85). This negative difference, -0.51, 95% CI [-1.51, 0.50], was not significant, $t(70) = -1.01$, $p = .318$.

There was a large increase in teacher efficacy for inclusive practices from pre-survey (*M* = 75.61, *MSE* = 1.05) to post-survey (*M* = 79.92, *MSE* = .99). This positive difference, 4.31, 95% CI [6.43, 2.35], was significant, $t(70) = 4.34$, p = .000 and the effect size was medium, $d = 0.52$.

Frequency data for each of the 40 knowledge questions were also analyzed to determine knowledge differences at pre- and post-survey. For 29 questions on the knowledge subsection of the pre- and post-surveys, most pre-service teachers demonstrated strong knowledge gains. Those questions were numbered 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 24, 25, 27, 30, 33, 34, 37, 38, 39, and 40. See the Appendix for the details of those questions. In Table 1, 10 questions from the knowledge subsection of the pre- and post-surveys demonstrated that many pre-service teachers continued to struggle to answer these questions correctly after the Learn Mental Health course.

Table 1

Knowledge Questions with which Many Pre-service Teachers Struggled, Including Answer Frequencies (T = True, F = False, DK = Don't Know)

Question	Correct Answer	Pre-survey *n*			Post-survey *n*		
		T	F	DK	T	F	DK
6. Mental illnesses are mostly unrelated to other health conditions, such as diabetes or heart disease.	False	14	34	23	31	30	10
17. The pre-frontal cortex develops before the limbic system matures.	False	13	8	50	28	12	31
23. When someone has an anxiety disorder, his or her brain is responding to legitimate threats in the environment.	False	11	35	25	29	40	2

Question	Correct Answer	Pre-survey *n*			Post-survey *n*		
		T	F	DK	T	F	DK
26. A diagnosis of oppositional defiant disorder (ODD) or conduct disorder (CD) helps us to understand *why* someone acts a certain way.	False	33	8	30	50	12	9
28. Asking a student that you know well if he or she is thinking about suicide is unlikely to trigger a suicide attempt.	True	18	23	30	31	23	17
29. The parasympathetic nervous system is involved in ramping up the body's stress response.	False	21	13	37	37	19	15
31. It is very important for schools to teach students about the harmful effects of daily stress so that they can grow up to become more resilient people.	False	56	6	9	44	26	1
32. Faulty logic is one example of a behavioural and emotional response to a stressor.	False	33	2	36	41	12	18
35. A family doctor is not trained in the diagnosis and treatment of mental illnesses and should therefore refer young people who have a mental illness to a psychiatrist or psychologist for treatment.	False	39	13	19	51	14	6
36. Case studies and case reports provide stronger research evidence than randomized controlled trials.	False	23	8	40	22	27	22

Discussion

Interpretation

The results of the current study support the implementation of all seven online Learn Mental Health modules into BEd courses in order to improve pre-service teacher MHL and TEIP. Specifically, a significant and substantial effect on mental health literacy knowledge was achieved, and a significant and small effect was achieved with help-seeking behaviours. There was a significant and moderate effect on TEIP scores. Results on attitudes toward stigma at post-course survey were non-significant. Pre- and post-survey

scores on attitudes toward stigma were high, indicating a ceiling effect (i.e., a bunching of scores at the upper level of the scoring limit), which may be the result of increased mental health awareness through national movements such as the Bell's Let's Talk and the ongoing work of Jack.org. There were non-significant changes in perceived stress, which may be the result of the post-course survey taking place just past the mid-point of the university term, when most pre-service teachers were taking between three and five courses. At this time in the term, many final and significant course assignments were soon to be due. Given this, students may have been experiencing increased stress.

The results of this study are similar to the results of previous studies that have evaluated MHL and TEIP with pre- and in-service teachers, though such studies have not evaluated both MHL and TEIP in the same study. Nor have previous studies used all seven modules of Learn Mental Health as part of BEd course content. To our knowledge, this is the first time this has been done and we believe this study provides important information for educational leaders who are considering the inclusion of MHL in BEd programs as it demonstrates the effectiveness of the online Learn Mental Health modules.

This study also showed that pre-service teachers who enter BEd programs with previous mental health learning score higher on MHL and TEIP than those who do not have previous learning, at pre-survey. Further statistical analysis was not in the original data analysis plan for this study; therefore, future studies should plan for this inquiry in order to help determine significance and effect size of possible differences in pre-survey mean scores between those with previous mental health and mental illness learning and those with no such previous learning. Similarly, the higher post-course survey mean score on help-seeking and the lower post-course survey mean score on perceived stress for those with previous learning also warrants future analysis. Those who review applications for BEd programs and/or those who teach inclusion or MHL may benefit from this information. BEd students with previous learning may require accelerated or differentiated instruction, and/or perhaps play an important role in leading their peers who do not have prior learning.

Limitations

There are serious limitations that should serve as cautions when interpreting the results of this study. Participants were not randomly selected. Because of the time constraints of a

short nine-week on-campus term followed by intense in-school practicum, and our previous experience with two similar, unpublished evaluations (very small sample sizes due to poor uptake on follow-up surveys), we decided not to collect follow-up data. Future studies should endeavour to collect important follow-up data so that stronger data analysis can take place, which may result in showing possible long-term sustained improvement on pre-service teacher MHL from the Learn Mental Health modules. Similar results may be attained for the TEIP scores.

A control group of BEd students was not used to compare scores between those who did and did not take the Learn Mental Health modules. Future studies should seek a control group to explore the possible case for Learn Mental Health in BEd programs. Our predictions for increased MHL and TEIP scores do not differentiate for the possible impact the Learn Mental Health modules has on those scores versus face-to-face content in Inclusion Two. Those doing future studies should consider a control group of students taking Inclusion Two without Learn Mental Health, and an intervention group of students taking Inclusion Two and Learn Mental Health. An additional control group of students not taking an Inclusion Two-type course and Learn Mental Health would help further differentiate, and perhaps strengthen, results similar to this study.

Additionally, post-intervention direct observations of pre-service teachers teaching during practicum did not take place. Observations would have helped confirm or validate the TEIP scores. Given the limitations of self-report measures such as response bias, honesty/image management, and understanding of concepts in questions, observing pre-service teachers actually teaching and interacting with their students would be important in future studies.

Generalization of the results of this study should be made with caution. It is likely that, given the rural nature of the StFX BEd program, the pre-service teachers in this campus-based study are not representative of the ethnic diversity of pre-service teachers in larger, urban-based programs. The StFX BEd program has long offered off-campus cohorts, particularly within Mi'kmaq communities. Recently, the program has expanded off-campus programming to include mature students currently working full-time who wish to transition from their current employment to the teaching profession. This current study did not include pre-service teachers from any of the current off-campus BEd cohorts that StFX's Faculty of Education facilitates. Inclusion of these pre-service teachers represents an opportunity for future study.

Given that Learn Mental Health was part of an on-campus mandatory BEd course in this study, and uptake of pre-service teacher Learn Mental Health content was assessed via journal responses to comprehension questions, one would expect there to be increases in MHL knowledge scores. While this may be interpreted as an obvious outcome, we see it as evidence that the Learn Mental Health modules combined with an assignment worth marks contributing to pre-service teachers' grades in a BEd course, is an effective way to increase pre-service teacher MHL. At the same time, the TEIP results could support mandatory BEd courses on inclusion, though it is important to note again that post-course surveys took place just past the halfway point of the Inclusion Two course. Given this, it is also possible to interpret the TEIP results as evidence supporting the effectiveness of Learn Mental Health on pre-service teachers' perceived efficacy for inclusive practices. Again, our study is unique in that both MHL knowledge and TEIP scores increased significantly and substantially with Learn Mental Health as part of the course. Given the 2012 CTF survey results, our study may be seen as an effective response to the stated lack of preparation, knowledge, and confidence in working with students who present with mental health problems and illnesses in schools.

Implications/Next Steps

An important next step is a close review of the Learn Mental Health course to see if there is adequate content related to the 10 questions that many pre-service teachers struggled to answer correctly. Following this, a longitudinal study to follow these pre-service teachers into their first years as in-service teachers is needed. Observing these in-service teachers directly in classrooms, continued use of these and other relevant survey instruments, and semi-structured interviews would provide extremely important information to both faculties of education and school employers. Observations, possibly by third parties, would help determine if teacher perceptions or beliefs about their efficacy match their classroom practices, and how their practices may or may not be informed by their increased MHL. There is also the very real possibility that the demands of particular classrooms exceed the knowledge and abilities of any one teacher or team of educators working collectively. In this possible future study or others like it, there is an important need to focus on in-service teacher mental health, particularly their ability to cope with the intense demands required of them as new teachers.

Running parallel to such a study, with similar outcome measures, would be a study of all in-service teachers who take the Learn Mental Health modules. While the initial planning and creation of Learn Mental Health was designed for pre-service teachers in faculties of education, once it became public and freely accessible online, the creators of this resource (which includes the primary investigator and author of this study) quickly learned that many in-service teachers were taking the course. Online feedback provided by those in-service teachers helped us to see that it is a course for all educators. Asking support, professional, and administrative staff to engage in Learn Mental Health seems worthwhile, and future studies should include these important members of the group we describe collectively as educators.

Conclusion

Mental health problems and symptoms of illness in classrooms continue to be present while specialized individual supports may not always be readily or consistently available. A course in MHL is especially relevant to the training of pre-service educators. Given that educators should receive quality, evidence-based information about supporting and promoting student mental health proactively as part of their teacher education (Koller & Bertel, 2006; Whitley et al., 2013), it is the hope of the current authors that this study provides additional support for Learn Mental Health modules in BEd programs that do not currently cover this in their curriculum, and an expansion of this (i.e., mandatory requirement) in those programs where it is currently offered.

This study is especially timely given new Inclusive Education policy in Nova Scotia. With the requirement for "teaching and supports, based on evidence, that promote students' physical, social-emotional, and behavioural well-being and achievement" (Nova Scotia Department of Education and Early Childhood Development, 2019, p. 1) and the responsibility of BEd programs to prepare pre-service teachers to meet this requirement, we suggest our study provides significant and substantial evidence of the effectiveness of Learn Mental Health in a BEd course.

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Appendix
Teach Mental Health Survey Questionnaire

This survey is designed to assess the impact of Teach Mental Health Resource among pre-service and in-service teachers.

Please check or highlight one answer to each of the following statements.

1. I identify as: ☐ Male ☐ Female ☐ Other:_____

2. I am an/a: ☐ Undergraduate student
☐ Graduate student
☐ In-service teacher
Years of practice: _____
☐ Other: _____

3. I have learned about mental health and mental illness before this course:

☐ Yes

If YES, choose one of these:
☐ Training program (such as ASIST or Mental Health First Aid)
☐ Undergraduate course
☐ Post graduate course
☐ Other (describe): _____

☐ No

To help us match your anonymous responses between surveys completed at the beginning and end of the course, please answer the following questions. These answers allow you to remain anonymous and still let us determine if your scores on the survey change before and after participating in this professional development opportunity.

a) The **month** you were born _____, b) The **first two letters** of your first name _____, c) The **last two digits/numbers** of your telephone _____, d) The **first three letters** of the city of your birth _____.

Section A

For each of the following statements, select **True, False, or I don't know** by marking a **X** in the appropriate box.

Statements	True	False	I don't know
1. Mental health literacy is focused on reading about current treatments of specific mental illnesses.			
2. Mental illnesses are usually caused by the stresses of everyday life.			
3. Mental health problems will be experienced by almost everyone during the course of their life.			
4. Mental distress is rare.			
5. A person can have good mental health and a mental illness at the same time.			
6. Mental illnesses are mostly unrelated to other health conditions, such as diabetes or heart disease.			
7. People with mental illness rarely, if ever, get better.			
8. Self-stigma is often the result of personal weakness of people with mental illness.			
9. It is important to apply evidence-based approaches to stigma reduction programs and use those for which good evidence of positive impact exists.			
10. Stigma about mental illness prevents people from seeking help for a mental illness, causing negative impacts on the type of health care they receive.			
11. Treatments for mental illnesses are not as effective as treatments for other illnesses, such as diabetes and arthritis.			
12. Students with mental illness usually are not able to achieve academic success.			
13. Pruning, the destruction of parts of the brain, is a normal part of brain development during adolescence.			
14. Epigenetics is the study of how different brain parts malfunction.			
15. Mental health is brain health.			

Statements	True	False	I don't know
16. Most behaviors that a person exhibits are not based on how their brain functions but instead reflect how they have been parented.			
17. The pre-frontal cortex develops before the limbic system matures.			
18. Brain development occurs over time, as a result of a complex interaction between the genes in the brain and the environment the brain experiences.			
19. According to the Yerkes-Dodson law, there is an optimal level of anxiety that improves our performance.			
20. Mental distress, mental health problems, and mental illness are always caused by a negative event.			
21. There is no valid scientific evidence supporting the claim that Autism Spectrum Disorder (ASD) is caused by vaccines or diet.			
22. Eating a balanced diet and getting regular exercise are sufficient treatments for mental illness.			
23. When someone has an Anxiety Disorder, his or her brain is responding to legitimate threats in the environment.			
24. Someone with Panic Disorder can anticipate when a panic attack is likely to occur.			
25. Sometimes separation anxiety is developmentally appropriate.			
26. A diagnosis of Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD) helps us to understand why someone acts a certain way.			
27. Students who self-harm are usually suicidal.			
28. Asking a student that you know well if he or she is thinking about suicide is unlikely to trigger a suicide attempt.			
29. The parasympathetic nervous system is involved in ramping up the body's stress response.			

Statements	True	False	I don't know
30. The presence of a responsible, supportive, and caring adult is one of the more important protective factors against the potential negative impacts of overwhelming stress for young people.			
31. It is very important for schools to teach students about the harmful effects of daily stress so that they can grow up to become more resilient people.			
32. Faulty logic is one example of a behavioural and emotional response to a stressor.			
33. Most students will experience toxic stress daily.			
34. A mentally healthy classroom is one in which the teacher works to try and make sure that the environment is stress-free.			
35. A family doctor is not trained in the diagnosis and treatment of mental illnesses and should therefore refer young people who have a mental illness to a psychiatrist or psychologist for treatment.			
36. Case Studies and Case Reports provide stronger research evidence than Randomized Controlled Trials.			
37. When examining research about a treatment, statistical significance is more important than clinical significance.			
38. A treatment provider's experience is the gold-standard in determining what treatment your student should receive.			
39. ALL of the following are important roles that a teacher can take regarding mental health for students: identification of students at risk for a mental disorder; providing a diagnosis for parental consideration; providing information on academic achievement to the health care team.			
40. The overall purpose of treatment for mental illness is to cure the illness.			

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Section B

For each of the following statements please mark an **X** in the box that you feel best describes your attitude about the statement. Please select only one answer for each statement.

	Strongly Disagree	**Disagree**	**Disagree a little**	**Not sure**	**Agree a little**	**Agree**	**Strongly Agree**
1. It is easy to tell when someone has a mental illness because they usually act in a strange or bizarre way.							
2. A mentally ill person should not be able to vote in an election.							
3. Most people who have a mental illness are dangerous and violent.							
4. Most people with a mental illness can have a good job and a successful and fulfilling life.							
5. I would be willing to have a person with a mental illness at my school.							
6. I would be happy to have a person with a mental illness become a close friend.							
7. Mental illness is usually a consequence of bad parenting or poor family environment.							
8. People who are mentally ill do not get better.							

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Section C

For each of the following statements please mark an **X** in the box that you feel best describes your attitude about the statement. Please select only one answer for each statement.

Talking about mental health - Please select only one answer for each question.
At any point during the past 3 months, did you ever speak to a health professional about any mental health problem or concern? 1 ☐ I did not have any mental health problem or concern. 2 ☐ I am waiting to see a health professional about a mental health problem or concern. 3 ☐ I spoke to a health professional about a mental health problem or concern. 4 ☐ I opted not to speak to a health professional although I am concerned about my mental health.

In this question, we would like to know who, if anyone, you talked to about or asked for help with a mental health problem you were having (in the past 3 months). Complete only those questions that are relevant to you.			
	Asked for help	Wanted to but did not ask for help	Did not feel the need to ask for help
My mother or father (or equivalent)			
A sibling (brother, sister, step sibling, etc.)			
Another relative (or equivalent)			
A close friend			
A work colleague			
My minister, priest, rabbi, imam (or some other spiritual or religious leader)			
My regular family health professional (e.g., a physician or a nurse)			
A mental health professional (like a counselor, psychologist, psychiatrist, or mental health nurse)			
A person not identified above			

In general, how strongly do you agree or disagree with each of the following statements?							
	Strongly Disagree	Disagree a lot	Disagree	Not sure	Agree	Agree a lot	Strongly Agree
1. In general, asking for help for a mental health problem or disorder is helpful.							
2. I am comfortable asking for help for a mental health problem or disorder.							
3. If I think I may have a mental health problem or mental disorder (such as depression, social anxiety disorder, etc.), I will ask for help.							
4. If I thought one of my friends or peers needed help with a mental health problem or disorder (such as depression), I would encourage them to seek help.							
5. If I thought one of my family members needed help with a mental health problem or disorder (such as depression), I would encourage them to seek help.							

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Section D

For each of the following statements, please mark an **X** in the box that you feel best describes your response toward the statement. Please select only one answer for each statement.

Question	Never	Almost never	Sometimes	Fairly often	Very often
1. In the last month, how often have you been upset because of something that happened unexpectedly?					
2. In the last month, how often have you felt that you were unable to control the important things in your life?					
3. In the last month, how often have you felt nervous and "stressed"?					
4. In the last month, how often have you felt confident about your ability to handle your personal problems?					
5. In the last month, how often have you felt that things were going your way?					
6. In the last month, how often have you found that you could not cope with all the things that you had to do?					
7. In the last month, how often have you been able to control irritations in your life?					
8. In the last month, how often have you felt that you were on top of things?					
9. In the last month, how often have you been angered because of things that were outside of your control?					
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

©Cohen, 1994 Perceived Stress .

Section E

For each of the following statements, please mark an **X** in the box that you feel best describes your response toward the statement. Please select only one answer for each statement.

Strong Disagree (SD)=1; Disagree(D)=2; Disagree somewhat (DS)=3; Agree somewhat (AS)=4; Agree(A)=5; Strong agree (SA)=6

Questions	SD	D	DS	AS	A	SA
1. I can make my expectations clear about student behaviour.						
2. I am able to calm a student who is disruptive and noisy.						
3. I can make parents comfortable coming to school.						
4. I can assist families in helping their children do well in school.						
5. I can accurately gauge student comprehension of what I have taught.						
6. I can provide appropriate challenges for very capable students.						
7. I am confident in my ability to prevent disruptive behaviour before it occurs in the classroom.						
8. I can control disruptive behaviour in the classroom.						
9. I am confident in my ability to get parents involved in school activities of their children with disabilities.						
10. I am confident in designing learning tasks so that the individual needs of students with disabilities are accommodated.						
11. I am able to get children to follow classroom rules.						
12. I can collaborate with other professionals (e.g., itinerant teachers or speech pathologists) in designing educational plans for students with disabilities.						

Questions	SD	D	DS	AS	A	SA
13. I am able to work jointly with other professionals and staff (e.g., aids, other teachers) to teach students with disabilities in the classroom.						
14. I am confident in my ability to get students to work together in pairs or in small groups.						
15. I can use a variety of assessment strategies (e.g., portfolio assessments, modified tests, performance- based assessment, etc.).						
16. I am confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.						
17. I am confident when dealing with students who are physically aggressive.						
18. I am able to provide an alternative explanation or example when students are confused.						

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