Partnering to Support a Mindfulness-Informed Social and Emotional Learning Program in Elementary Schools: Strategies Aligned with the Quality Implementation Framework

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ABSTRACT

In this case study we use the Quality Implementation Framework (QIF) to identify implementation strategies within the context of a six-year university–school board partnership that implemented and evaluated the MindUP program in Southwestern Ontario. Attention to all four phases in the QIF were found to contribute to the success of the initiative. Being implementation-sensitive required significant pre-implementation work at the outset, ongoing attunement to changing contexts and challenges, and dissemination to target stakeholders. The community-based participatory research principles, the importance of alignment, rapid knowledge mobilization within and beyond partners, and responding to challenges and opportunities were identified as key components for success.

Keywords: implementation science, schools, social emotional learning, community-university partnerships

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RÉSUMÉ

Avec cette étude, nous utilisons le *Quality Implementation Framework* (QFI) pour identifier les stratégies d'implantation utilisées dans le cadre d'un partenariat université-commission scolaire de 6 ans visant à mettre en œuvre et évaluer le *MindUP program* dans le sud-ouest de l'Ontario. Il est apparu qu'une attention particulière portant sur les quatre phases du QIF a contribué au succès de cette initiative. L'approche sensible requiert un travail significatif de préimplantation dès le début, une harmonisation en cours de route pour adapter les contextes et les défis ainsi que la diffusion de l'information pour rejoindre les intervenants. Les principes de recherches fondés sur la participation de la communauté, l'importance de l'harmonisation, la mobilisation rapide des connaissances auprès et au-delà des partenaires de même que la réponse aux défis et opportunités ont été des éléments déterminants quant à la réussite de cette initiative.

Mots clés : science de l'implantation, écoles, apprentissage socioémotionnel, partenariats communauté-université

Schools are a significant avenue for universal interventions that promote mental health and well-being through fostering positive social, emotional, and behavioural skills for all students (Adelman & Taylor, 2006; NCSMH, 2020; Rawana et al., 2018). In recent years, mindfulness in schools has proliferated as an approach for helping students become calmer and more focused in the classroom and reducing experiences of stress (Semple et al., 2016). Mindfulness-based social and emotional learning (SEL) programs utilize mindfulness practices to build on SEL skills such as self-awareness, self-management, and perspective taking. Mindfulness-based SEL programs in schools have shown evidence of positive effects, including improving child behavioural problems (Crooks et al., 2020), promoting social emotional competence and well-being (Felver et al., 2016; Schonert-Reichl & Lawlor, 2010), improving cognitive performance (Zenner et al., 2014), and reducing educator burnout and stress (Kim et al., 2020).

Positive effects of evidence-based mindfulness SEL programs can promote mental wellness in schools if implemented with high quality (Domitrovich & Greenberg, 2009; Durlak & DuPre, 2008; Durlak et al., 2011). Moving evidence-based programs from science-to-practice in schools continues to be a challenge for researchers, school policymakers, and facilitators; this challenge can be addressed with attention to the implementation process (Domitrovich et al., 2008; Domitrovich & Greenberg, 2009; Meyers et al., 2012). There are many factors that influence implementation within the school system: elements of the intervention itself, the support system put in place, school culture, changes in social context, larger macro-level influences (e.g., policies and financing), and university/community partnerships (Domitrovich et al., 2008). A case study format allows these factors to be examined in depth in the natural setting with insights into program implementation (Fàbregues & Fetters, 2019).

The MindUP Program

MindUP, by the Goldie Hawn Foundation, is a classroom-based program that teaches SEL skills to children through cognitive neuroscience, positive psychology, and mindful awareness (see https://mindup.org; Maloney et al., 2016). The 15 MindUP lessons incorporate attentional and self-regulatory SEL strategies for children and are taught once a week for 40–50 minutes (Maloney et al., 2016). The effectiveness of MindUP

has been found in studies with evidence of significant improvement in self-regulation, perspective-taking, emotional control, optimism, cognitive control, and stress physiology (Schonert-Reichl & Lawlor, 2010; Schonert-Reichl et al., 2015). In a quasi-experimental study by Schonert-Reichel and Lawlor, children (ages 9–12) who received the MindUP program showed greater decreases in self-reported symptoms of depression and peer-rated aggression than their peers who received the regular social responsibility curriculum (2010). Child-related findings from our MindUP implementation with young children demonstrated that students who received the intervention improved in adaptive skills and demonstrated fewer behavioural problems (Crooks et al., 2020). Based on the extant research evidence, MindUP has been identified as an effective practice by the Collaborative for Academic Social and Emotional Learning (CASEL, 2021).

There are limited studies on the implementation of MindUP beyond mentions of implementation in outcomes studies; however, one feasibility and effectiveness trial in Uganda details implementation challenges and strategies (Matsuba et al., 2020). The implementation teachers received an enhanced MindUP training and three days per week assistance by trained, local researchers, and despite facing implementation challenges, educators delivered 98% of the 15 lessons (Matsuba et al., 2020).

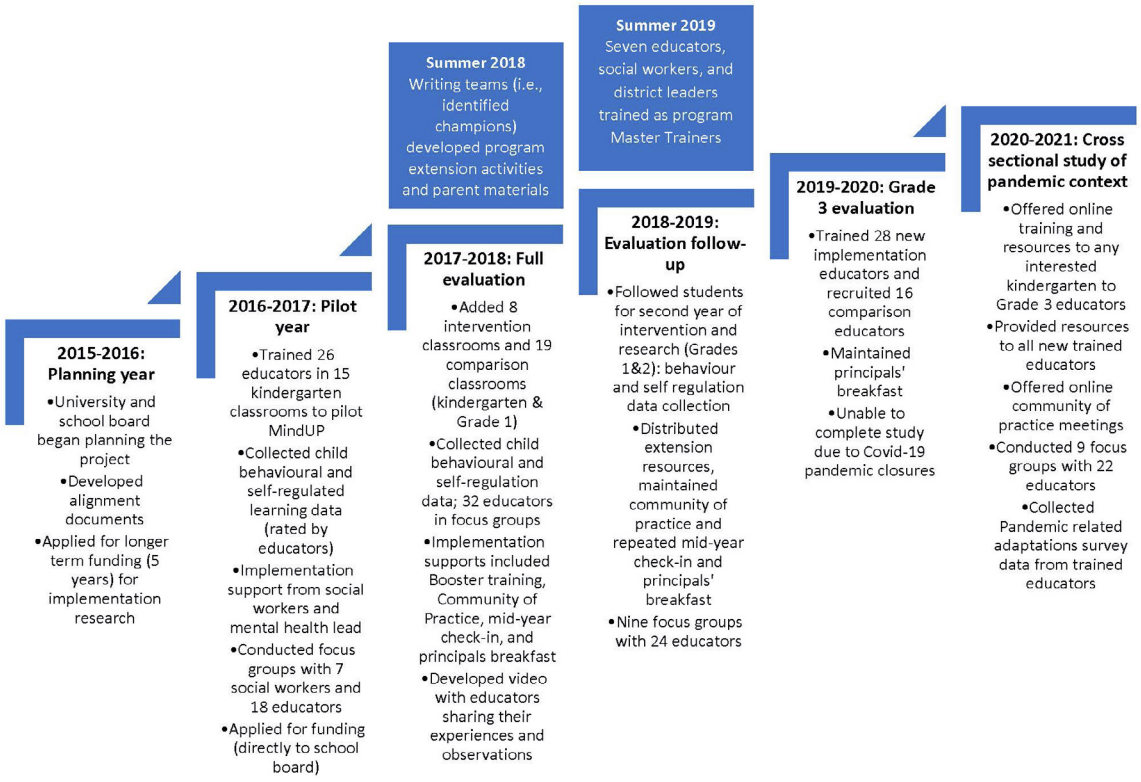
The MindUP for Young Children Project

In 2015, the Director of the Centre for School Mental Health at Western University contacted the school board administrator and mental health lead at a medium-sized Catholic school board in southwestern Ontario to discuss a possible partnership opportunity. The mental health lead was looking for a CASEL-accredited program to promote within the school board (CASEL, 2021). Their mutual interests gave rise to a university–school board partnership for the supported implementation and evaluation of MindUP with young children. This planning phase resulted in the co-application for funding, obtained in 2016 (Figure 1). A steering committee (the authors of this paper) was formed including the director/research principal investigator, school board administrator/mental health lead, co-principal investigator specializing in community partnerships, school board administrator/research and evaluation officer, and project manager. Steering committee members are well-versed in implementation science and co-created a partnership agreement to guide decision-making protocols, ownership of resources developed, authorship rights, and other partnering interests.

In this project, the SEL program MindUP was supported and implemented in the framework of trauma-informed care (TIC). The TIC framework was utilized to increase educators' knowledge of trauma and violence, while the mindfulness-informed SEL program provided strategies for trauma-related behaviours in children. Combined, the SEL program in a TIC framework was our approach for preventing and reducing negative impacts associated with trauma, and increasing resilience, mental health, and well-being for children exposed to trauma and violence. Our first objective was to build capacity and readiness to implement the program in kindergarten classrooms of school board-identified structurally marginalized schools. Kindergarten, a younger age group than previous MindUP evaluations, is taught in Ontario by educator teams of teacher-early childhood educator (ECE) pairs. We engaged the educator teams to build capacity and readiness through partnership building, informing and engaging teams on the program's concepts, and recruiting strategic stakeholders. We piloted the program in 15 schools to evaluate the fit, acceptability, and feasibility of MindUP and the TIC training in the school board (Figure 1). After the pilot, our other objectives were to implement multi-year MindUP programming with children as they moved from Grades 1 to 3, continuing

Figure 1

Implementation Roll Out from 2015–2021



with the MindUP program for the children who first received it as part of the pilot in their kindergarten years (Figure 1). We wanted to expand the supported implementation of MindUP in early years education in a board-wide model. During the 2020–2021 school year, MindUP was offered to all interested primary grade educators (kindergarten to Grade 3).

The Quality Implementation Framework

The Quality Implementation Framework (QIF) is a meta-theory that synthesizes implementation literature and 25 implementation frameworks (Meyers et al., 2012). An important contribution of the QIF is its identification of four temporal phases. The first phase emphasizes initial considerations regarding the host setting and focuses on the ecological fit between the innovation and the host setting (Meyers et al., 2012). Phase 2 emphasizes creating a structure for implementation, Phase 3 attends to ongoing structure once implementation begins, and Phase 4 identifies the importance of learning from experience to improve future applications (Meyers et al., 2012). During each of these four phases there are 14 actions that can help improve successful implementation. The QIF has been applied to the school mental health evidenced-based program initiatives as an implementation roadmap (Moore et al., 2018), as a means of identifying implementation gaps (Novins et al., 2013), and as a tool for retrospective evaluation of implementation facilitators and barriers (Dariotis et al., 2016). The QIF framework provides a useful template to retrospectively identify strategies that contributed to the success of the MindUP for Young Children project. The purpose of this case study is to describe the supported implementation strategies that fit with the QIF in a university–school board partnered implementation of a mindfulness-informed SEL program, MindUP.

METHODS

We utilized qualitative methodology within a Community-Based Participatory Research framework for this study (CBPR; Israel et al., 2001). The school board is the partnering community, which was represented by key school board level administrators. The CBPR principles that apply to this study are the formulation of the implementation research question, the balance of research and implementation actions, and the findings influencing capacity building for board-wide change (Israel et al., 2001). Data for the present study were gathered for process evaluation and as part of a mixed-methods quasi-experimental research study for impacts of MindUP within the school board (Crooks et al., 2020). For the present study, we analyzed these process and qualitative data for theoretical fit with the QIF. We selected Yin's embedded single case design to describe the SEL program implementation in the context of the various educators' experiences, at different schools, and including support staff/administrators' views within the school board environment (Fàbreques & Fetters, 2019; Yin, 2017).

Procedure

The MindUP training, implementation, and scale up from pilot to year 5 is described in Figure 1. Almost 300 educators and staff were trained in MindUP, bringing the program to thousands of students. All schools that were approached to participate scored higher on the Social Risk Index (SRI) calculated by the school board, as indicated by high rates of poverty, single parent families, low parental educational attainment,

high mobility, and high rates of recent immigrants (Favaro et al., 2008). Implementation support strategies are discussed in depth in the Results section. We used Yin's multi-method approach for descriptive, embedded single case studies to retrospectively apply a case study lens to the secondary data from focus groups/interview and implementation products (2017). We charted the actions of each QIF phase that seemed to support successful implementation in data previously collected through interviews and focus groups for the purpose of continuous process evaluation. Other sources of data include steering committee meeting minutes, project plan, partnership agreement, year-end reports to funders, and alignment documents. Ethics approval for this project was obtained both from Western University Research Ethics Board and the school board Research and Evaluation Office.

Measures

Focus Groups

At the end of the pilot year, the LDCSB mental health lead invited school social workers, who were involved in supporting and coaching MindUP, to participate in an optional focus group. The project manager of the research team conducted one semi-structured focus group for social workers (n = 7; 6 female, 1 male), which lasted approximately 40 minutes. Social workers were asked about their role in implementing or supporting MindUP, strengths and limitations of implementing MindUP, changes they observed in the classrooms, whether/how MindUP fits with TIC, advice for implementation, and perceived changes in their beliefs or practices associated with MindUP and TIC training.[1] Semi-structured focus groups were conducted at the end of each school year (except spring 2020) with educators who were involved in the MindUP implementation aspect of the research study for that school year (n = 94). Educators were asked in focus groups about their delivery of MindUP, strengths and limitations of implementing MindUP, and any changes they noticed in their teaching and in their classroom environment due to the MindUP program and TIC. They were also invited to discuss how their views/ideas concerning young children changed because of the MindUP and TIC training. In the spring of 2021, educator focus groups were conducted online via a secure Zoom platform. The online focus group educator participants were asked additional questions about the successes, challenges, adaptations, modifications, and experiences associated with implementing MindUP in the online learning environment and in-person during a pandemic.

Interviews

The first author conducted formal in-person interviews with two school board key informants following the pilot year of this project. Participants were asked how the schools/classrooms were selected for participation, how MindUP aligns with school and board goals, and their general impressions about the successes and challenges of the MindUP program and TIC. The interviews lasted 30 and 45 minutes. In accordance with CBPR principles of partnership equality, the key informants/interview participants are co-authors of this case study paper (Israel et al., 2001). Conducting formal interviews with these partners gave us the opportunity to include their voices as data, even though these views were largely already known through regular steering committee meetings. Although there could be bias introduced in these interviews because

1. All measures are available from the corresponding author.

of our pre-existing relationship, the interviews were conducted after the pilot year in the spirit of critical reflection to analyze the project and partnership for improvements.

Data Analysis

Data were collated in Dedoose Version 7.5.16 web application and deductively analyzed beginning with the QIF phases, steps, and descriptions to test the fit between our data and the QIF lens. The first author coded the textual data with the a priori developed codes and any data that seemingly contradicted the QIF were coded as "misaligned." Coded data were organized into the four phases for presentation with direct quotes selected by the first author for examples of the alignment with the framework. Codes and the selected examples were presented to the other authors for the purposes of peer debriefing, member checking, and critical reflections of our involvement and interpretation (Lincoln & Guba, 1985). We increased our study quality by ensuring our work aligned with the Checklist for Evaluating the Quality of a Case Study by Fàbregues and Fetters (2019).

RESULTS

Specific strategies that were effective in each QIF phase are presented in Tables 1–4, corresponding with each phase. Further details and illustrative quotes from participants are presented under each phase's sub-heading.

Phase 1: Initial Considerations Regarding the Host Setting

We spent almost one year building capacity for the project and engaging relevant stakeholders of the school board before beginning implementation. The Steering Committee collaborated on the research design, alignment work, and funding application. One school board administrator associated the pre-implementation investment of time and energy with moving beyond a few classrooms implementing the program, toward a board-wide method of practice:

> Investment at the beginning, looking at alignments and articulating them, sharing the plan with decision-maker-level stakeholders to ensure that broad support is there; I think it makes all the difference in the world. Because we need this to be not just an off shoot (a nice little program somebody is doing in some classes), but something that becomes how we practice in the classroom with the kids. (school board administrator, interview).

Table 1 (next page) provides strategies and descriptions that were key to a successful pre-implementation phase.

Assessment Strategies

The QIF recommends conducting a needs and resources assessment, a fit assessment, and a capacity/readiness assessment (Meyers et al., 2012). School board administrators identified potential pilot schools based on the criteria of fit, needs, and alignment. As mentioned, schools approached for the implementation had higher scores on the SRI (Favaro et al., 2008). Also taken into consideration was whether someone at the school had expressed interest in MindUP and if the administrator indicated a willingness to support the

Table 1

Phase 1: Strategies for Initial Considerations Regarding the Host Setting

Descriptors from QIF	Sample Strategies Embedded in the MindUP Project
Conducting a needs and resources assessment	School board administrators had identified need internally for TIC training as part of the Mental Health Strategy
Conducting a fit assessment	University-based researchers prepared an extensive fit document showing alignment with provincial curriculum expectations, Board Mental Health Strategy, and Board Improvement Plan goals
Conducting a capacity/readiness assessment	School board administrators considered the capacity and interest of school administrators before engaging the school to participate
Obtaining explicit buy-in from critical stakeholders and fostering a supportive climate	Extended period of pre-implementation work to develop buy-in Specific focus on stakeholders who might have specific concerns (i.e., religious curriculum coordinator, positive behavioral supports team)
Building general/organizational capacity	Training social workers, school administrators, other support staff, and board administrators, rather than just implementation educators.
Effective pre-innovation staff training	High quality training in both TIC and MindUP pre-implementation and refresher training throughout implementation

program. A final consideration was whether there were other programs or research projects underway in the schools to avoid overburdening schools and ensure equity of opportunity across schools:

> The schools and classrooms were selected based on measures that we have around Social Risk Index, their Early Developmental Instrument (EDI; Janus & Offord, 2007) scores[2]—(these are all averages across and for all of our schools), the EQAO[3] scores in those schools, whether they were getting enhanced support around the renewed math strategy. We also thought about things like leadership. If there had been a new principal on board or a seasoned principal. Or whether they had other initiatives in the school that they had to focus on. The first place was the needs assessment, and the second layer was from what we knew about the schools around their capacity to engage with this project and to implement it. (school board administrator, interview)

The steering committee developed documentation to identify and articulate the fit and alignment of the MindUP program and TIC with the mental health and well-being strategy for the school board, board improvement plan, Ontario Ministry of Education learning outcomes and frames, and social and emotional learning framework endorsed by the school board. We shared the alignment documentation with decision-maker-level stakeholders to ensure broad awareness and secure buy-in and support from people in key leadership roles. Educators commented on the clear alignment they recognized between MindUP and the curriculum expectations and school board goals. One alignment and integration comment was:

> We now have the curriculum expectations that match. Think of it more that you can meet a whole bunch [of curriculum expectations] rather than just an isolated program and as you become more familiar with the program then you can get better at integrating it into your language program, science program. (educator, focus group)

Another educator described how "it fits right into the Grade 1 to 8 Learning Skills. This is faith based and you can integrate it into language. There's so many ways." (educator, focus group). Educators noticing and accepting the program alignments is a demonstrable product of the fit, engagement, and alignment work.

Decisions about Adaptation and Capacity-Building Strategies

A key part of the Phase One activities was identifying potential challenges to the project and determining if the curriculum required modification or adaptation to fit the Catholic school board context. For example, school board administrators set up a meeting with the curriculum coordinator of religious and family life to review the MindUP program in depth and brainstorm ways in which a mindful awareness approach is consistent with the values of the board.

Obtaining Explicit Buy-In from Critical Stakeholders and Fostering a Supportive Climate

The example of meeting with the curriculum coordinator of religious and family life relates to the capacity-building strategies of the QIF, which involves "obtaining explicit buy-in from critical stakeholders and fostering a supportive climate" (Meyers et al., 2012). We left the meeting with the curriculum coordinator

2. The Early Development Instrument is a reliable and valid measurement tool completed by kinergarten teachers on behalf of each child between ages 2.5 and 6.5 years, that measures the children's ability to meet age-appropriate developmental expectations in five major areas. The results are grouped for population child development monitoring and comparison of neighbourhoods, schools, and regions. More information can be found at https://edi.offordcentre.com/about/what-is-the-edi/

3. EQAO (Education Quality and Accountability Office) is an Ontario government agency that provides student assessments and evaluations of Ontario elementary and secondary education. More information can be found at https://www.eqao.com/about-eqao/

of religious and family life with an endorsement from this important figure in the school board, which we shared with school board senior executives in the process of gaining final approval for this project.

Social workers commented on the importance of obtaining buy-in from school-level stakeholders, specifically administrators:

> It has to come from the administrator buying into it, creating that momentum, creating the supports, and the enthusiasm, the emotional energy for it. And some of the practical things too; they have to make sure the staff have enough time to learn it and go through the process and have the resources. The administration I think is key. (social worker, focus group)

Building General/Organizational Capacity and Staff Recruitment/Maintenance

Our work to encourage administrators' buy-in included inviting them to attend the MindUP training days, along with social workers, SEL support staff, speech language pathologists, and positive behaviour support team. A social worker commented on our training approach as part of obtaining buy-in and linked this strategy with the step of building general and organizational capacity:

> One of the things that I found helpful was being able to come to the training with the teachers and I know there was one administrator there. You have the same language, you know the concepts, and then having the administrators who've been part of it, who've had a positive experience, then talking to peers about how it can work. Because they know what it's like to work in that job, they know what challenges they're going to face so they can have a discussion around how it worked [and] why it worked. (social worker, focus group)

Effective Pre-Innovation Staff Training

The final step of Phase One relates to effective training. Each fall, the project educators participated in one half day of neuroscience-based TIC training created by the research team and a full day of MindUP training by the Goldie Hawn Foundation trainers. Educators were invited to participate in training as optional intervention classroom educators, as support staff for board-wide capacity building, or after they were comparison classroom educators. Another full day of MindUP training was provided by the Goldie Hawn Foundation trainers each spring when most were mid-implementation and potentially had questions or challenges. In these "booster" sessions, the didactic training material was presented alongside opportunities for peer sharing and problem solving. Through the research funding, educators were provided with release time to attend these training days. Regarding the effectiveness of the training sessions one person said, "I just found that they were such awesome days, you came back like, 'OK I'm going to change the world!" (educator, focus group). A social worker shared an opinion of the quality of training:

> It was good information about brain function but in a very simplistic way that people really got and understood. The feedback that I got from teachers is that they really appreciate it. I think it fits with an easy framework that they can understand and then teach kids. So, I thought it was great. I liked the training. (social worker, focus group)

Phase 2: Creating a Structure for Implementation

With respect to Phase 2 of the QIF, there was a clear structure from the steering committee including a project plan with timelines and deliverables, research-related structures, and regular meetings to check our progress against the plan. The steering committee partnership agreement was finalized in the second project

year. The steering committee continuously reinforced the structure with implementation science strategies such as identifying observed or potential challenges and adapting to changing contexts. Steering committee meeting minutes and tracking deliverables were done by a research funding-paid position. Steering committee member/board administrator linked the overall implementation plan success with concrete partnership agreements and sustained regular contributions, saying:

> The regular communication and updates and having someone tracking what's going on and then we come together and make decisions and have clarity about how we make decisions, has been a very positive thing… Now we've had very positive feedback about MindUP all around and that's getting around the [school] board and I think that that gives us momentum to continue. (school board administrator, interview)

Table 2 provides the strategies we applied to create a structure for the implementation.

Table 2

Phase 2: Creating a Structure for Implementation

Descriptors from QIF	Sample Strategies Embedded in the MindUP Project
Creating implementation teams	Teachers and Early Childhood Educators (ECE) trained to implement Training multiple educators within schools Community of Practice
Developing an implementation plan	Clear implementation plan for school board Principals Breakfast Partnership agreement clearly defining roles and responsibilities

Creating Implementation Teams

From the outset, there was an effort to train and include both educators of the kindergarten teams (i.e., the teacher and the ECE) when applicable. Implementation teams utilized the skills of each educators' role and expertise to facilitate the program in their classrooms. For example, an ECE described how it naturally worked for the teacher to conduct the lessons and for the ECE to conduct the practice. "Generally [teacher's name] would do the discussions or lead the lesson and then I'd incorporate it into the day however it happened, either pop up or I generally would lead all of the brain breaks" (educator, focus group). Another implementation team benefit, that educators described, was having multiple educators trained within their schools:

> …she knew I had done it for a year so she would ask me for my advice, and I was able to help her…find ways to implement it into the curriculum and not just have it as a separate thing, so she was really happy… It was nice to be able to share what I had gone through last year, what I found worked, what I found didn't, and help someone else do it at a different grade level. (educator, focus group)

An educator provided advice involving the board-wide network of trained implementors, suggesting to new educators they:

> Tap into somebody within our board … who's already done it and ask them, because people already have resources and everybody I know is willing to share what they've got. … Don't reinvent the wheel… access all of the resources that are out there. (educator, focus group)

Experienced implementers were invited to attend the afternoons of the MindUP training sessions, allowing us to utilize the Goldie Hawn Foundation trainers and sessions to not only train new educators,

but to re-invigorate those previously trained. The training sessions were also a forum for problem solving implementation challenges and issues, celebrating implementation successes, and sharing lessons learned. In this sense, they also served as a community of practice (COP) where new implementers were able to learn from experienced implementers. During the Covid-19 pandemic, in the Spring of 2020 and Fall/Winter of 2021, the COP was moved online in a series of weekly MindUP brief presentations and conversations.

Developing an Implementation Plan

Educators were given autonomy to develop individual implementation strategies for their classrooms, which were influenced and supported by the training, implementation teams, resources, and steering committee. The overall implementation framework involved training and supporting educators over multiple years. Educators reflected on the benefits of this structure:

> Participant A: We get to do it again next year and you can take it one more step… So every year…you add more to it, you add more, you add more.
>
> Participant B: …it's your ability to integrate it. (educators, focus group)

In the fall of project years 3 and 4 (2018 and 2019) the steering committee hosted morning meetings for administrators of schools involved in the MindUP research project. The goals of the "Principals Breakfasts" were to inform about MindUP curriculum, engage them with research study plans, and encourage their support of educators' implementation efforts. The director of education was in attendance and opened the meetings with messages of support for the project, program, and research partnership. We facilitated discussion among administrators on support strategies for the MindUP educators and distributed "Tips for Principals to Support MindUP in Schools" that was created by the educators of the Summer Writing Team in summer 2018 (described in Phase 3).

Phase 3: Ongoing Structure Once Implementation Begins

Table 3

Phase 3: Ongoing Structure Once Implementation Begins

Descriptors from QIF	Sample Strategies Embedded in the MindUP Project
Technical assistance, coaching, and supervision	Social worker co-implementation or support where indicated Booster training and COP meetings MindUP resource sharing site Summer writing team
Process evaluation	Ongoing process evaluation throughout Focus on collecting both process and outcome data
Supportive feedback mechanism	Multiple opportunities for input to accommodate individual preferences i.e., focus groups, feedback surveys, feedback directly to researchers, to social workers, or to school board administrators

Technical Assistance/Coaching/Supervision

In August 2018, we hosted five educators for three days at the school board office for a Summer Writing Team to create MindUP resources. The educators were identified by the steering committee based on their engagement with the program and the MindUP resources and activities they had created for their classrooms. The educators edited and approved "Teacher Lesson Extensions" and "Parent Handouts" drafted by a hired coordinator, shared and edited their own created resources, and co-produced resources, including a deck of Smart Board files, "Getting Ready for MindUP" Units 1–4, "Integrating MindUP into Your Daily Classroom Routine," "Centres Ideas for Kindergarten," and "Tips for Principals to Support Implementation of MindUP in Schools." A MindUP project sharing site was created as a "go-to" resource repository for all involved educators, administrators, and support personnel.

The mental health lead of the school board and steering committee engaged the school board social work team and SEL support staff for coaching and technical assistance, which proved very effective. The mental health lead requested the social workers check in with MindUP classrooms for early identification of educators who were struggling with implementation. This identification allowed MindUP-trained social workers to facilitate timely support (e.g., acting as co-facilitators).

> I feel in the classroom that I helped with, if I hadn't been there to help model the first few sessions… I don't know if they would have taken the time to develop the plans [for implementation] but once they saw how simple it could be, then I feel like they could continue on [for the rest of] the year. After six sessions my supervisor [mental health lead] asked me to get out so they could do it on their own. (social worker, focus group)

Another coaching support example comes from the 2020–2021 school year. One educator described how she found it difficult to teach MindUP during the brief online classes, which occurred temporarily in January 2021 and again in April 2021 for the rest of the school year, due to the Covid-19 pandemic. A coach (SEL support staff) modelled MindUP to the class in the online learning environment, which inspired the educator to continue implementing:

> In January, it was trying to find a way to make it fit with online…. which was hard so I didn't when we went to remote. In April, we had [SEL support staff name] come for three sessions and so I decided when she was done that I would pick up where I had left off with MindUP… So, I feel like that was a success because I was able to move that online remotely. (educator, focus group)

Process Evaluation and Supportive Feedback Mechanism

We collected ongoing process data with a variety of methods: annual focus groups after each implementation year (except for Spring 2020), online feedback surveys, taking notes and feedback at training sessions, and through email. The steering committee board administrators received feedback through the social workers and school administrators. To ensure the feedback loop was supported, we made concerted efforts to address the feedback and integrate solutions into the ongoing structure of implementation. For example, in a year 2 focus group, an educator said, "I would like parent notes… because I really think it is valuable information and I would love it simplified in the way that can say what we talked about … for each section." After collecting such feedback and understanding that educators were finding the program repetitive year after year, we hired a MindUP coordinator to draft the requested resources and hosted the

Summer Writing Team of educators (previously described). The resources produced were shared with all trained educators as printed copies and through the online sharing platform.

Phase 4: Improving Future Applications

The final phase of the QIF underscores the importance of documenting and sharing lessons learned to improve future applications (Table 4).

Table 4

Phase 4: Improving Future Applications

Descriptors from QIF	Sample Strategies Embedded in the MindUP Project
Create genuine collaborative relationships with host/ researchers	CBPR principles for building mutual trust and reciprocity in research Data collection with multiple stakeholders including teachers, early childhood educators, social workers, and administrators
Lessons Learned – share with others	Rapid knowledge mobilization to share findings with stakeholders and participants in attractive, plain language formats to maintain high levels of engagement Sharing lessons learned and tips from experienced implementers with new implementers through summaries, during focus groups, and in trainings/ booster sessions Development of videos to share project lessons learned and program strategies
Critical reflection by researchers and developers	Efforts to listen, reflect, and incorporate feedback into future support strategies and sustainability efforts for the school board

Create Genuine Collaborative Relationships with Host/Researchers

The steering committee's commitment to equitable collaboration and listening to the educators on the ground was helpful for developing our genuine collaborative relationships (Israel, 2001). In appreciation of the school board–research partnership, an educator said:

> I'm really grateful that we got to participate in this program and that you guys were here and that... I don't know if you chose our school board or if our school board chose you, but I think that it's really valuable. (educator, focus group)

Another example of our partnership occurred when the school board administrators recommended that the research team not conduct a planned quasi-experimental study in the 2020–2021 school year due to Covid-19 pandemic-related protocols and stressors. The steering committee decided to offer the MindUP program to any interested primary educator, facilitated the creation of online training sessions, distributed resources, and created two less-cumbersome studies to answer board-identified research questions on implementation during the pandemic context and sustainability of MindUP within the board.

Lessons Learned—Share with Others

The focus groups not only functioned as a feedback mechanism to the steering committee, but also as a means of sharing lessons learned among implementers. For example, when an educator described they

didn't feel, as a first-time implementer, MindUP was, "my go-to strategy, where something like [conflict management curriculum] comes naturally to me." Another educator in the focus group, who had implemented MindUP multiple times, shared how MindUP could be incorporated with other programs, saying:

> … the more you do it the more...you can integrate... I made a bulletin board so as I introduce the main ideas it all flows together. First, I have the heading "Understanding Parts of the Brain" and the [MindUP brain] poster's there and then it's got a red arrow going to mindfulness and "So We Can Make Better Choices" and they have problem solving strategies. So that's where it could be your [Conflict Resolution Curriculum]… When you're calm and your thinking part is in charge, then you can make a [healthy behaviour] choice. (educator, focus group)

MindUP summaries of lessons learned were shared with new and previous implementers through annual feedback reports by the researchers. School board administrators found it helpful that we mobilized these data quickly and provided attractive plain language summaries over the course of the summer following the first three years of the project, saying *"*when you read that great report… and some of the quotes that the teachers and students are making, that's great! Even the pictures…I love that!" (school board administrator, interview). See www.csmh.uwo.ca/research/mindup.html for reports.

The steering committee presented published findings to the Board of Trustees. Two video projects were produced that informed about the project, lessons learned, and specific implementation strategies within the board. A third "white board" video was produced to give an overview of our research findings and implications. These knowledge mobilization efforts were key in maintaining buy-in from senior leadership, stakeholders, and educators on the board.

Critical Reflection by Researchers and Developers

Steering committee meetings provided an opportunity to critically examine our implementation and research, brainstorm around potential upcoming challenges, and address them before they became pitfalls. We also dedicated one steering committee meeting to focus on evaluating our partnership. We revisited the co-created partnership agreement to ensure the implementation research partnership remained mutually beneficial and collaborative.

Throughout the project, the steering committee would critically consider the sustainability of MindUP within the school board, after the research funding ended. We arranged for 10 school board educators and staff members to participate in the Goldie Hawn Foundation's train-the-trainer program in the summer of 2019 to become certified MindUP trainers. The goal of supporting school board staff and educators in becoming MindUP trainers was to promote sustainability and autonomy for the school board to train new educators in MindUP using resources within their own board.

DISCUSSION

This study focuses on the importance of understanding the steps and strategies of a mindfulness-SEL program implementation for young children in the context of a university–school board partnership. Implementation strategies contributed greatly to the successful adoption of the program. Specifically, we were able to map our implementation process onto all four sequential phases of the QIF and identify strategies that promote success at each stage (Meyers et al., 2012). Key strategies for success include continuous efforts

for engagement and buy-in, commitment to quality training, support and communication from the steering committee, and consistent data collection and review.

Implementation of any school-based program is most successful when it recognizes the different levels of the ecosystem and addresses this complexity (Domitrovich et al., 2008). Our pre-implementation work allowed for buy-in at all levels of the school system, which we continued throughout the project, with regular feedback and communication to stakeholders. Consistent with the step of building general capacity in the board we invited social workers, student program support teachers, school administrators, SEL support staff, and school board administrators to attend training sessions, even if they were not directly implementing the program (Meyers et al., 2012; Wandersman et al., 2008).

We provided MindUP and TIC training and supports for educators in multiple formats and throughout the changes associated with the pandemic context, which is essential for quality program delivery in schools (Domitrovich et al., 2008). Our framework of training and supporting the implementation educators over multiple years aligns with implementation science best practices for mental health promotion programs (Meyers et al., 2019).

The uptake of technical assistance and coaching by educators who struggled with the program for various reasons was a notable success. The importance of technical assistance and coaching is well documented (Dusenbury et al., 2010; Forman et al., 2009) but remains challenging to achieve. It is critical to build an assistance structure that educators will access because the core support system is a critical component of implementation quality (Domitrovich et al., 2008).

The continuous documentation of our process allowed us to adjust and make changes as needed to best support the educators. We shared lessons learned back to the school board and among educators in a timely fashion and in various formats. We believe this interactive approach and the rapid, accessible knowledge mobilization contributed to the ongoing buy-in from the school board (Wandersman et al., 2008).

The QIF is described as four temporal phases being addressed in a systematic order, with 10 out of the 14 steps being addressed *before* implementation begins (Meyers et al., 2012). Our CBPR-aligned partnership involved almost a year of planning, partnership building, aligning, and garnering support (Israel et al., 2001). For our long-term CBPR project, management and structure had to be cyclical and iterative (Israel et al., 2001). Rather than a step-by-step sequence as described by Meyers and colleagues (2012), our supported implementation strategies were continuously revisited throughout the project so that we could adjust to the complexity of the school board and greater social context.

Future research in implementation quality for SEL programs in the context of university–school board partnerships can examine continued participation as an indicator of implementation success. Our team will be evaluating our implementation strategies that are attributed to sustained implementation of MindUP within the school board.

Limitations

A case study approach limits generalizability of findings, as does our implementation context of a well-funded university–school board partnership. However, this case study provides an in-depth look at the specific strategies and factors that supported our implementation process in a real and complex context,

including a pandemic. Another limitation is that the majority of the child and educator participants from this Catholic school board are white and educators are mostly female, which might affect their acceptance of and ability to deliver the program (Crooks et al., 2020). We believe our study provides a compelling case for school boards and researchers to work together through CBPR principles to apply systematic implementation strategies for universal mental health programs.

Implications for Evidence-Based, Implementation-Sensitive Approaches to School Mental Health

Schools can promote child mental health and well-being through approaches like evidenced-based mindfulness and SEL programming when implemented with high quality (Crooks et al., 2020; Schonert-Reichl et al., 2015). Regarding improving implementation quality of evidence-based programs, Domitrovich and colleagues indicate a need for more understanding of the contextual factors that influence multiple levels of the implementation processes in schools (2008). This study suggests the steps of the QIF can be applied to a mindfulness-informed SEL program implementation in schools, even in the context of a complex, dynamic, and multi-year project, to broaden the impacts and embed the program further into the school board. Concerted efforts toward improving implementation of school-based mental health promotion programming can make profound impacts on the mental health of children and youth.

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