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## The Development of Theory- and Evidence-based Educational Workshops for Occupational Therapists

Sungha Kim  
*McMaster University*

Rebecca E. Gewurtz  
*McMaster University*

Ilana Bayer  
*McMaster University*

Nadine Larivière  
*University of Sherbrooke*

Lori Letts  
*McMaster University*

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## Abstract

The Do-Live-Well (DLW) framework is a health promotion approach developed by Canadian occupational therapists (OTs). As the DLW framework is relatively new, it has not been widely adopted by OTs. In order to facilitate OTs to incorporate the DLW concepts in their practice, there should be more learning opportunities, and online and in-person workshops have been chosen to be a specific interest of this study. The purpose of this project was to develop theory- and evidence-based in-person and online educational workshops for OTs as a pre-implementation study to increase the knowledge of the DLW framework among OTs. In order to develop workshops, we incorporated three different phases. First, we interviewed four OTs who have been applying the DLW concepts in practice to understand their use of the framework and training needs. It was identified that OTs experienced difficulty applying the DLW concepts in practice and wanted opportunities to learn more about the DLW framework. Next, problem-based learning (PBL) guided the workshop development, and the same eight key PBL principles were incorporated in both the in-person and online workshops. Finally, four different experts completed usability testing of the online workshop website to improve its learning environment. The online workshop website was improved based on the feedback from the usability testers. The next step of this research will be to compare effectiveness of in-person and online platforms for workshop delivery. The detailed development process described in this project may assist occupational therapy educators in developing theory- and evidence-based educational delivery methods.

## Keywords

Continuing education, professional development, online, education, health promotion

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## The Development of Theory- and Evidence-based Educational Workshops for Occupational Therapists

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Sungha Kim, MOT<sup>1</sup>; Rebecca E. Gewurtz, OT, PhD<sup>1</sup>; Ilana Bayer, PhD<sup>1</sup>;

Nadine Larivière, OT, PhD<sup>2</sup>; and Lori Letts, OT, PhD<sup>1</sup>

McMaster University<sup>1</sup>

University of Sherbrooke<sup>2</sup>

Canada

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### ABSTRACT

The Do-Live-Well (DLW) framework is a health promotion approach developed by Canadian occupational therapists (OTs). As the DLW framework is relatively new, it has not been widely adopted by OTs. In order to facilitate OTs to incorporate the DLW concepts in their practice, there should be more learning opportunities, and online and in-person workshops have been chosen to be a specific interest of this study. The purpose of this project was to develop theory- and evidence-based in-person and online educational workshops for OTs as a pre-implementation study to increase the knowledge of the DLW framework among OTs. In order to develop workshops, we incorporated three different phases. First, we interviewed four OTs who have been applying the DLW concepts in practice to understand their use of the framework and training needs. It was identified that OTs experienced difficulty applying the DLW concepts in practice and wanted opportunities to learn more about the DLW framework. Next, problem-based learning (PBL) guided the workshop development, and the same eight key PBL principles were incorporated in both the in-person and online workshops. Finally, four different experts completed usability testing of the online workshop website to improve its learning environment. The online workshop website was improved based on the feedback from the usability testers. The next step of this research will be to compare effectiveness of in-person and online platforms for workshop delivery. The detailed development process described in this project may assist occupational therapy educators in developing theory- and evidence-based educational delivery methods.

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## **Introduction**

The use of theoretical frameworks is integral to occupational therapy (OT) practice. Frameworks make explicit assumptions about humans and occupations and guide professional and clinical reasoning (Duncan, 2011). The Do-Live-Well (DLW) framework is a recent evidence-informed health promotion approach (Gewurtz et al., 2016b; Moll et al., 2015) developed by Canadian occupational therapists (OTs) to encourage persons of all ages to think about their time use and to enhance their opportunities to engage in activity patterns that can promote health and well-being. This framework has four main sections: dimensions of experience, activity patterns, forces influencing activity engagement, and health and well-being outcomes (Moll et al., 2015). According to the framework, individuals of all ages and any health conditions should have opportunities to engage in daily activities that allow them to experience a range of dimensions and optimal patterns of activity while having access to sufficient personal and social support, resulting in a wide range of positive health and well-being outcomes (Moll et al., 2015). This framework allows OTs to develop tools that promote health and wellness through meaningful occupational engagement and articulate their unique and valuable perspective (Moll et al., 2015). To date, there has been interest in the DLW framework among Canadian and international OTs, but it has not been widely adopted into OT practice, due in part to challenges of translating knowledge into practice.

The DLW framework was developed in Canada. Previous knowledge dissemination activities, focused on spreading knowledge of this framework, included publishing details in scientific journals and launching the DLW website ([www.dolivewell.ca](http://www.dolivewell.ca)). In-person educational opportunities were also made available, such as lectures and workshops. There was a workshop in Quebec that provided DLW content in French to OTs in various practice settings. However, the educational opportunities in English were primarily for clinicians in mental health practice; training has been limited for OTs in different practice settings. In addition, the previous training sessions in English have been conducted in specific regions of Canada, primarily urban centers in Alberta and Ontario. Thus, there is a need for more educational opportunities targeted to OTs in various practice settings and in different countries and geographic regions.

Online education may provide opportunities for OTs to learn more about the DLW framework, which may enhance their application of this new framework in practice. Online continuing education is increasingly being accessed by health professionals around the world (Institute of Medicine, 2010). This delivery modality has advantages such as easy access to materials, a customized learning pace, use of multimedia, and interaction among learners in different geographic regions (Greenhalgh, 2001; Harden, 2005; Ruiz et al., 2006; Stark et al., 2021; Wong et al., 2010). Furthermore, Chick (2020) demonstrated online learning to be an optimal way to maintain education while ensuring the safety of learners and educators during the COVID-19 pandemic. In OT education, a single group study evaluating the effectiveness of online continuing education reported improved self-efficacy of OTs in school-based practice (Suman & Provident, 2018). Little is known, however, about the effectiveness of online education for OTs compared with traditional in-person education (Hollis & Madill, 2006). Recent systematic reviews (Richmond et al., 2017; Vaona et al., 2018) of the effects of online

programs for health professionals suggests little or no difference between e-learning and traditional learning in terms of health professionals' behavior, skills, or knowledge. In these reviews (Richmond et al., 2017; Vaona et al., 2018), only one randomized controlled trial (RCT; Maloney et al., 2011) included OTs as participants, along with other health care professionals. This RCT study showed no difference in attendance, adherence, satisfaction, knowledge, and self-reported change in the practices between online and in-person fall-prevention exercise education groups (Maloney et al., 2011). Since only 8%–11% of participants in this study were OTs (Maloney et al., 2011), the results might be difficult to generalize to the broader OT community. In addition, this systematic review focused mainly on the difference in duration of delivery between online education and in-person education when providing detailed explanations of interventions. Lack of detailed descriptions of the learning and teaching approaches as well as whether the online and in-person education involved equivalence in delivering knowledge also makes generalization of the findings from this review difficult.

In OT education, problem-based learning (PBL) is a widely accepted educational approach and considered effective in improving learners' clinical reasoning skills (Scaffa & Wooster, 2004). The PBL approach encourages learners to draw on their existing knowledge and make it the foundation for acquiring new information associated with a problem (Colliver, 2000; Dochy et al., 2003). PBL environments encourage learners to engage deeply in the learning process rather than memorize information to take a test (Baptiste, 2003; Newble & Clarke, 1986; Vu et al., 1998). Problem-based learning has been mainly applied to in-person learning environments (Barrett & Moore, 2010), and there has been no research on how the PBL principles can be equally applied to online education for OTs. Thus, information is lacking about the development of a PBL-inspired online educational format for OTs and the evaluation of its effectiveness compared to the traditional in-person PBL environment.

Given the lack of evidence on the effectiveness of online education for OTs, despite its potential benefits, there is a need to compare the effectiveness of in-person and online workshops to disseminate knowledge of the DLW framework to OTs. In this paper, the authors describe a pre-implementation study that was conducted to develop the educational interventions to increase the knowledge of the DLW framework among OTs. The objective of this study was to develop evidence-based online (asynchronous) and in-person (synchronous) DLW workshops for OTs that contained the same content and applied the same PBL approaches by incorporating three methods: (1) understanding the experience of using the DLW framework, (2) incorporating PBL principles, and (3) conducting usability testing for an online educational platform. The overarching research question was, "How do the three methods support the development of educational workshops for OTs regarding the DLW framework?"

### **Workshop Development Processes and Outcomes**

The researchers developed the educational interventions in three sequential phases, with the findings from each informing the development of the DLW for both in-person and online workshops. This project did not require ethics approval because it was considered program development.

## **Phase 1. Understanding Current Users' Perspective and Experience of Using DLW**

### **Methodology**

In order to understand OTs' perspectives and experiences of using the DLW framework in practice, we aimed to interview Canadian OTs who were using the DLW framework from August to October 2017, with the intent that this would help provide guidance on what is important to include in a workshop focused on the DLW framework. Canadian OTs known by the research team to be applying the DLW concepts in their practices were invited to participate if they could undertake an interview conducted in English. The respondents chose the interview method (telephone, video call, or in person). A preliminary semi-structured interview guide was developed and revised after discussion with the DLW research team and an OT expert. The semi-structured interview guide included the following topics: interviewee background, description of the DLW application, and need for training. The first author conducted all the interviews, including one by telephone, two by video call using Skype, and one in person. The data were coded related to the research question in a systematic fashion across the entire dataset by the first author. Next, codes were collated into potential initial themes, which were subsequently defined. Then, members of the research team (SK, LL, RG, NL) reviewed the clarity of the final themes to ensure the research question was answered.

### **Outcomes**

The participants were four Canadian OTs who worked in different practice settings; two were from primary care settings, and the other two were from mental health care settings. Their working experience ranged from 3 to 22 years. Their client populations varied based on their different practice settings, including individuals with mental health issues and chronic conditions.

**Identified Themes.** Three main themes were identified based upon the perceptions and experiences related to OTs' use of the DLW framework.

**DLW Helped Clients Think About Their Daily Activities.** Participants acknowledged the use of the DLW framework in their practices; the framework aligned well with OT because both emphasize the importance of occupations as a means of promoting health and well-being. The DLW framework provided their clients with a different point of view in relation to daily activities and health by allowing them to think about how they spend their time to improve wellness. One participant stated that the DLW framework was especially useful when her clients did not know what they want to work on or when they were overly engaged in activities; her clients often had difficulty reflecting upon what activity changes they would like to bring to their current routine. The DLW framework guided conversations about the types of activities that can support a client's health and well-being, which assisted in client-directed goal setting.

***OTs Struggled with the Application of the DLW Framework.*** Most participants used the DLW website to explain concepts to their clients. Although the participants agreed that the DLW framework was useful in their practices, they thought the framework was abstract and the website self-directed, so it would be challenging for laypersons to read, think about, and implement the concepts. Some of the participants found that it was not easy for clinicians to put the theoretical ideas into practice. Thus, they wanted worksheets or tools developed specifically for the DLW framework.

***OTs Needed DLW Training.*** OTs have made many requests for DLW training opportunities, and the participants also emphasized the importance of such opportunities. They felt that examples of how and when to use the DLW framework with different client groups would be beneficial for clinicians. They also stated that the dimensions of experience and activity patterns sections should receive the most attention during the workshop because these sections are relatively new aspects of OT practice, compared with the other two sections, Health and Wellness Outcomes and Forces Influencing Activity Engagement.

## **Phase 2. Development of the DLW Workshop Content and Application of Key PBL Principles**

### ***Methodology***

The content for the educational interventions (in-person and online workshops) was developed through an iterative process. The first author drafted the initial workshop content by incorporating resources previously used and developed by the DLW team as well as findings from Phase 1. The draft was then shared with the remaining DLW research team. In Phase 1, it was identified that OTs wanted to know more about the application of the DLW framework. Therefore, the DLW team decided to use case scenarios in different practice settings so that the acquired knowledge regarding the DLW framework could be applied by OTs in their own settings.

To create a more effective learning environment, eight key principles of PBL (Gewurtz et al., 2016a) were used throughout the content development process of the in-person and online DLW workshops: self-directedness, internal motivation, prior knowledge and experience, applicability in practice, cognitive process, active learning, interaction between learners, and elaboration and reflection. The content developed for the educational interventions, including PowerPoint slides, presentation scripts, case scenario videos, and discussion questions, was the same for both the online and in-person workshops.

### ***Outcomes***

Through the iterative process and findings from the qualitative interviews, content for both in-person and online workshops was developed with the following key elements.

**Overall Structure.** The content of both in-person and online workshops consisted of four main sections, each covering the key sections of the DLW framework: (1) dimensions of experience, (2) activity patterns, (3) the notion of forces influencing activity engagement, and (4) health and well-being outcomes (Moll et al., 2015).

To ensure consistency between in-person and online workshops, PowerPoint slides and written scripts were prepared. Five case scenarios related to different OT practice settings, selected by the DLW team, were developed for the workshops in the form of video recordings of interviews with five different clients: a recently retired man, a woman with lower back pain, a woman with rheumatoid arthritis, a child with coordination problems, and a paramedic with mental health issues. The details of how the in-person and online workshops are organized are outlined in Table 1.

**Table 1**

*Information About the Workshop Sessions*

Introduction of instructors, participants, and learning and teaching approach	
Session 1	Introduction of case scenarios
	Health promotion & health and well-being outcomes
Session 2	Introduction of the DLW framework
	Dimensions of activity
Session 3	Activity patterns
	Social and personal support
Session 4	Application of the DLW framework
	Large group case scenario discussions
Wrap up (Q&A / Reflection), Post-evaluation	

**Program Length.** The in-person workshop was designed as a one-day, eight-hour workshop, while the online workshop was designed to take a total of approximately eight hours for four modules/sessions, with initial plans to make the workshop available for four weeks.

**Planned Delivery Format.** Content delivery was planned through the use of PowerPoint slides, and the written script used to record the content for the online workshop. The online workshop was delivered through an online website that was available to workshop participants for a specified duration, and participants were allowed to access the content at their own pace, moving through and between sections as desired. Participants in both in-person and online workshops received a workbook consisting of a workshop schedule, a written summary of case scenarios, a DLW figure, and tools specifically related to the DLW concepts.

Members of the DLW team agreed to facilitate small and large group discussions during both in-person and online workshops. Discussion topics were generated for use after each session, and opportunities designed for participants to share their opinions freely during discussions. Participants in the online group were asked to leave their answers in



the discussion forum on the website and freely leave comments on other learners' responses. Before they learned about the details of the DLW framework, the researchers asked the participants in both workshops to rank their top three preferred case scenarios. Then, each participant was assigned to a small group in which members discussed the application questions specific to the assigned case scenario. The large group discussion allowed applicants to learn about the cases of other groups and understand how the different groups have applied the DLW concepts to the cases.

Finally, the researchers asked participants in each workshop to reflect on their learning processes and answer the following questions during a large group discussion: (1) what did you learn from the workshop? and (2) did you achieve your learning goal?

**Delivery: Application of the PBL Principles.** The manner in which PBL principles were applied in both the online and in-person workshop are presented in this section.

1. **Self-directedness:** Adult learners are independent and take responsibility for their learning; they are the experts on their own learning needs. The DLW team applied this principle by encouraging learners to set personalized learning goals and identify their ideal learning strategies and resources. Additionally, the choice of a case scenario from a possible five was included to provide a tailored workshop experience that can actively engage learners.
2. **Internal motivation:** This principle asserts that adult learners engage in learning when they perceive the need to learn. Learners in the DLW workshop were asked to develop learning objectives based on their learning needs prior to the workshop.
3. **Prior knowledge and experience:** According to this principle, learning occurs as learners build upon prior knowledge and experience, which helps learners reflect on beliefs and values and also broadens their perspectives. In the DLW workshops, the DLW team prompted learners to use their existing knowledge to solve problems. For example, in small group discussions, participants were asked to reflect on their usual practice and then how that may change as they consider application of the DLW framework.
4. **Applicability in practice:** Adult learners improve their comprehension when the new knowledge is applicable in practice. Thus, the DLW team provided participants with an opportunity to select the scenarios relevant to their practices. Later in the workshop, learners were encouraged to reflect on their use of the DLW framework using the Do-Live-Well Training Toolbox, which asked how to integrate DLW principles into their practice.
5. **Cognitive process:** Learning is facilitated through cognitive demands and requires different strategies based on learners' knowledge level. Thus, the DLW team examined participants' knowledge of the DLW framework before the workshop through a questionnaire and made adjustments to the content.

6. **Active learning:** Learning is active, and facilitators encourage learners to actively participate in their learning process. Following this principle, the DLW team provided five video case scenarios and ask questions regarding the application of the DLW framework. In the process of answering the questions, the participants used their existing knowledge and problem-solving skills to actively engage with other workshop participants.
7. **Interaction among learners:** Learning is promoted through sharing knowledge with others, understanding others' perspectives, and examining one's own perspectives accordingly. In the DLW workshop, the facilitator highlighted the importance of mutual respect and cooperation among participants and asked them to share their perspectives on the DLW framework by actively participating in discussions, both in small and large groups. Especially in small groups of four to five people, learners interacted more actively with others.
8. **Elaboration and reflection:** The learning process is solidified by allowing learners to analyze, synthesize, and integrate new knowledge. By the time the workshop was over, the DLW team provided participants with an opportunity to reflect on what they learned from the DLW workshop. The DLW team asked if they were able to achieve their learning goals and prompted discussions on the use of the DLW concepts in their own practice.

### **Phase 3. Usability Test of the DLW Online Educational Platform**

#### **Methodology**

After developing the content for the educational interventions, Articulate 360 software was used to create e-learning modules for the online workshop and WordPress was used to develop an educational platform to host the online workshop content and activities. A usability test of the online platform was conducted to identify any potential difficulties with using the online learning option (Zaharias & Poylymenakou, 2009). The researchers aimed to include individuals in four different expert areas: a graphic designer, a web developer, a university instructor, and an OT as a learner. Each individual was asked to focus on aspects of usability most aligned with their expertise. Based upon the results of the usability test, revisions were made to the workshop materials and online workshop website to improve the DLW online learning environment before launching it for OTs.

#### **Outcome**

The online learning website to deliver the content of the online workshop was designed, developed and evaluated for its usability. One person in each expert area, a total of four, agreed to participate in the usability testing. They freely accessed the website and completed the usability testing questionnaire (Zaharias & Poylymenakou, 2009); the times to complete the test ranged from one to two weeks. They all had more than four years of work experience in their fields.

**Quantitative Results.** Table 2 summarizes the scores and percentages from questions on the usability testing questionnaire that employed the 5-point Likert scale. As each individual completed only a predetermined selection of components of the questionnaire, there were differences in total raw scores between participants. There were a few questions that the participants did not score for undetermined reasons; in that situation, the average score for the category was entered to address missing data. The overall usability score for the online workshop website ranged from 85% - 92%.

**Table 2**

*Summary of Quantitative Results from Usability Testing Questionnaire*

	Graphic designer	Web developer	University instructor	OT learner
Navigation [30]	26	28	29	26
Accessibility [30]		26		26
Consistency [15]	14		12	15
Visual design [20]	18		15	18
Interactivity [25]	21	23	24	19
Content and resources [50]			43	43
Media use [15]	13		11	12
Learnability [20]				16
Learning strategy [20]			20	17
Feedback [10]			N/A	8
Summed score / total score	92 / 100	77 / 85	154 / 175	200 / 235
Overall percentage (%)	92%	91%	88%	85%

**Qualitative Results.** Through the direct content analysis of free-text answers, the following three key categories of responses were identified.

***It Was Easy to Access and Navigate the Website.*** The participants appreciated that the access mechanism of the website was well designed so that learners could easily explore the website and control their learning activities. When they re-entered the website, the menu before they left appeared immediately, and the menus they previously completed had changed color, so they did not have to remember how far they had progressed in the workshop. Both the web developer and learner recommended including a contact person's information in case there was a technical issue exploring the website.

***Visual Design Could Be More User Friendly.*** The website used similar fonts, appropriate font sizes, images, and infographics, which made it easy for learners to read and understand the content. However, the users recommended having a different image for the front page and other pages for better visual design. Additionally, the font for some citations was not sufficiently large for users, and the icons on the first screen were difficult to see owing to the color of the background image. In addition, animations used in the PowerPoint slides may have distracted users from focusing on the content.

***Clarified Terms, Resources, and Activities May Allow Users to Learn the DLW Concepts Better.*** Overall, each section was concise, helping users better focus on content and reduce distraction. Furthermore, the learner commented that it was great to see examples of a wide variety of client groups, which may resonate more with clinicians who work with a particular group. The instructor recommended changing some wording for clarity and including missing references. The OT learner recommended including some resources that learners could download and use when learning. Moreover, the learner said that it would be helpful to see the progress of learning in each module, and she hoped to see more learning activities to attract attention and maintain interest and motivation.

***Final Refinements to the Online Workshop.*** The researchers further refined the website of the DLW online workshop based on participants' usability test results and feedback. First, to improve the visual design and provide differentiation, the researchers used different images on the front page and on other pages, and we increased the font size of some slides for better readability. Moreover, the researchers removed unnecessary animation to allow learners to better focus on the content. Some wording was changed for better clarification and booklet was prepared containing learning resources to use while learning (which was subsequently included in the in-person workshop as well). Last, the researchers also added contact information in case learners experienced technical issues while exploring the website. All these modifications to the online workshop did not affect the similarities between the online and in-person workshops in any way.

## Discussion

In this three-phase process, an initial understanding was gained of the ways OTs use the DLW framework by interviewing OTs who were using the framework in their routine practice as well as their needs for training. Understanding learners' needs is important in developing educational interventions (Graves, 1996). As can be deduced from the three themes of the current use of the DLW framework, OTs using DLW concepts believed that the framework fit into their clinical settings and would be useful when having conversations with their clients about wellness. However, they wanted to learn more about the application of the concepts to their real-world practice. To meet this need, the researchers developed five case scenarios representing different practice settings so that potential users would have an opportunity to think about how to use the concepts in practice during the workshop. Providing case scenarios during education allows health care professionals to focus more on their learning because they are provided with examples of persons with lived experience that can resonate with their context (Thistlethwaite et al., 2012). Furthermore, case scenarios were presented in the format of video recordings of interviews with clients. This delivery method was found to be more acceptable and time-efficient when compared to the traditional written case scenarios (Gavgani et al., 2015). The OTs also thought that the theoretical concepts of the DLW framework might not be easily understood by their clients, which might hinder its implementation in their daily lives. They wanted structured worksheets or tools designed specifically for the DLW framework. Thus, the DLW team developed a workbook consisting of various resources and tools that could be used when they applied the DLW framework in their practice. The use of a workbook was designed to deliver knowledge in a more concise way and facilitate learners' active engagement in their learning (Utami et al., 2020).

In our second phase, the content for both in-person and online workshops was developed which incorporated key principles of PBL. Considering the importance of theoretical approaches when delivering knowledge (Aliakbari et al., 2015; Cartney, 2000; Hartzell, 2007; Mann et al., 2009; Pinney et al., 2007; Pololi et al., 2001), it was critical to apply a learning and teaching approach to guide the development of DLW workshops. The PBL approach allowed us to develop a learner-centered educational environment by encouraging learners to actively participate in the learning process in both face to face and online platforms. Small and large group discussions were included in the in-person workshops and discussion forums in the online workshops by considering the core principles of PBL: facilitating collaborative and active learning, stimulating cognitive process, and using prior knowledge (Gewurtz et al., 2016a). Discussion is considered an important method in the learning process to assist learners in understanding different perspectives from other learners, examine their assumptions, get more connected to the knowledge, and develop abilities to integrate knowledge (Brookfield & Preskill, 2012). In addition, online discussion forums are cost efficient and allow learners to ask questions about content or usability issues. They can also provide learners with an opportunity to socialize with other learners (Ng, 2009).

In our final phase, the researchers conducted usability testing for the online workshop because the technology used to deliver the workshop content can affect learning (Sandars & Lafferty, 2010). The feedback received was used to improve the usability of the workshop website based on suggestions from our usability testers. The COVID-19 pandemic put more emphasis on the importance of online learning. In order to provide efficient education in this situation, it will be important to design online education programs based on evidence and theory. OT educators may be able to improve their online educational programs by incorporating a usability test as an essential component of developing a user-friendly online learning platform.

### **Strengths**

While the researchers intended the reporting of our intervention development process as an essential preparatory step to our future interventional trial, the reporting of our development process also allows OT educators to gain insights on how to develop an educational program that takes into account learners' needs. The three-phase process reported here provides educators with a description of how to incorporate the PBL principles equally in both online and in-person learning environments so that learners can be actively engaged in their learning process regardless of the types of educational delivery methods. There have been studies incorporating PBL in the continuing education of health care professionals, but they lacked detailed description of how the PBL principles were applied in the educational intervention development (Smits et al., 2003; Taylor et al., 2004). To our knowledge, this study is the first to explain how the key PBL principles can be equally used for online and in-person workshop development.

### **Limitations**

The use of different measures in our three-phase process allowed us to develop and refine the in-person and online workshops aimed at delivering knowledge about the DLW framework for OTs. There are, however, still more aspects to address in the future, such as incorporating more activities (e.g., games, quizzes, role-playing, etc.) that can enhance learning motivation (Chan, 2012; Cheong et al., 2013). For example, role-playing activities may suit the PBL environment and improve learners' critical thinking, which may affect their decision-making and problem-solving in practice (Chan, 2012). It might not be easy to implement role-playing online; however, creating videos of real-life practice situations might allow each learner to select a preferred character, such as a client, caregiver, or health care provider. The instructor would need to provide constructive feedback on learners' decision-making and offer them a chance to reflect upon their role-playing experience. In addition, the researchers ruled out possible synchronous activities to explicitly differentiate online education from in-person learning. However, considering that OTs value professional socialization (Hollis & Madill, 2006), future researchers designing online educational interventions for OTs may consider including synchronous activities, such as a video meeting for some synchronous small or large group discussions.

### Implications for Occupational Therapy Education

- It is important to understand learners' needs, apply a learner-centered approach, and test online educational methods when OT educators develop educational interventions for OTs.
- A detailed description of the workshop development process can provide OT educators with a template of elements to be included and potential process to adopt when developing evidence- and theory-based educational interventions for OTs.

### Conclusion

There has been a lack of description of the development of online training workshops in OT continuing education. In this paper, a three-phase process is described that supported the team to develop the educational interventions (in-person and online workshops) intended to increase the knowledge and application of the DLW framework in OT practice. The researchers applied different approaches to develop evidence- and theory-based online and in-person workshops to deliver knowledge about the DLW framework for OTs. The researchers considered the development of these interventions as a pre-implementation project, an indispensable step prior to evaluating and comparing the effectiveness of in-person and online workshops. By reporting our development process, the authors provided an “audit trail” of intervention development which facilitates reproducibility of similar educational interventions (Foy et al., 2007).

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### References

- Aliakbari, F., Parvin, N., Heidari, M., & Haghani, F. (2015). Learning theories application in nursing education. *Journal of Education and Health Promotion, 4*.
- Baptiste, S. (2003). *Problem-based learning: A self-directed journey*. Slack Incorporated.
- Barrett, T., & Moore, S. (2010). *New approaches to problem-based learning: Revitalising your practice in higher education*. Routledge.  
<https://doi.org/10.4324/9780203846926>
- Brookfield, S. D., & Preskill, S. (2012). *Discussion as a way of teaching: Tools and techniques for democratic classrooms*. John Wiley & Sons.
- Cartney, P. (2000). Adult learning styles: Implications for practice teaching in social work. *Social Work Education, 19*(6), 609–626.  
<https://doi.org/10.1080/02615470020002335>
- Chan, Z. C. (2012). Role-playing in the problem-based learning class. *Nurse Education in Practice, 12*(1), 21–27. <https://doi.org/10.1016/j.nepr.2011.04.008>
- Chick, R. C., Clifton, G. T., Peace, K. M., Propper, B. W., Hale, D. F., Alseidi, A. A., & Vreeland, T. J. (2020). Using technology to maintain the education of residents during the COVID-19 pandemic. *Journal of Surgical Education, 77*(4), 729-732.  
<https://doi.org/10.1016/j.isurg.2020.03.018>
- Cheong, C., Cheong, F., & Filippou, J. (2013). Quick quiz: A gamified approach for enhancing learning. *PACIS*, (206).
- Colliver, J. A. (2000). Effectiveness of problem-based learning curricula: Research and theory. *Academic Medicine, 75*(3), 259–266.  
<https://doi.org/10.1097/00001888-200003000-00017>

- Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: A meta-analysis. *Learning and Instruction, 13*(5), 533–568. [https://doi.org/10.1016/S0959-4752\(02\)00025-7](https://doi.org/10.1016/S0959-4752(02)00025-7)
- Duncan, E. A. (Ed.). (2011). *Foundations for practice in occupational therapy* [eBook edition]. Elsevier Health Sciences.
- Foy, R., Francis, J. J., Johnston, M., Eccles, M., Lecouturier, J., Bamford, C., & Grimshaw, J. (2007). The development of a theory-based intervention to promote appropriate disclosure of a diagnosis of dementia. *BMC Health Services Research, 7*(1), 207. <https://doi.org/10.1186/1472-6963-7-207>
- Gavvani, V. Z., Hazrati, H., & Ghojzadeh, M. (2015). The efficacy of digital case scenario versus paper case scenario on clinical reasoning in problem-based learning: A systematic review and meta-analysis. *Research and Development in Medical Education, 4*(1), 17–22. <https://doi.org/10.15171/rdme.2015.003>
- Gewurtz, R. E., Coman, L., Dhillon, S., Jung, B., & Solomon, P. (2016a). Problem-based learning and theories of teaching and learning in health professional education. *Journal of Perspectives in Applied Academic Practice, 4*(1), 59-70. <https://doi.org/10.14297/jpaap.v4i1.194>
- Gewurtz, R. E., Moll, S. E., Letts, L. J., Larivière, N., Levasseur, M., & Krupa, T. M. (2016b). What you do every day matters: A new direction for health promotion. *Canadian Journal of Public Health, 107*(2), e205–e208. <https://doi.org/10.17269/cjph.107.5317>
- Graves, K. (1996). A framework of course development processes. *Teachers as Course Developers, 12*, 38. <https://doi.org/10.1017/CBO9780511551178.004>
- Greenhalgh, T. (2001). Computer assisted learning in undergraduate medical education. *BMJ, 322*(7277), 40–44. <https://doi.org/10.1136/bmj.322.7277.40>
- Harden, R. M. (2005). A new vision for distance learning and continuing medical education. *Journal of Continuing Education in the Health Professions, 25*(1), 43–51. <https://doi.org/10.1002/chp.8>
- Hartzell, J. D. (2007). Adult learning theory in medical education. *American Journal of Medicine, 120*(11), e11. <https://doi.org/10.1016/j.amjmed.2006.10.024>
- Hollis, V., & Madill, H. (2006). Online learning: The potential for occupational therapy education. *Occupational Therapy International, 13*(2), 61–78. <https://doi.org/10.1002/oti.209>
- Institute of Medicine (US). Committee on Planning a Continuing Health Care Professional Education Institute. (2010). *Redesigning continuing education in the health professions*. National Academies Press.
- Maloney, S., Haas, R., Keating, J. L., Molloy, E., Jolly, B., Sims, J., Morgan, P., Haines, T. (2011). Effectiveness of Web-based versus face-to-face delivery of education in prescription of falls-prevention exercise to health professionals: Randomized trial. *Journal of Medical Internet Research, 13*(4), e116. <https://doi.org/10.2196/jmir.1680>
- Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education, 14*(4), 595. <https://doi.org/10.1007/s10459-007-9090-2>



- Moll, S. E., Gewurtz, R. E., Krupa, T. M., Law, M. C., Lariviere, N., & Levasseur, M. (2015). "Do-Live-Well": A Canadian framework for promoting occupation, health, and well-being: «Vivez-Bien-Votre Vie»: Un cadre de référence Canadien pour promouvoir l'occupation, la santé et le bien-être. *Canadian Journal of Occupational Therapy*, 82(1), 9–23. <https://doi.org/10.1177/0008417414545981>
- Newble, D. I., & Clarke, R. M. (1986). The approaches to learning of students in a traditional and in an innovative problem-based medical school. *Medical Education*, 20(4), 267–273. <https://doi.org/10.1111/j.1365-2923.1986.tb01365.x>
- Ng, E. M. (Ed.). (2009). *Comparative blended learning practices and environments*. IGI Global. <https://doi.org/10.4018/978-1-60566-852-9>
- Norman, G. T., & Schmidt, H. G. (1992). The psychological basis of problem-based learning: A review of the evidence. *Academic Medicine*, 67(9), 557–565. <https://doi.org/10.1097/00001888-199209000-00002>
- Pinney, S. J., Mehta, S., Pratt, D. D., Sarwark, J. F., Campion, E., Blakemore, L., & Black, K. P. (2007). Orthopaedic surgeons as educators. *Journal of Bone and Joint Surgery. American Volume*, 89(6), 1385–1392. <https://doi.org/10.2106/JBJS.F.01487>
- Pololi, L., Clay, M. C., Jr., M. L., Hewson, M., Kaplan, C., & Frankel, R. M. (2001). Reflections on integrating theories of adult education into a medical school faculty development course. *Medical Teacher*, 23(3), 276–283. <https://doi.org/10.1080/01421590120043053>
- Richmond, H., Copsey, B., Hall, A. M., Davies, D., & Lamb, S. E. (2017). A systematic review and meta-analysis of online versus alternative methods for training licensed health care professionals to deliver clinical interventions. *BMC Medical Education*, 17(1), 1-14. <http://doi.org/10.1186/s12909-017-1047-4>
- Ruiz, J. G., Mintzer, M. J., & Leipzig, R. M. (2006). The impact of e-learning in medical education. *Academic Medicine*, 81(3), 207–212. <https://doi.org/10.1097/00001888-200603000-00002>
- Sandars, J., & Lafferty, N. (2010). Twelve tips on usability testing to develop effective e-learning in medical education. *Medical Teacher*, 32(12), 956–960. <https://doi.org/10.3109/0142159X.2010.507709>
- Scaffa, M. E., & Wooster, D. M. (2004). Effects of problem-based learning on clinical reasoning in occupational therapy. *American Journal of Occupational Therapy*, 58(3), 333–336. <https://doi.org/10.5014/ajot.58.3.333>
- Smits, P. B., de Buissonjé, C.D., Verbeek, J. H., van Dijk, F. J., Metz, J. C., & Cate, O. J. T. (2003). Problem-based learning versus lecture-based learning in postgraduate medical education. *Scandinavian Journal of Work, Environment & Health*, 29(4), 280–287. <https://doi.org/10.5271/sjweh.732>
- Stark, C. M., Garner, C.D., Garg, A., & Bégin, F. (2021). Building capacity of health professionals in low- and middle-income countries through online continuing professional development in nutrition. *Journal of Continuing Education in the Health Professions*. 41(1), 63–69. <https://doi.org/10.1097/CEH.0000000000000334>

- Suman, M & Provident, I. (2018). Using online professional development to increase self-efficacy in school-based occupational therapy fieldwork educators. *Journal of Occupational Therapy Education*, 2(1), 6.  
<https://doi.org/10.26681/jote.2018.020106>
- Taylor, R. S., Reeves, B. C., Ewings, P. E., & Taylor, R. J. (2004). Critical appraisal skills training for health care professionals: A randomized controlled trial [ISRCTN46272378]. *BMC Medical Education*, 4(1), 30.  
<https://doi.org/10.1186/1472-6920-4-30>
- Thistlethwaite, J. E., Davies, D., Ekeocha, S., Kidd, J. M., MacDougall, C., Matthews, P., Purkis, J., & Clay, D. (2012). The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Medical Teacher*, 34(6), e421–e444.  
<https://doi.org/10.3109/0142159X.2012.680939>
- Utami, A. R., Aminatun, D., & Fatriana, N. (2020). Student workbook use: Does it still matter to the effectiveness of students' learning? *Journal of English Language Teaching and Learning*, 1(1), 7–12. <https://doi.org/10.33365/jeltl.v1i1.247>
- Vaona, A., Banzi, R., Kwag, K. H., Rigon, G., Cereda, D., Pecoraro, V., Tramacere, I., & Moja, L. (2018). E-learning for health professionals. *Cochrane Database of Systematic Reviews*, (1). <https://doi.org/10.1002/14651858.CD011736.pub2>
- Vu, N. V., van der Vleuten, C. P., & Lacombe, G. (1998). Thinking about student thinking: Medical students' learning processes. A comparative and longitudinal study. *Academic Medicine*, 73(10), S25–27.  
<https://doi.org/10.1097/00001888-199810000-00035>
- Wong, G., Greenhalgh, T., & Pawson, R. (2010). Internet-based medical education: A realist review of what works, for whom and in what circumstances. *BMC Medical Education*, 10(1), 12. <https://doi.org/10.1186/1472-6920-10-12>
- Zaharias, P., & Poylymenakou, A. (2009). Developing a usability evaluation method for e-learning applications: Beyond functional usability. *International Journal of Human–Computer Interaction*, 25(1), 75–98.  
<https://doi.org/10.1080/10447310802546716>