JOTE Journal of Occupational Therapy Education

Volume 7 | Issue 1 Article 9

2023

Increasing Self-Efficacy and Engagement in Occupational Therapy Education through the Use of an Unfolding Case Study Curricular Design

Michael J. Jensen
University of Minnesota - Twin Cities

Recommended Citation

Jensen, M. J. (2023). Increasing Self-Efficacy and Engagement in Occupational Therapy Education through the Use of an Unfolding Case Study Curricular Design. *Journal of Occupational Therapy Education, 7* (1). https://doi.org/10.26681/jote.2023.070109

Increasing Self-Efficacy and Engagement in Occupational Therapy Education through the Use of an Unfolding Case Study Curricular Design

Abstract

The unfolding case study, which has the case study client evolve over time, has been shown to positively influence both academic and affective performance, though to this point has not been studied in terms of development of self-efficacy in clinical skills or engagement with course content. This study used a quasi-experimental design as well as retrospective data analysis to examine two case study designs (one static or unchanging and one unfolding) within an occupational therapy doctorate program. The study found that occupational therapy students (n = 16) reported a statistically significant difference in the development of clinical skill self-efficacy ($p < .05$) after engaging in a semester long unfolding case study compared to a semester long static case study. Additionally, the study found that occupational therapy students (n = 47) demonstrated greater engagement with the online curricular content supporting the unfolding case study compared to the static case study ($p < .001$). The findings of the study suggest that there may be benefits to using an unfolding case study as a curricular design strategy in relation to increased clinical skill self-efficacy and enhanced engagement with course content.

Keywords

Unfolding case study, self-efficacy, engagement, curricular design

JOTE
Journal of Occupational Therapy Education

Volume 7, Issue 1

Increasing Self-Efficacy and Engagement Through the Use of an Unfolding Case Study Curricular Design

Michael Jensen, EdD, OTR/L

University of Minnesota

United States

ABSTRACT

The unfolding case study, which has the case study client evolve over time, has been shown to positively influence both academic and affective performance, though to this point has not been studied in terms of development of self-efficacy in clinical skills or engagement with course content. This study used a quasi-experimental design as well as retrospective data analysis to examine two case study designs (one static or unchanging and one unfolding) within an occupational therapy doctorate program. The study found that occupational therapy students (n = 16) reported a statistically significant difference in the development of clinical skill self-efficacy ($p < .05$) after engaging in a semester long unfolding case study compared to a semester long static case study. Additionally, the study found that occupational therapy students (n = 47) demonstrated greater engagement with the online curricular content supporting the unfolding case study compared to the static case study ($p < .001$). The findings of the study suggest that there may be benefits to using an unfolding case study as a curricular design strategy in relation to increased clinical skill self-efficacy and enhanced engagement with course content.

The use of case studies within a curriculum, otherwise referred to as case-based learning, is utilized as a curricular strategy within higher education as a means to bridge the gap between didactic coursework and the direct application of knowledge with clients in the field. Healthcare education in particular has been using this model as a means to prepare students to interact with and treat clients across a variety of disciplines including medicine, allied health (occupational, physical, and speech therapy), nursing, and dentistry (McLean, 2016). Case-based learning has been found to promote student engagement within the curriculum (Thistlethwaite et al., 2012), enhance critical thinking skills (Li et al., 2019), and be positively related to academic performance (Dong et al., 2022).

The unfolding case study design, which originated within the field of nursing education (Glendon & Ulrich, 1997), accounts for the complex and evolving nature of an actual client or patient by changing over a pre-determined course of time. An unfolding case study can initiate on the first client encounter and then 'unfold' across a pre-determined period of time culminating in a client discharge or other event. During this unfolding, multiple designed events can occur including client encounters with other members of the interdisciplinary team, resolution or worsening of conditions, and changes to the client's context. As these changes occur, the student must utilize previously gained knowledge and apply it in response to the dynamic client presentation (Altmiller, 2020).

Benefits from using an unfolding case study within a curricular design have included enhanced knowledge synthesis and transferability to practice (Meiers & Russel, 2019) as well as facilitating the clinical application of theory (Palermo et al., 2019). Additionally, the unfolding case study model has been associated with an increased positive attitude and comfort in dealing with challenging client issues such as end of life contexts (Byrne et al., 2020). What still requires further exploration, however, is the unfolding case study model's effect on student self-efficacy as well as student engagement with curricular content.

Self-efficacy theory, as proposed by Bandura, explores "people's beliefs in their capabilities to produce desired effects by their actions" (Bandura, 1997, p. 6). This has direct application towards the training of healthcare students as not only do academic programs desire to build the knowledge and skills of future healthcare professionals but also develop a sense of self-confidence, or efficacy, in the students' perceived ability to successfully translate knowledge and skills into practice with clients. A key element in building self-efficacy includes the provision of mastery experiences because "they provide the most authentic evidence of whether one can muster whatever it takes to succeed" (Bandura, 1997, p. 80). Mastery experiences alone, however, are not enough to build self-efficacy. An important consideration is that the mastery experiences must be in close proximity, or authentic, to the actual experience in which one is seeking to gain self-efficacy (Bandura, 1997). A student who completes academic coursework that is removed from the actual experience of treating clients will not build self-efficacy towards treating clients, whether on their clinical rotations or beyond. For example, mastering multiple-choice testing might increase self-efficacy in test taking but this may not apply beyond this discrete skill. Unfolding case studies, by more closely mirroring the complex and changing nature of clients over time compared to static or unchanging case studies, which provide a one-time vignette of a client but do not evolve, may provide students a more authentic approximation of the skills healthcare students will need to enact on clinical rotations and more directly lead to the development of self-efficacy in this area.

To date, researchers have explored related topics such as the static case study design's relation to self-efficacy (Shin et al., 2020) as well as self-efficacy stemming from participation in an unfolding case study design coupled with high-fidelity simulation (Munn et al., 2021), though further research is needed to better understand whether or

DOI: 10.26681/jote.2023.070109

not participating in an unfolding case study curricular design has a greater influence on clinical skill self-efficacy compared to participation in a static case study curricular design. To explore this further, the following research question was developed.

Research Question #1: Does completion of a course utilizing an unfolding case study design increase student clinical skill self-efficacy to a greater extent than completion of a course utilizing a static case study?

A separate pragmatic question that arises is whether the unfolding case study design increases student engagement with learning content. It is hypothesized that, because the client's condition changes over time, the student would be necessitated to return to prior content as a reference since the presenting situation is now novel. For example, a student may need to return to content on cardiac lab values from an earlier week's module in order to appropriately react to newly presenting information within the client's updated lab value report. Semple and Currie (2022) found evidence that the unfolding case study model enhanced student engagement broadly, though further evidence is needed related to this topic. Specifically, in a hybrid course in which the didactic information is contained within an online learning management system (LMS), would an unfolding case study curricular design encourage greater engagement with the associated online content than a static case study design? The present study seeks to answer the following research question.

Research Question #2: Does an unfolding case study design promote greater engagement with associated didactic content (operationalized through average page views of associated educational content) than a static case study?

Methods

Study Design

This study used a quasi-experimental, non-randomized design to gather data comparing case study design impact on students' clinical self-efficacy. The study also utilized retrospective data analysis by examining content page views associated with both case study design models.

Participants

Students were recruited from two separate occupational therapy doctorate student cohorts (n=96) who had completed both of the courses housing the case study design models under investigation. Students were invited to participate via an email containing the survey link sent by a program staff member. The data gathered pertaining to page views were available via the LMS's analytics software. Whereas the information gathered via survey was limited to active participation (students choosing to fill out the survey), the data examined in the LMS incorporated all students enrolled across both courses (each course had the same students given the structured nature of the curriculum).

Instruments

Physiotherapist Self-Efficacy Questionnaire (PSE): The PSE (vanLenkveld el al., 2017) is a 13-question survey assessing self-efficacy related to clinical skills. Each statement in the questionnaire uses a 5-point Likert scale. The scale has been shown to have significant internal reliability (Cronbach's $\alpha > .90$) and has strong construct validity (vanLenkveld et al., 2017). The survey instructions directed students to complete the PSE in regard to their experience engaging in both the static case study design and the unfolding case study design. The PSE, though originally designed with physical therapy students in mind, was deemed to be appropriate for occupational therapy students as the questions were equally relatable to both disciplines. Questions such as "I feel that I am able to perform objective assessments for an older adult caseload," "I feel that I am able to identify and prioritize patient's problems for an older adult caseload," and "I feel that I am able to progress interventions appropriately for an older adult caseload" (vanLenkveld el al., 2017) are equally relatable to both physical therapy and occupational therapy professionals.

Canvas LMS Analytics: Course engagement was operationalized through the number of times a student visited a content page within a module directly related to each course's case study. Page views were utilized as the proxy for student engagement instead of time spent within the course page because the latter does not account for a student leaving a page open beyond their active engagement thus overestimating student engagement. The analytics software that was utilized to compare number of page views was built into the course prior to the study as part of the standard course performance and engagement analysis software. The software allowed for a comparison of individual student page views per module across both courses. Only modules that were directly associated with the case study clients (as indicated by the module content and end of module assignment being directly related to the case study client) were utilized in this study.

Course and Case Study Design

The two courses that were under investigation focused on the practice of occupational therapy within an older adult population. The courses occurred within semester four and five of the curriculum progression. The courses were designed in a very similar manner to promote continuity and both were centered on a client case study that was introduced in the first week of the course. Both courses were delivered within a hybrid model in which the students were presented with all of the didactic content online and had bi-weekly in-person labs for hands-on skill practice. Each course was organized into weeklong modules with an assignment associated with each module. These modules addressed practice topics related to the case study clients and included assignments that had the student apply information about the case study client and associated content to the assignment. There were certain modules within the courses that did not directly apply to the case study (such as modules focused specifically on a diagnosis or indirectly related population-level concerns) and were excluded from the analysis.

DOI: 10.26681/jote.2023.070109

Static Case Study

The static case study presented an older adult client that included both a primary diagnosis as well as a rich occupational profile of the client describing medical, social, and contextual information about the client. Per the static case study design, the client's initial information did not change or evolve over time. The presentation of the static case study was broad and detailed enough to relate to the subsequent modules within the course and the assignments directly related to the case study client.

Unfolding Case Study

The unfolding case study also presented an older adult client with a primary diagnosis and the same level of contextual details as the static case study. As each week of the course progressed, however, so did the client. Each week the client moved forward in time and his functional status and condition changed. The client's progression occurred across a period of six weeks within a rehabilitation facility and at each updated interval the client progressed in terms of functional ability and medical stability. In order to track the progression of the client over time, a simulated electronic health record (EHR) was utilized. Changes in client status were expressed within the progress notes of the interdisciplinary team (physician, occupational therapist, physical therapist, speech language pathologist, nursing, and social worker) as well as updates to vital signs and lab values. The design of the modules and related assignments were very similarly structured to the course built around the static case study design. The evolving case study client existed in the external EHR and accessing his information directly did not register as a page view in the learning management system.

Data Analysis

Both hypotheses were tested utilizing paired samples t-tests. Testing for the impact of case study design on student self-efficacy of clinical skills was completed through paired t-test analysis of PSE scores related to the participants' experience with the static case study curriculum design and the unfolding case study curriculum design. Testing for student engagement in the curriculum (operationalized through case study content-specific page views) was completed through paired t-test analysis of student page views across courses. Mean page views per module were utilized accounting for pages per module to prevent skewing of data due to difference in number of pages. Effect size of both analyses was completed via Cohen's D. All data analysis was completed through IBM SPSS Statistics (version 28).

Ethics

This study was reviewed and approved by the Institutional Review Board (IRB) of the University of Minnesota.

Results

Surveys were distributed to all students who completed the two courses under investigation across two cohorts of students (N = 96; cohort sizes = 47 and 49). The study originally focused on the initial cohort of 47 students though was extended (with IRB approval) to a second cohort due to low initial survey response. Sixteen completed surveys were returned for a response rate of 17% (see Table 1).

Table 1

Participant Demographics

Variable	n (%)
Gender Identification	
Male	1 (6%)
Female	15 (94%)
Age Range	
18-25	11 (69%)
26-30	4 (25%)
31-35	1 (6%)

Statistical analysis using a two-tailed paired t-test showed a significant difference in perceived self-efficacy scores between the student experience related to the static case study curricular design (M = 3.65, SD = 0.54) and the unfolding case study curricular design (M = 3.91, SD = 0.51), t(15) = 2.64, p < .05. This difference in self-efficacy demonstrated a medium effect size (Cohen's d = .659) (see Table 2).

Table 2

Self-Efficacy per Case Study Design

	Static Case Study		Unfolding Case Study				
	M	SD	M	SD	T(15)	p	Cohen's d
Student Self-Efficacy per Case Study Design	3.65	.54	3.91	.51	2.64	< .05	.659

The analysis of page views across both courses as described in the methodology section was completed through a two-tailed paired t-test analysis of the course analytic data. As opposed to the survey data (N = 16), the retrospective course data analysis included data points from all participants of the initial cohort (n = 47) and did not necessitate an additional retrospective analysis of the second cohort. Analysis of average page views across modules that specifically related to the case study model found a greater number of average page views associated with the unfolding case study model (M = 10.2, SD = 3.4) compared to the static case study model (M = 5.8, SD = 2.0), t(46) = 10.1, p < .001. This difference in page views demonstrated a large effect size (Cohen's d = 1.5).

DOI: 10.26681/jote.2023.070109

The above results confirmed a statistically significant difference in page views associated with the case study design within the courses. To further explore this phenomenon, it would be expected that module pages between the two courses that were unrelated to the unfolding case study design should demonstrate no statistically significant difference. To further explore this statistically, the opening modules of the two courses were analyzed. Given that both case studies are introduced in the opening module of the course, they would both be considered static at that point since the unfolding case study design does not begin to unfold or evolve until the following week's module. Because of this, page views between both week one modules should be similar and any difference in page views between the two modules would be attributed to other confounding factors beyond case study design. A two-tailed paired t-test comparison of the week one modules (which contained one less student in the analysis due to a late start) confirmed that there was no statistically significant difference in page views between week one of the static case study course ($M = 4.9$, $SD = 1.6$) and week one of the unfolding case study course ($M = 5.5$, $SD = 2.2$), $t(45) = 1.8$, $p = .075$. This result further suggests that the difference in page views may be associated with the difference in case study design. Table 3 summarizes analysis of student engagement.

Table 3

Student Engagement per Case Study Design

	Static Case Study		**Unfolding Case Study**				
	M	SD	M	SD	T(46)* T(45)**	p	Cohen's d
Engagement (Average Page Views)	5.8	2.0	10.2	3.4	10.1*	< .001	1.5
Engagement (Week 1 Comparison)	4.9	1.6	5.5	2.2	1.8**	.075	n/a

Discussion

The results of this study demonstrated curricular design choices may have an impact on the development of self-efficacy within university healthcare students. In particular, utilizing an unfolding case study design, in which the client changes and evolves over a select period of time, may lead to increased self-efficacy in a student's clinical skillset. This holds with self-efficacy theory which posits that a challenge must not only be set at the correct mastery level (not too easy; not too hard) but must also be authentic and proximal to the true challenge (Bandura, 1997). A static case study design, which does contain some elements of authenticity towards the actual practitioner-client interaction, is essentially a snapshot in time and does not reflect the dynamic nature of clients over

an episode of care. Unfolding case studies can more closely mirror what the student will experience in the field. The designer of the unfolding case study (the course designer or course instructor) can draw on actual client cases and create a complex episode of care in which the client's medical condition or social situation changes and must be addressed by the students. Additionally, rare, complex events that may not come up on a student's clinical rotation can be addressed within the unfolding case study (Carr, 2015). This style of case study client can unfold across a matter of hours or months (in subjective client time) and can extend in real time across the span of one course session, an entire semester course (as it did in this study), or thread across multiple courses tying together multiple subjects into one complex case (Padgett et al., 2020). This varied and authentic presentation of client case studies may better approximate what a student will encounter in the field and, when mastered, build self-efficacy.

The results of the study also suggested that curricular design choice can influence engagement in educational content. In particular, embedding an unfolding case study within a course may encourage students to access the course's content at a greater level as they react to the novel demands of the changing client. As stated earlier, the unfolding case study has been found to be inherently engaging to students (Semple & Currie, 2022) which may account for increased engagement in the supporting educational content. More pragmatically, thoughtful design of an unfolding case study can encourage students to reengage with different aspects of the curriculum in response to the evolution of the case study client. For example, a student may use week one educational content to address issues presenting in week one, though may need to return to week one content in week six if the condition presenting in week one changes. The design of an unfolding case study is inherently a narrative pedagogical design approach (Carr, 2015) and as such can be deliberately crafted to reinforce previously addressed aspects of the curriculum or to have students reconsider them within a new context.

The study did contain certain limitations. The design of the study was not a true experimental design as the analysis occurred within the context of an existing curriculum. Due to this, a semester separated the two case study experiences and the order of experiencing the two different case study designs could not be randomized. Additionally, the two courses were designed in a very similar manner with the exception of the case study design, yet they were still different courses taught by two different instructors which would not be ideal within a true experimental design. Finally, while the number of participants that completed the self-efficacy surveys was adequate for statistical analysis, a larger sample would have been ideal.

Future research in this area could seek to replicate this study using a more experimental design in which the two case study models are designed with identical supporting content and assignments with randomized order of case study engagement. Additionally, future research could incorporate a mixed methods approach to better understand the student perspective on self-efficacy and content engagement across both case study designs.

DOI: 10.26681/jote.2023.070109

Implications for Occupational Therapy Education

Occupational therapy educators should consider the inclusion of an unfolding case study design into their courses as a means to enhance student self-efficacy towards their clinical skills. This may be particularly relevant to practice-based courses which teach specific skills and approaches across the occupational therapy process as well as courses in close proximity to fieldwork experiences in order to address clinical skill self-efficacy prior to active engagement in the skills.

Additionally, the unfolding case study design may be used as a means to increase student engagement with online course material. The design of the unfolding case study could purposefully refocus students on past content that is deemed critical for the students to comprehend. The unfolding case study is a flexible curricular design tool that could thread one case study across multiple courses or semesters to build connections across the curriculum and encourage review of content from prior semesters.

Conclusion

The results of this study suggest that the curricular design choice of utilizing unfolding case studies within a healthcare curriculum may positively influence student self-efficacy towards their clinical skills. This study adds to the body of evidence that unfolding case studies are an effective tool that occupational therapy educators can utilize to build student self-efficacy (Munn et al., 2021). Building self-efficacy through authentic mastery experiences (Bandura, 1997) can allow students to experience the just-right challenge and build confidence in their ability to apply learned practice skills.

The study also contributes to the literature supporting the unfolding case study as a means to increase student engagement (Semple & Currie, 2022). The student engaging in the unfolding case study can be drawn back to the curricular content in order to reinforce learning related to the current case study context. Taken together, creators of occupational therapy coursework can consider aspects of the curriculum in which they want to build student self-efficacy and integrate them into an unfolded case study to meet these ends.

References

Altmiller, G. (2020). Perioperative unfolding case study: A lesson in quality and safety. *AORN Journal, 112*(2), 104-111. https://doi.org/10.1002/aorn.13101

Bandura, A. (1997*). Self-efficacy: The exercise of control*. W.H. Freeman.

Byrne, D., Overbaugh, K., Czekanski, K., Wilby, M., Blumenfeld, S. & Laske, R. (2020). Assessing undergraduate nursing students' attitudes toward the dying in an end-of-life simulation using an ACE.S unfolding case study. *Journal of Hospice & Palliative Nursing, 22*(2), 123-129. https://doi.org/10.1097/NJH.0000000000000626

Carr, K. (2015). Using the unfolding case study in midwifery education*. Journal of Midwifery & Women's Health, 60*(3), 283-290. https://doi.org/10.1111/jmwh.12293

Dong, H., Guo, C., Zhou, L., Zhao, J., Wu, X., Zhang, X., & Zhang, X. (2022). Effectiveness of case-based learning in Chinese dental education: A systematic review and meta-analysis. *BMJ Open, 12*(2), E048497.

Glendon K., & Ulrich D. (1997). Unfolding cases: An experiential learning model. *Nurse Educator, 22*(4), 15-18. https://doi.org/10.1097/00006223-199707000-00009

Li, S., Ye, X., & Chen, W. (2019). Practice and effectiveness of "nursing case-based learning" course on nursing student's critical thinking ability: A comparative study. *Nurse Education in Practice, 36*, 91-96. https://doi.org/10.1016/j.nepr.2019.03.007

McLean, S. F. (2016). Case-based learning and its application in medical and health-care fields: A review of worldwide literature. *Journal of Medical Education and Curricular Development, 3*, 39-49. https://doi.org/4137/JMECD.S20377

Meiers, J., & Russell, M. (2019). An unfolding case study: Supporting contextual psychomotor skill development in novice nursing students. *International Journal of Nursing Education Scholarship, 16*(1). https://doi.org/10.1515/ijnes-2018-0013

Munn, A. C., Lay, B., Phillips, T. A., & George, T. P. (2021). Assessing the impact of unfolding case study scenarios during high-fidelity pediatric simulation among undergraduate nursing students. *Healthcare, 9*(11), 1584. https://doi.org/10.3390/healthcare9111584

Padgett, T., DeRose, B., Woolf, S., & Tielker, S. (2020). Implementing an unfolding case study throughout the nursing curriculum to increase opioid addiction education. *Journal of Nursing Education, 59*(4), 235-238. https://doi.org/10.3928/01484834-20200323-12

Palermo, C., Kleve, S., McCartan, J., Brimblecombe, J., & Ferguson, M. (2019). Using unfolding case studies to better prepare the public health nutrition workforce to address the social determinants of health. *Public Health Nutrition, 22*(1), 180-183. https://doi.org/10.1017/S1368980018002811

Semple, L., & Currie, G. (2022). "It opened up a whole new world": An innovative interprofessional learning activity for students caring for children and families. *International Journal of Educational Research Open, 3*, 100106. https://doi.org/10.1016/j.ijedro.2021.100106

Shin, T., Klingler, M., Han, A., Mocsiran, J., Vilchez, V., Naples, R., French, J., Lipman, J., & Rosenblatt, S. (2020). Efficacy of virtual case-based general surgery clerkship curriculum during COVID-19 distancing. *Medical Science Educator, 31*(1), 101-108. https://doi.org/10.1007/s40670-020-01126-5

Thistlethwaite J., Davies D., Ekeocha S., Kidd J., 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), e421-444. https://doi.org/10.3109/0142159X.2012.680939

van Lankveld, W., Jones, A., Brunnekreef, J., Seeger, J., & Staal, J. (2017). Assessing physical therapist students' self-efficacy: Measurement properties of the Physiotherapist Self-Efficacy (PSE) questionnaire. *BMC Medical Education, 17*(1), 250. https://doi.org/10.1186/s12909-017-1094-x

DOI: 10.26681/jote.2023.070109