



## **AOTA Critically Appraised Papers Series**

# **Evidence Exchange**

*\*A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

### **CRITICALLY APPRAISED PAPER (CAP)**

#### ***Focused Question***

**What are the effects of an intensive problem-based learning (PBL) course on the development of occupational therapy students' clinical-reasoning skills?**

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Scaffa, M. E., & Wooster, D. M. (2004). Brief Report--Effects of problem-based learning in occupational therapy. *American Journal of Occupational Therapy*, 58, 333–336.  
<http://dx.doi.org/10.5014/ajot.58.3.333>

#### **CLINICAL BOTTOM LINE:**

This Level III study was based on a one-group, nonrandomized sample and used a quasi-experimental pretest/posttest design with a convenience sample of 48 undergraduate occupational therapy students to examine if problem-based learning (PBL) had a significant effect on students' clinical reasoning. The Self-Assessment of Clinical Reflection and Reasoning (SACRR) was administered on the first and last days of the course to determine changes in clinical reasoning. Students showed improvement in clinical reasoning, as well as in their use of theory and their ability to question the potential efficacy of interventions. Although occupational therapy education has progressed to a master's level of preparation, the study findings offer support for the use of PBL in an occupational therapy curriculum. However, this conclusion is limited by the size of the study, the lack of a control group, and the use of students' self-assessment rather than objective criteria. PBL is used as a learning method in many curriculums. Stronger evidence supporting its efficacy is needed.

#### **RESEARCH OBJECTIVE(S)**

The purpose of the study was to determine the effects of an intensive PBL course on the development of clinical-reasoning skills of undergraduate occupational therapy students.

#### **DESIGN TYPE AND LEVEL OF EVIDENCE:**

Level III study used a quasi-experimental pretest/posttest design.

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *Circle yes or no, and if no, explain.*

**YES/NO**

There have been a few studies in occupational therapy education literature that have explored the efficacy of PBL.

**SAMPLE SELECTION**

How were subjects selected to participate?

A convenience sample of 48 occupational therapy students participated in the course prior to the start of their Level II fieldwork experience.

**Inclusion Criteria**

Senior occupational therapy students pursuing a Bachelor of Science in Occupational Therapy.

**Exclusion Criteria**

Not reported.

**SAMPLE CHARACTERISTICS**

N = 48

% Dropouts

#/ (%) Male

#/ (%) Female

Ethnicity

Disease/disability diagnosis

Check appropriate group:

<20/study group	20–50/study group <input checked="" type="checkbox"/>	51–100/study group	101–149/study group	150–200/study group
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**INTERVENTION(S) AND CONTROL GROUPS**

Group 1

Brief Description?	The students participated in a 5-week, 30-hour PBL course before beginning their Level II fieldwork. Royeen’s (2001) SACRR was used as the outcome tool. Students worked in small groups on cases for two 3-hour sessions (6 hours) per week for 5 weeks.
Setting	Occupational therapy classroom, University of South Alabama.
Who Delivered?	Student facilitated sessions under faculty supervision.
Frequency?	Two 3-hour sessions per week.
Duration?	5 weeks

Intervention Biases: Circle yes or no and explain, if needed.

Contamination

YES  NO

Co-intervention

YES  NO

Timing

YES  NO

Site

YES  NO

Use of different therapists to provide intervention

YES  NO

## MEASURES AND OUTCOMES

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article--yes/no/NR [not reported]), and how frequently the measure was used.

Royeen's (2001) SACRR was used as the outcome tool and administered on the first and last days of class. Internal consistency is good (Cronbach's alpha = .87 pretest, .92 posttest); test-retest reliability is acceptable at .60 (Spearman rank order correlation coefficient).

Measurement Biases

Were the evaluators blind to treatment status? Circle yes or no, and if no, explain.

YES  NO

The researchers were faculty of the course; the students completed the SACRR pre- and post-course.

Recall or memory bias. Circle yes or no, and if yes, explain.

YES  NO

A 5-week interval between pretest and posttest controlled for memory bias.

Others (list and explain):

## RESULTS

List results of outcomes relevant to answering the focused question.

Include statistical significance where appropriate ( $p < 0.05$ ).

Include effect size if reported.

Wilcoxon Signed Ranks Test is a nonparametric test that examines both the direction and the relative amount of difference of paired scores (Portney & Watkins, 2009) which was used to compare the pretest and posttest scores on each of the 26 items on the SACRR. Significant differences were noted on 11/26 items and on the aggregate score from pretest to posttest. Items demonstrating significant differences included

“I think in terms of comparing and contrasting information about a client’s problems and proposed solutions to them.”

“I use theory to understand treatment techniques, I regularly hypothesize about the reasons for my client’s problems.”

“Regarding a particular intervention, I ask, ‘In what context would it work?’”

“I use theory to understand intervention strategies.”

“When planning intervention strategies, I ask, ‘What if’ for a variety of options’.”

“I ask for colleagues’ ideas and viewpoints.”

“I ask for the viewpoints of the client’s family members.”

“Regarding a proposed intervention strategy, I think ‘What makes it work?’”

“Regarding a particular intervention strategy, I ask, ‘In what context would it work?’”

“Regarding a particular intervention with a particular client I determine whether or not it worked.”

Participants improved in their overall scores from pretest score of 96.88 to posttest score of 102.55 ( $p < .01$  level).

Was this study adequately powered (large enough to show a difference)? *Circle yes or no, and if no, explain.*

YES  NO

The small sample size limited the study’s power.

Were appropriate analytic methods used? *Circle yes or no, and if no, explain.*

YES  NO

Were statistics appropriately reported (in written or table format)? *Circle yes or no, and if no, explain.*

YES  NO

## CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

This study found PBL had a significant effect on students' self-perception of clinical reasoning. An additional 11 items on the SACRR showed significant differences, including the use of theory in treatment, questioning the efficacy of treatment, and the use of specific clinical strategies. The authors also concluded that, although the development of the PBL model was time intensive, the learning was justified on the basis of noted improvement in 40% of items and in the total score. The empirical evidence to support this is limited by a lack of control group. The authors acknowledge the need for a control group to determine the benefit of PBL. Main limitations are the lack of a control group, lack of specificity of the PBL course design, and the use of a tool that measured self-perception and not an objective measure of clinical reasoning or student learning outcome.

## References

- Portney, L. G., & Watkins, M. P. (2009). *Foundations of clinical research: Applications to practice*. Upper Saddle River, N.J: Pearson/Prentice Hall.
- Royeen, C. B., Mu, K., Barrett, K., & Luebben, A. J. (2001). Pilot investigation: Evaluation of clinical reflection and reasoning before and after workshop intervention. In P. Crist (Ed.), *Innovations in Occupational Therapy Education* (pp. 107–114). Bethesda, MD: American Occupational Therapy Association.

This work was completed in November 2012 by Claire M. Mulry, MSOT, OTR, CAPS, and Donna Breger Stanton, MA, OTR/L, CHT, FAOTA, who were OTD students from Thomas Jefferson University.

AOTA has determined that this CAP has met AOTA-established criteria and guidelines for research design, format, and structure. The CAP has been peer reviewed by CAP reviewers who are selected and trained by AOTA. However, the vigorous peer review process is conducted independently of the AOTA review and editorial processes.

For more information about the Evidence Exchange, e-mail [evidenceexchange@aota.org](mailto:evidenceexchange@aota.org)

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