

Synthesis of Research on Mathematical Thinking Development under the Lesson Study and Open Approach Context

by Keow Ngang Tang

Submission date: 08-Sep-2021 11:57AM (UTC+0700)

Submission ID: 1643559156

File name: Turnitin_Jatuporn2.docx (186.17K)

Word count: 3428

Character count: 20888

Synthesis of Research on Mathematical Thinking Development under the Lesson Study and Open Approach Context

ABSTRACT

The qualitative educational research synthesis of this paper is the incorporation of existing knowledge and the research results using Lesson Study and Open Approach innovations that relevant to the concern of students' mathematical thinking development. The purpose of synthesis is to upsurge the generalization and pertinency of new knowledge development based on the results in incorporation the two innovations. Researchers employed document analysis to analyze the evidence of 266 postgraduate studies from the academic year 2003 to 2020. The research procedure consists of three stages. The results from the first stage showed that there are six research classifications identified, namely teacher and teaching, students and learning, assessment, classroom innovations, curriculum development, and educational policy. The research findings of the second phase indicated that there was a total of 210 studies (78.95%) were employing Open Approach incorporated in the Lesson Study process. Moreover, 53.33 percent are found in students and learning research classification. This is followed by 19.05 percent in teacher and teaching, 14.76 percent in classroom innovations, and 4.76 percent in assessment classifications. However, there was a limited of past postgraduate researchers interested to study curriculum development (4.29%) and educational policy (3.81%) research classifications. The findings of the final stage revealed that all the 210 postgraduate studies concerning the six research classifications are found to have different impacts on students' mathematical thinking development. These effects occurred across a series of settings, synthesis approaches, expectations, and managing the Thailand Lesson Study Model.

KEYWORDS

Innovations; Lesson Study; Mathematical thinking; Open Approach; Synthesis of educational research.

INTRODUCTION

Research synthesis is defined by past researchers (Baron et al., 2017; Wyborn et al., 2018) as the incorporation and valuation of understanding and study results relevant to a specific problem, with the intention of enhancing the generalization and application of, and gain access to, those results. Qualitative educational research synthesis is an academic report to facilitate the research of teachers and students' teaching and learning experiences as well as cultural and social phenomena (Jordan, Donnelly, & Pittman, 2006). Therefore, qualitative educational research synthesis has its foundations in the humanities and social sciences and requests to examine the complication of human being experiences in realistic backgrounds and from a universal perspective (Ailinger, 2003).

The significance of systematic reviews of postgraduate research in utilizing teaching innovations could inform us of the delivery of the teaching and learning process as evidence-based teacher education (Lockwood, Munn, & Porritt, 2015). As a result, systematic reviews can investigate the culture of school communities, exploring students' experiences and teachers' teaching practices through the Lesson Study (LS) process, and can evaluate the implementation of Open Approach (OA) and mathematical activities of research lessons as teacher professional development (Munn, Porritt, Lockman, & Aromataris, 2014).

National Council of Teachers of Mathematics (NCTM) (2000) proposed the sociocultural models such as the LS model of teaching and learning to be the powerful references in teachers' ability to describe and support the search of instruction. Students are expected to participate actively in their own learning and can select from a repertoire of approaches and their progress in utilizing these approaches toward their learning goal (Pape, Bell, & Yetkin, 2003). Even though there is an abundance of literature emphasizing the importance to focus on enhancing students' mathematical thinking while they are learning mathematics, but the effect of research synthesis on educational policy and practice and the rationality of the expectations supporting effect have hardly ever been studied analytically (Abdul Hamid & Kamarudin, 2021). The

Synthesis of Research on Mathematical Thinking Development under the Lesson Study and Open Approach Context

ORIGINALITY REPORT

11%

SIMILARITY INDEX

7%

INTERNET SOURCES

10%

PUBLICATIONS

2%

STUDENT PAPERS

PRIMARY SOURCES

1	eprints.whiterose.ac.uk Internet Source	3%
2	Carina Wyborn, Elena Louder, Jerry Harrison, Jensen Montambault et al. "Understanding the Impacts of Research Synthesis", Environmental Science & Policy, 2018 Publication	1%
3	"Encyclopedia of Mathematics Education", Springer Science and Business Media LLC, 2020 Publication	1%
4	Submitted to Intercollege Student Paper	1%
5	Submitted to Universiti Sains Malaysia Student Paper	1%
6	www.sciencegate.app Internet Source	1%
7	zombiedoc.com Internet Source	1%

8	New ICMI Study Series, 1998. Publication	<1 %
9	catalog.xmu.edu.cn Internet Source	<1 %
10	"Third International Handbook of Mathematics Education", Springer Science and Business Media LLC, 2013 Publication	<1 %
11	Pimpaka Intaros, Maitree Inprasitha. "How Students' Mathematical Ideas Emerged through Flow of Lesson in Classroom Using Lesson Study and Open Approach", Psychology, 2019 Publication	<1 %
12	"Building the Foundation: Whole Numbers in the Primary Grades", Springer Science and Business Media LLC, 2018 Publication	<1 %
13	"Encyclopedia of Mathematics Education", Springer Nature, 2014 Publication	<1 %
14	Anne-Lise Halvorsen, Lauren McArthur Harris, Linda Doornbos, Matthew T. Missias. "Lesson study in historical inquiry: Teachers working across rural communities", Teaching and Teacher Education, 2021 Publication	<1 %

15

Sampan Thinwiangthong, Maitree Inprasitha, Suladda Loipha. "Adaptation of Lesson Study and Open Approach for Sustainable Development of Students' Mathematical Learning Process", Psychology, 2012

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off