

A Systematic Review of the "Think Pair Share" Technique in Enhancing Operational Competency

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A SYSTEMATIC REVIEW OF THE "THINK PAIR SHARE" TECHNIQUE IN ENHANCING OPERATIONAL COMPETENCY

Abstract: This study presents a systematic review focused on the utilization of the "Think Pair Share" technique in crafting training models to augment the proficiency of operational personnel, emphasizing quality development criteria for operational excellence. Research articles from 2020 to 2023 were extracted from the Scopus database and the Thai Journal Citation Index Center using the keyword "Think Pair Share." Out of 140 identified articles in Scopus, 71 were pertinent to Social Sciences. The Thai database yielded 25 relevant articles using a combination of related keywords. In total, 96 articles underwent a rigorous review process. The research method employed a two-stage screening, starting with title and abstract reviews followed by full-text evaluations. This systematic approach aimed to derive and integrate the methodologies, frameworks, and outcomes from the studies, showcasing the efficacy of the "Think Pair Share" technique in the domain of research. The insights from this review will provide trainers, educators, and decision-makers with an evidence-based understanding of the technique's applicability and effectiveness in diverse contexts. Furthermore, this synthesis illuminates potential areas for future research, hinting at evolving trends and emergent practices in operational training grounded in the "Think Pair Share" methodology.

Keywords: Think pair share, criteria for operational excellence, performance excellence, quality

Introduction

In a rapidly evolving technological and professional landscape, the development of operational competencies in personnel is crucial for organizational success. Training and development are key processes in enhancing knowledge, skills, attitudes, and behaviors, contributing to work efficiency. This is particularly significant in modern organizations, where technological advancements and structural changes are common. Effective human resource development starts from employee orientation and continues throughout their tenure in the organization. Various methods, including training, coaching, job rotation, and field trips, are employed to boost workforce efficiency. Setting clear and appropriate objectives is vital for the efficacy of these development methods.

The "Think-Pair-Share" technique, developed in 1981 by Professor Frank Lyman of the University of Maryland, has been widely adopted in educational settings. This peer learning method fosters the sharing and discussion of ideas, aligning well with students' learning processes. It facilitates comprehension of content through a step-by-step conclusion-drawing process and encourages group work and interpersonal relationships (Mazur, 1997, p.26).

This technique involves pairing students to exchange ideas on specific issues before sharing their insights with the class for collective analysis and critique. As outlined by Monchai Thianthong (2008, page 99), it comprises three main components: Think, Pair, and Share.

A systematic literature review is employed in this research to gather and synthesize information about the "Think-Pair-Share" technique's application in operational competency enhancement. This research methodology is recognized for providing reliable information, as it involves a systematic and explicit approach to searching, selecting, and critically appraising related studies for synthesis and summary. The aim is to explore how the Think Pair Share technique, when integrated into learning management activities, can effectively increase personnel's work abilities.

Objectives of the Study

This study aims to provide a comprehensive synthesis of knowledge on the implementation and efficacy of the "Think-Pair-Share" technique within various operational contexts. The objective is to collate and analyze the methodological approaches, conceptual frameworks, and outcomes of relevant research studies, thereby contributing a consolidated understanding of this peer-to-peer technique's impact on learning and development.

Scope of the Study

This systematic literature review endeavors to thoroughly examine and integrate methodologies, frameworks, and findings from research studies employing the "Think-Pair-Share" technique. The review is guided by the principles of the literature review process as delineated by the PICO framework, which includes:.

Population

Focus on research reports that utilize peer-to-peer techniques in various activities, encompassing a broad spectrum of educational and organizational settings where such techniques are implemented.

Intervention

Scrutinization of research reports investigating the organization and execution of activities using the peer learning technique, examining how the "Think-Pair-Share" method is integrated into learning activities across different contexts.

Comparison

The review involves a comparative analysis between control and experimental groups within the selected studies to evaluate the efficacy of the "Think-Pair-Share" technique against traditional learning methods or other educational interventions.

Outcome

Assessment of the outcomes and changes resulting from the use of peer learning techniques, focusing on the impact of these methodologies on various educational and operational competencies.

The review process adheres to the systematic research review guidelines proposed by The Joanna Briggs Institute (2011), encompassing several critical steps: identification of the topic, setting objectives and formulating review questions, establishing research selection criteria, searching for relevant research, assessing the quality of the research, extracting data, synthesizing research findings, and presenting the results of the review.

Through this comprehensive and methodical approach, the study aims to offer valuable insights into the operationalization and impact of the "Think-Pair-Share" technique, thereby contributing significantly to the field of educational research and practice.

Research Methodology

This research employs a systematic literature review methodology, meticulously investigating and retrieving relevant research reports based on defined criteria. The methodology involves several key steps:

1. **Keyword Identification:** A set of specific keywords, both in Thai and English, were identified for the literature search. These include:
 - เพื่อนคู่คิด (Think partner in Thai)
 - Think Pair Share
 - Think Pair Share Technique

The selection of keywords was an iterative process, refined and adjusted to align with relevant information, ensuring comprehensive search results in subsequent searches.

2. Publication Period: The research focused on documents published within a specific timeframe, from 2020 to 2023, to ensure the relevance and currency of the data.
3. Full Document Selection: A criterion was set to select complete documents to provide a thorough understanding of each study.
4. Information Search Sources: The research utilized databases for sourcing research and academic works, including citation information from Thai and international academic journals. Key databases included the Thai Journal Citation Index Center (TCI) and SCOPUS.
5. Search Execution: The research was conducted using computerized searching techniques from the identified databases, specifically TCI and Scopus.

This methodological approach aims to synthesize and analyze the efficacy of the Think Pair Share technique comprehensively. The systematic review process, as guided by the steps, provides a structured framework for gathering, analyzing, and presenting findings relevant to the research topic.

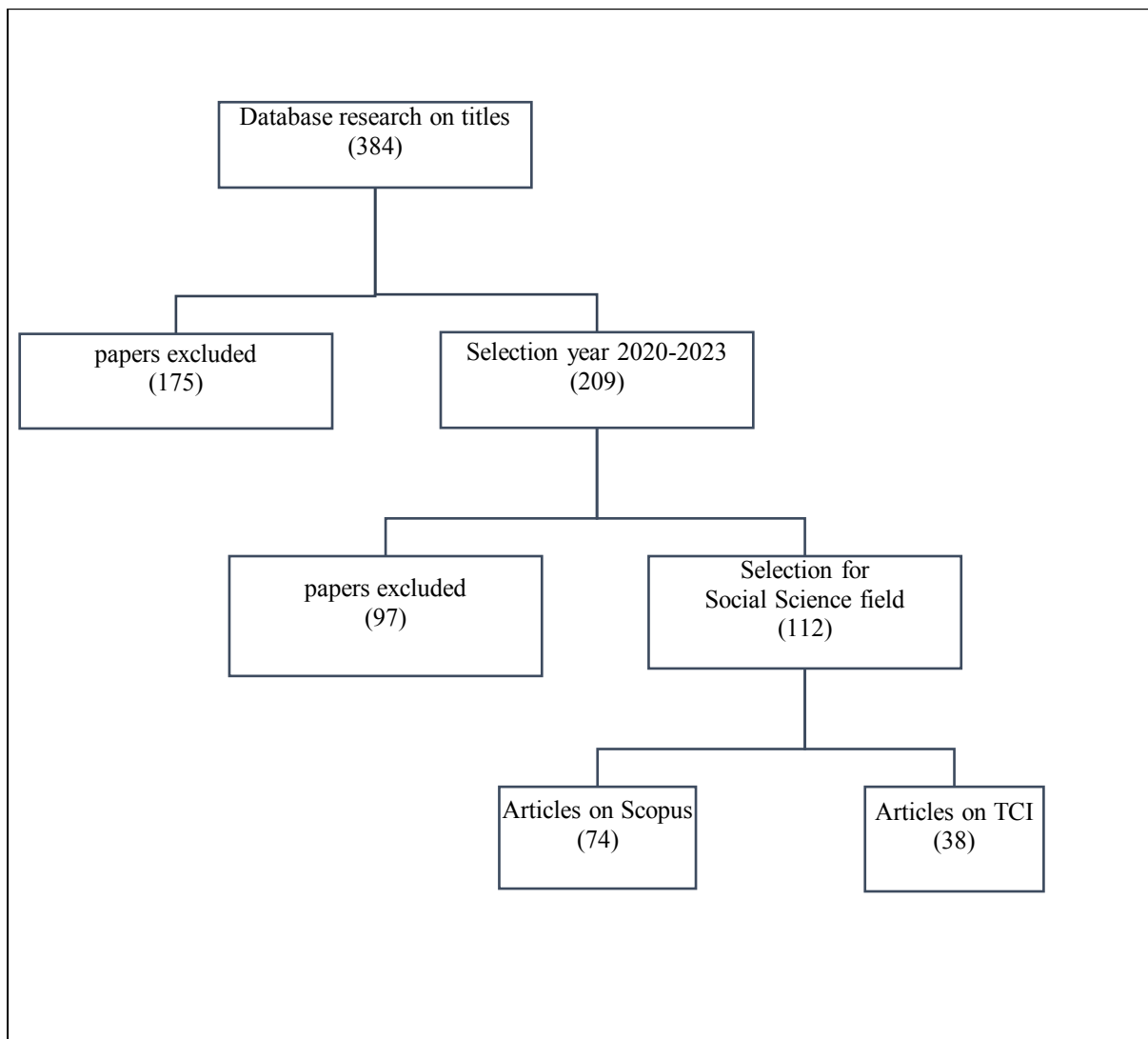


Figure 1 Shows the steps for selecting articles

Research Instruments

In this systematic literature review, a carefully structured set of instruments was employed. These instruments primarily consisted of data recording forms designed to capture comprehensive information from the selected studies. These forms were meticulously crafted to encompass a wide range of data points, including the characteristics of sample groups, the methodologies employed, the tools used in conducting the research, statistical approaches adopted, and the outcomes of each study. The aim was to ensure a holistic and detailed record of all pertinent aspects of the reviewed literature.

Data Analysis Approach

The approach to data analysis in this study was bifurcated into two distinct yet complementary segments:

Analysis of General Characteristics

The first segment of data analysis focused on the general characteristics of the research reports. This entailed a thorough examination of the foundational elements inherent in the selected studies, offering insights into the broader context and framework of each piece of research.

Table 1 Characteristics of included studies

Author(s) and year	Participants/sample	Framework/theoretical model	Design	Instrument	Scoring	Reliability	Validity
Anders Schlichtkrull (2023)	students at the first semester of the Software BSc education of Aalborg University Copenhagen (AAU CPH). (N= 55)	Not specified	Experiment	1. an evaluation using an online form 2. using the black board and slides for illustrations 3. Microsoft Teams 4. streamed the screen to the students	Not reported	Not reported	Not reported
Mohareb. A. Alsmadi (2023)	The study sample consisted of 66 students divided into two groups: Namely, an experimental group, which comprised 33 students who studied mathematics	Not specified	the quasi-experimental approach and, thereby, used experimental and control groups and a pre/post-test.	Problem Solving Test	Not reported	This showed that the reliability coefficients' values ranged between .64 and .77 and that the test's overall	Not reported

	(N=66)						reliability was 0.82. The values of the difficulty coefficients ranged between .22 and .69	
Helena Silva (2020)	4th graders students of the 1 st cycle of basic education in the north of Portugal. (N=41)	Not specified		the study employed a quasi-experimental design with a pretest and posttest using an experimental and a control group	1. Observation (15 item) 2. Test (48 item)	Not reported	$\alpha=0.72$	Not reported
Mohammad Kurjum (2020)	sample are 70 students of Al-Qur'an class. (N=70)	Not specified		an experimental group and a control group	questionnaires and observations	Not reported	Not reported	Not reported
Sutopo (2020)	students in energy at the Department of Mechanical Engineering Education, Universitas Negeri Yogyakarta (N=32)	Not specified		Experimented, Data collection techniques using observation and documentation.	Data collection uses observations obtained by observing people, interviews, field notes and other materials	Not reported	Not reported	Not reported
Yanyoun Lanlod (2023)	Thepsatri Rajabhat University the second year-students majoring in Physical Education in the second semester of the academic year of 2021 (N= 52)	Not specified		quasi-experimental	1 . Learning management plan using the Think Pair Share method 2 Achievement tests during study Each learning plan has 1 0 questions, 9	3 0 multiple choice questions	Learning plan and the test has an average of 4.57	Not specified

					learning plans. 3 pre-study and post-study achievement tests, 3 0 questions 4 Attitude measurement questionnaire, 15 questions				
Thipwan Chankhian (2022)	Mathayom students at Srinakharinwirot University Prasarnmit Demonstration School (Secondary Division) (N=33)	1 at	Not specified	quasi-experimental	1. Learning management plan 2. Ability test	IOC=1.00	=0.89		ไม่ได้ระบุ
Supaporn Saduakdee (2022)	Mathayom students at Yothinburana School (Suwan Suttaram), Semester 1 , Academic Year 2021 (N=20)	3 at	Not specified	Experimental Research	1.Achievement test 2.Satisfaction evaluation form	Not specified	Not specified	Not specified	Not specified

Utilization of Research Analysis

The second segment revolved around the application of research analysis techniques. This involved the use of average statistics, percentages, and descriptive summaries as the primary tools for data interpretation. These methods were instrumental in distilling complex data sets into coherent and insightful summaries, thereby facilitating a nuanced and in-depth response to the research questions posed in the initial stages of the literature review.

Through this dual-pronged analytical approach, the study aimed to dissect and understand the multifaceted layers of the research landscape under review. This methodological rigor was pivotal in ensuring that the study's findings were both robust and reflective of the current academic discourse surrounding the Think Pair Share technique.

Research Findings

The systematic literature review encompassed a comprehensive analysis of **71** articles from the Scopus database and **25** articles from the TCI database. The majority of these studies were conducted with samples drawn from various educational levels, including primary, junior high, high school, and higher education students. Additionally, a unique study within this collection focused on a sample of working professionals, specifically in a hospital setting.

The research pursued several objectives

The objectives of the studies analyzed were diverse yet centered around the application and effectiveness of the Think Pair Share technique. These objectives were categorized as follows:

1. Evaluation of Learning Management: Investigating the outcomes of employing the Think Pair Share technique in learning management.
2. Academic Achievement Comparison: Assessing and comparing academic achievement facilitated by the Think Pair Share technique.
3. Usage Ability Comparison: Examining the comparative ability of learners to utilize the Think Pair Share technique in educational settings.
4. Skill Development Analysis: Analyzing the development of skills among students engaging with the Think Pair Share technique.
5. Satisfaction Assessment: Evaluating the satisfaction levels of learners with respect to the learning management processes involving the Think Pair Share technique.
6. Opinions on Learning Management: Gathering and analyzing opinions related to learning management using the Think Pair Share technique.

Various tools were employed in the reviewed studies

In addition to the objectives, various research tools were employed across the studies to facilitate data collection and analysis:

1. Learning Management Plans: Utilized to outline and structure the learning activities centered around the Think Pair Share technique.
2. Assessment Tools: These included ability tests, skill tests, and achievement tests to measure the educational outcomes of the learners.
3. Satisfaction Assessment Forms: Employed to gauge the satisfaction levels of participants with the learning processes.
4. Opinion Questionnaires: Designed to collect detailed feedback on the use of the Think Pair Share technique in learning management.

Sample Groups Utilized in the Studies

An examination of the research studies revealed a diverse range of sample groups. The distribution of these groups, as utilized in the Think Pair Share technique for organizing learning activities, is detailed in Table 1:

Outcomes of the Research

The analysis of the research results revealed several significant findings:

1. Academic Achievement: Students exhibited a significant improvement in academic achievement after engaging in learning management using the Think Pair Share technique, with statistical significance at the .01 and .05 levels.
2. Learning Ability: There was a notable increase in students' learning ability when employing the Think Pair Share technique, evident at the .01 and .05 levels of statistical significance.
3. Learning Skills: Students demonstrated enhanced learning skills with the Think Pair Share technique, reaching statistical significance at the .01 and .05 levels.
4. Satisfaction with Learning Management: The level of student satisfaction with learning management using the Think Pair Share technique ranged from good to very good.
5. Opinions on Learning Organization: Students' opinions on the organization of learning using the Think Pair Share technique were generally rated from good to very good.

Discussion of Study Results

The systematic review of the "Think Pair Share" technique in enhancing work performance revealed 96 studies in the Scopus and TCI databases from 2020 to 2023. These studies predominantly involved students from primary through higher education levels, with one study focusing on hospital personnel. The findings indicate that the Think Pair Share technique significantly enhances efficiency and effectiveness in learning activities, with statistical significance at the .01 and .05 levels. This technique offers a structured approach to collaborative learning, leading to improved student outcomes.

The Think Pair Share technique has learning steps as shown in Table 2 as follows.

Table 2 Learning steps with the Think Pair Share technique

Step	Details
Think	Learners think about answers to problems or questions they receive from the teacher without exchanging information with others.
Pair	Learners will think of answers with the friends they are paired with. There is an exchange of opinions. and consult about problems or questions in order to get the most accurate answer
Share	Learners will present information in class/classroom. to share answers or opinions with the whole class to summarize and exchange Let's

understand each other.

Learning with the Think Pair Share technique increases efficiency, effectiveness, and academic achievement. Practical skills Ability in various fields because students are different. have different learning abilities. There is help from the more talented learners to help the weaker learners. There is direct teamwork of students, giving students the courage to learn. It causes learning and more lasting memory than learning from what the teacher teaches only. Therefore, there is the durability of knowledge that results from learning.

Suggestions for Applying Research Results

1. The application of the peer-to-peer learning technique should be expanded to diverse groups beyond traditional educational settings. This includes private companies in various sectors, manufacturing industries, educational institutions, and various support departments. Such expansion would enhance the versatility of the technique and its relevance across different professional domains.
2. Organizations and educational institutions should actively support learning activities that incorporate peer-to-peer techniques. This would facilitate knowledge exchange in various fields, cater to the interests of the personnel, and promote opportunities for personal and professional development.

Suggestions for Future Research

1. Future research should broaden its focus to include the use of the Think Pair Share technique among working professionals in different sectors. This would provide insights into the technique's applicability and effectiveness in workplace settings.
2. Further studies are recommended to explore the integration of the Think Pair Share technique with other pedagogical and collaborative methods. Such research could unveil synergistic effects and novel applications of these combined approaches.
3. There is a need for research that delves into the diverse processes of applying the Think Pair Share technique. Investigating various implementation strategies would offer a more comprehensive understanding of how this technique can be adapted and optimized for different learning environments and objectives.

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