

Unveiling the Pedagogical Partnership: Exploring Co-Teaching and Self-Efficacy in Science and Arts Educators

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Abstract: *In contemporary educational settings, co-teaching has emerged as a promising approach to foster inclusive and collaborative learning environments. This study delves into the dynamic realm of co-teaching by focusing on its impact on the self-efficacy beliefs of teachers, pursuing science and arts disciplines. Self-efficacy, as defined by Bandura (1977), plays a pivotal role in shaping academic performance and motivation. However, limited research has systematically examined the interplay between co-teaching and self-efficacy within these distinct academic domains. The primary objective of this study is to investigate whether a significant correlation exists between the self-efficacy levels of science and arts teachers when engaged in co-teaching environments. To achieve this, a cross-sectional research design was employed, involving a representative sample of science and arts teachers from various educational institutions. Data collection included the administration of a standardized self-efficacy questionnaire, encompassing five key dimensions: co-planning efficacy, co-instruction efficacy, co-assessment efficacy, co-classroom management efficacy, and co-professional development efficacy. This study contributes to the ongoing discourse on effective pedagogical strategies and Teachers self-efficacy across diverse academic disciplines. It underscores the importance of fostering collaborative learning environments and tailoring co-teaching experiences to meet the unique needs of science and arts teachers. Further investigation into this area promises to enhance the educational landscape, promoting holistic student development and inclusive classroom practices.*

Keywords: Co-teaching, Self-efficacy, Science teachers, Arts teachers, Gender differences, Pedagogical Partnership, Teacher Collaboration

1. Introduction

In the realm of modern education, the approach to teaching and learning has witnessed significant evolution. One such innovation is the implementation of co-teaching, a pedagogical strategy that involves two or more educators working collaboratively in a shared classroom to enhance the learning experience for students. Co-teaching is recognized for its potential to foster inclusive and diverse learning environments, accommodating students with varying needs and learning styles. While this approach has gained traction across disciplines, it remains essential to examine its effects on student self-efficacy, particularly within the distinct domains of science and arts education.

While the term "self-efficacy" is relatively modern, the exploration of beliefs regarding personal control has a deep-rooted history in philosophy and psychology. Renowned thinkers such as Spinoza, David Hume, John Locke, William James, and more recently, Gilbert Ryle, have grappled with comprehending the significance of "volition" and "the will" in human behavior (Russell, 1945; Vessey, 1967). This enduring interest reflects a longstanding engagement with the concepts of personal agency and control across various philosophical and psychological perspectives.

Self-efficacy, as theorized by Bandura (1977), is an individual's belief in their ability to perform a specific task or achieve a particular goal. He brought forward a concept named "Self-efficacy", which showcases how perceived self-competence influences human behaviour. It plays a

pivotal role in shaping one's academic achievements, motivation, and overall educational outcomes (Bandura, 1994). Self-efficacy is distinguishable from a personality trait; rather, it comprises beliefs concerning the capacity to integrate skills and abilities effectively to achieve desired goals within specific domains and situations. While measures of "general" self-efficacy, such as those developed by Chen, Gully, and Eden (2001), Sherer et al. (1982), and Tipton & Worthington (1984), are commonly employed in research, they prove less effective than more targeted self-efficacy measures in predicting individuals' actions within specific circumstances (Bandura, 1997; Maddux, 1995). This underscores the importance of specificity when assessing self-efficacy for a more accurate understanding of behavior prediction. Understanding the factors that influence self-efficacy is of paramount importance in educational research. Thus, the present study seeks to explore the correlation between science and arts teachers self-efficacy when engaged in co-teaching environments.

Science and arts education represent two diverse and vital branches of knowledge, each with unique pedagogical approaches and objectives. While co-teaching has been studied extensively in various educational contexts, limited research has systematically examined its impact on self-efficacy among teachers of science and arts disciplines. Consequently, this study aims to bridge this gap by investigating whether there exists a significant correlation between the self-efficacy levels of science and arts discipline teachers when exposed to co-teaching practices.

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The outcome of this study holds implications for educators, curriculum designers, and policymakers in both science and arts education. By shedding light on the relationship between co-teaching and self-efficacy within these disciplines, we aspire to provide evidence-based insights into the effectiveness of co-teaching as a pedagogical approach. These insights can inform the development of tailored strategies to enhance self-efficacy and improve the overall teaching experience for teachers from diverse academic paths.

Co-Teaching Self-Efficacy Scale:

It is a tool used to assess the self-efficacy beliefs of educators engaged in co-teaching practices. It measures their confidence and perceived competence in various aspects of co-teaching. The scale typically consists of five dimensions:

Co-Planning Efficacy:

This dimension assesses an educator's self-efficacy in the process of collaboratively planning lessons, activities, and assessments with their co-teacher. It examines their confidence in contributing to the development of instructional materials and strategies in tandem with their co-teacher.

Co-Instruction Efficacy:

Co-instruction efficacy focuses on an educator's belief in their ability to effectively co-teach lessons with a partner. This dimension explores their confidence in implementing instructional techniques and strategies collaboratively within the classroom.

Co-Assessment Efficacy:

This dimension gauges an educator's self-efficacy related to the assessment and evaluation of student learning outcomes in a co-teaching environment. It assesses their confidence in designing, administering, and interpreting assessments alongside their co-teacher.

Co-Classroom Management Efficacy:

Co-classroom management efficacy pertains to an educator's belief in their capability to manage classroom behavior, routines, and logistics when co-teaching. It examines their confidence in maintaining a well-organized and productive classroom atmosphere.

Co-Professional Development Efficacy:

This dimension looks at an educator's self-efficacy in engaging in ongoing professional development related to co-teaching. It assesses their confidence in seeking out opportunities for growth, reflection, and collaboration with colleagues to enhance their co-teaching practices.

These dimensions collectively provide a comprehensive view of an educator's self-efficacy in the context of co-teaching. Understanding these dimensions can help

educators and educational institutions identify areas where additional support or training may be needed to enhance the effectiveness of co-teaching partnerships. It also assists in improving collaborative teaching practices, ultimately benefiting student learning outcomes in inclusive classrooms.

Objectives of the study:

- To assess and compare the self-efficacy levels of science teachers and arts teachers engaged in co-teaching practices with a focus on gender differences.
- To compare the self-efficacy levels of science and arts teachers involved in co-teaching within the same educational context.

Hypothesis of the study:

- There is no significant difference in the self-efficacy levels between male and female science teacher engaged in co-teaching practices.
- There is no significant difference in the self-efficacy levels between male and female arts teacher engaged in co-teaching practices.
- There is no significant difference association between gender and self-efficacy levels of science and arts teachers.

Method & procedure:

Research Design: This study adopts quantitative research design to assess and compare self-efficacy levels among the science and arts teachers within the context of co-teaching practices. This research employs both t-test and chi-squared tests to explore the impact of gender on self-efficacy.

Sample: The study includes a purposive sample of science and arts teachers working in various educational institutions of Rohtak District of Haryana State, who are engaged in co-teaching practices within teacher education programs. The total of 190 participants are involved in the study.

Table 1: Table showing the sample of the Study

STREAM \ GENDER	SCIENCE TEACHERS	ARTS TEACHERS	TOTAL
MALE	34	49	83
FEMALE	48	59	107
TOTAL	82	108	190

Data Collection:

Self Efficacy Measurement: Self efficacy levels are assessed using a researcher made self-efficacy questionnaire tailored to the context of school educational institutions. The questionnaire comprises items in five categories as co-planning efficacy, co-instructional

efficacy, co-management efficacy, co-feedback efficacy and co-professional development efficacy that gauge teachers’ belief in their abilities related to co-teaching practices.

Data Analysis:

➤ Gender Comparison: Independent sample t-test are conducted separately for science and arts teachers to compare self-efficacy levels between male and female teachers.

➤ Chi-squared tests are employed to examine the association between gender and self-efficacy levels categorized as “high” & “low”.

Limitations:

➤ The study is limited to a specific region i.e. Rohtak District of Haryana State, and findings may not be fully generalized.
 ➤ The research focuses on selected demographic factors and other variables that may influence self-efficacy levels are not explored in depth.

2. Results and Interpretation

Table 2: Table showing the Comparison of Teacher Efficacy Dimensions Between Science and Arts Streams

Dimensions	Stream	N	M	SD	T Value
Co-Planning Efficacy	Science	82	4.371	0.707	0.04
	Arts	108	3.5	0.707	
Co-Instructional Efficacy	Science	82	4.359	0.619	0.805
	Arts	108	4.29	0.538	
Co-Management Efficacy	Science	82	4.252	0.528	1.045
	Arts	108	4.169	0.555	
Co-Feedback Efficacy	Science	82	4.25	0.58	0.047
	Arts	108	4.246	0.601	
Co-Professional Development Efficacy	Science	82	4.286	0.53	0.203
	Arts	108	4.302	0.568	

The data suggests that, on average, Teachers in both science and arts disciplines perceive themselves as effective in various aspects of collaborative teaching, including planning, instruction, management, feedback, and professional development. While there are some differences in average scores between the two disciplines,

both generally report a high level of perceived efficacy in these collaborative teaching practices.

H₁: There is no significant difference in the self-efficacy levels between male and female science teacher engaged in co-teaching practices within teacher education.

Table 3: Self-Efficacy Levels of Female and Male Science Teachers in Co-Teaching Practices within Teacher Education

GENDER	N	Mean	S. D.	T-value
Female Science Teachers	48	4.365	0.518	0.2365
Male Science Teachers	34	4.342	0.571	
TOTAL	82			

The t-value of 0.2365 suggests that the difference in self-efficacy levels between female and male science teachers is not statistically significant. In other words, there is no strong evidence to suggest that self-efficacy levels differ significantly between the two gender groups in this sample. This finding implies that, within the context of co-teaching practices in teacher education, there is no apparent gender-based variation in self-efficacy levels.

Therefore H₁ “There is no significant difference in the self-efficacy levels between male and female science teacher engaged in co-teaching practices within teacher education” is ACCEPTED.

H₂: There is no significant difference in the self-efficacy levels between male and female arts teacher engaged in co-teaching practices within teacher education.

Table 4: Self-Efficacy Levels of Female and Male Arts Teachers in Co-Teaching Practices within Teacher Education

GENDER	N	Mean	S. D.	T-value
Female Arts Teachers	59	4.441	0.566	1.570
Male Arts Teachers	49	4.285	0.568	
TOTAL	108			

Table 4 shows that the Female arts teachers (Mean = 4.441) have a slightly higher average self-efficacy score compared to male arts teachers (Mean = 4.285). The difference in means is approximately 0.156. A t-value of 1.570 is provided, which suggests that the difference in means between female and male arts teachers is statistically significant. The t-value of 1.570 suggests that

there is a statistically significant difference in self-efficacy levels between female and male arts teachers.

The results indicate that, on average, female arts teachers exhibit slightly higher self-efficacy levels compared to their male counterparts. This statistically significant difference may have implications for teacher training,

support, and professional development programs, suggesting that tailored approaches could be considered based on gender to address self-efficacy-related issues. Therefore H_2 : There is no significant difference in the

self-efficacy levels between male and female arts teacher engaged in co-teaching practices within teacher education” is REJECTED.

Table 5: Chi-squared tests to examine the association between gender and self-efficacy levels categorized as “high” & “low”.

		High Self Efficacy	Low Self Efficacy	TOTAL	χ^2	P value
Science Teachers	Female	28 (41.79)	08 (11.9)	67	0.0129	0.909 NS (0.5)
	Male	24 (35.82)	07 (10.4)			
Arts Teachers	Female	27 (35.52)	09 (11.84)	76	0.0209	0.885 NS (0.5)
	Male	25 (32.89)	15 (19.7)			
TOTAL		102	41	143		

Table 5 presents the distribution of Science and Arts teachers based on gender and self-efficacy levels (High and Low). It includes the observed frequencies in each category and the percentages in parentheses, providing insight into the proportion of teachers in each group. Table shows that majority of the female science teachers 28 (41.79 %) belonged to high level of self-efficacy followed by the male science teachers 24 (35.82%) and Female Arts Teachers 27 (35.52%) respectively. The study also reported that of male science teachers (10.4%) and female arts teachers 09 (11.84%) showed the lowest level of self-efficacy. The chi-squared test scores for the Science and Arts teacher groups are reported as 0.0129 and 0.0209, respectively. The associated p-values are provided as 0.909 for science teachers and 0.885 for Arts teachers. These scores confirm that there is no statistically significant association between gender and the level of self-efficacy among teachers. The overall conclusion is that, based on the chi-squared test results, there is no significant association between gender and the level of self-efficacy among both Science and Arts teachers. Thus the H_0 “There is no significant difference association between gender and self-efficacy levels of science and arts teachers” is ACCEPTED.

3. Conclusion

The detailed analysis of the study's results provides a comprehensive understanding of the relationship between co-teaching, self-efficacy, and gender among science and arts teachers within the realm of teacher education.

Science Teachers in Co-Teaching: The non-significant difference in self-efficacy levels between male and female science teachers engaged in co-teaching practices is a noteworthy finding. It suggests that, within the collaborative teaching framework, both genders perceive a similar level of efficacy in executing their teaching responsibilities. This uniformity may be indicative of a shared confidence and competence among science educators, irrespective of gender, when participating in collaborative teaching.

Arts Teachers in Co-Teaching: The observed statistically significant difference in self-efficacy levels between male and female arts teachers introduces a nuanced dimension.

Female arts teachers exhibit slightly higher self-efficacy, indicating a greater sense of belief in their ability to succeed in co-teaching scenarios. This finding suggests that gender dynamics may influence the self-perceived efficacy of arts educators in collaborative teaching situations.

Chi-Squared Tests: The chi-squared tests examining the association between gender and self-efficacy levels further illuminate the results. The absence of a significant association implies that, while there may be gender-based differences in self-efficacy levels within specific subject areas like arts, these differences are not substantial enough to establish a consistent pattern across the entire sample. In other words, gender alone is not a decisive factor in predicting self-efficacy levels among teachers in the context of collaborative teaching.

Implications for Teacher Development: The study's findings have practical implications for teacher training and professional development programs. Recognizing the subject-specific nuances in self-efficacy levels, especially among arts teachers, suggests the importance of tailoring support programs based on subject domains. For example, strategies addressing potential self-efficacy concerns among female arts teachers could be beneficial in enhancing overall teaching effectiveness and job satisfaction.

Contribution to the Field: The study contributes to the broader understanding of collaborative teaching practices and self-efficacy within the context of teacher education. By uncovering gender-based variations in self-efficacy among arts teachers, the research highlights the need for a nuanced approach to address the diverse needs of educators and fostering a supportive and empowering environment for teachers engaged in collaborative teaching practices.

References

- [1] Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215. Bandura, A. (1986). *Social foundations of thought and action*. New York: Prentice-Hall.

- [2] Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 117-148.
- [3] Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman. Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26
- [4] Barone, D., Maddux, J. E., & Snyder, C. R. (1997). *Social cognitive psychology: History and current domains*. New York: Plenum
- [5] Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new general self-efficacy scale. *Organizational Research Methods*, 4, 62-83
- [6] Maddux, J. E. (1995). Self-efficacy theory: An introduction. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp.3-36). New York: Plenum
- [7] Russell, B. (1945). *A history of Western philosophy*. New York: Simon & Schuster. Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale:
- [8] Tipton, R. M., & Worthington, E. L. (1984). The measurement of generalized self-efficacy: A study of construct validity. *Journal of Personality Assessment*, 48, 545-548.
- [9] Vessey, G. N. A. (1967). Volition. In P. Edwards (Ed.), *Encyclopedia of philosophy* (Vol.8, pp.258-260). New York: Macmillan