Original Research Article

Transdisciplinary Teaching and Social Responsiveness of Teachers in Public Elementary Schools

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ABSTRACT

This study explored the transdisciplinary teaching practices and social responsiveness of teachers in public elementary schools in the Bunawan District, Division of Davao City. It employed a non-experimental quantitative research design, utilizing a correlational method. The sample comprised 132 teachers from public elementary schools, selected through universal sampling. Data analysis was performed using mean, Pearson r, and regression analysis. The findings indicated that teachers exhibited high level of transdisciplinary teaching practices in areas such as project-based learning, standards of learning, instructional practices, and assessment of learning. Similarly, teachers demonstrated a high level of social responsiveness, particularly regarding students' ethnic backgrounds, their role as educators, sensitivity to language, and an inclusive curriculum. The study revealed a significant relationship between transdisciplinary teaching and social responsiveness. Additionally, it was found that various domains of transdisciplinary teaching significantly influenced the social responsiveness of teachers in these schools. Based on these findings, it is recommended that public school teachers may participate in seminars and professional development programs organized by the Department of Education (DepEd) to enhance their instructional skills. These initiatives may focus on fostering professional growth, enriching teaching practices, and promoting rigorous education opportunities that support the academic success of all learners.

Keywords: transdisciplinary teaching, social responsiveness, teachers, public elementary schools, Philippines.

1. INTRODUCTION

Transdisciplinary teaching and learning are grounded in the belief that knowledge, concepts, skills, attitudes, and actions extend beyond traditional subject boundaries, merging disciplines into a unified, coherent curriculum. This approach emphasizes the importance of integrating various fields of study to create a learning experience that is engaging, relevant, challenging, and meaningful. While the value of traditional subject areas is acknowledged, it is recognized that educating students in isolated disciplines is insufficient and ineffective. This gap highlights the need for an approach that not only imparts academic knowledge but also equips students with skills in context and content that transcends traditional subject boundaries (Albright, 2016).

In Australia, for a student to be truly educated, it is essential to make connections across disciplines, integrate knowledge from various subjects, and apply learning to real-life situations. Transdisciplinary teaching is seen as vital for promoting international-mindedness, with students engaging across disciplines through this approach (Ferguson-Patrick et al., 2018).

Curriculum integration, as an approach to transdisciplinary teaching, dismantles the traditional boundaries between subjects and organizes teaching around the construction of meaning, particularly in the context of real-world problems (Singh & Kaunert, 2024). The transdisciplinary approach in public school settings aims to present related concepts from multiple perspectives, avoiding an exclusive focus on any one discipline. It addresses the need for pedagogical approaches that promote the unity of knowledge, offering a broader, more inclusive framework within the public school system (Daneshpour & Kwegyir-Afful, 2022).

In the Philippines, experiences with establishing a flagship research course at the graduate level draw from existing theories to offer practical steps for delivering content from a transdisciplinary perspective. The strength of this approach lies in its ability to demonstrate how relevant concepts can be easily transferred across disciplines and settings. By adopting this method, educators can influence overall instructional techniques in educational environments where multiple disciplines intersect (Reston & Jugar, 2023).

Transdisciplinary teaching seeks to unify knowledge by presenting subjects from various perspectives without adhering to a single disciplinary framework (Darbellay, 2015). This approach eliminates traditional disciplinary boundaries, enabling students to recognize the pervasiveness of key concepts across multiple disciplines. Transdisciplinary teaching, in this context, involves the fusion of distinct and overlapping perspectives, offering a broader understanding without confining explanations to specific disciplines (Arnold, 2020).

The intent behind exploring transdisciplinary teaching and social responsiveness is to understand how integrating cross-disciplinary knowledge and prioritizing social awareness can enrich education and positively impact society. By transcending traditional subject boundaries, transdisciplinary teaching encourages students to think critically, solve complex, real-world problems, and establish connections between seemingly unrelated areas. This approach better equips students to navigate the rapidly changing, interconnected world (Demerath & Suarez, 2019).

Clearly, teaching with transdisciplinary objectives is a best practice in today's fast-evolving world. It prepares students to solve real-world problems and fosters creativity, allowing them to authentically generate and develop their own ideas. The transdisciplinary approach

promotes both depth of understanding and adaptability, which are essential skills for success in a changing global landscape (Ammar et al., 2024).

Creating transdisciplinary learning objectives can be challenging, as they must incorporate multiple disciplines with a human-centered goal or global issue. All the components must align to create a meaningful objective, a task that many educators struggle with. The Next Generation Science Standards (NGSS) provide a useful framework for identifying transdisciplinary learning objectives, as they include core ideas, practices, and cross-cutting concepts from multiple disciplines. Educators believe that mastery of these objectives better prepares students for success in college and careers (Corvo, 2014).

Together, transdisciplinary teaching and social responsiveness cultivate learners who are not only academically competent but also socially aware and engaged. This approach aims to prepare students to thoughtfully and responsibly address complex social challenges, aligning education with broader goals of social progress and global well-being.

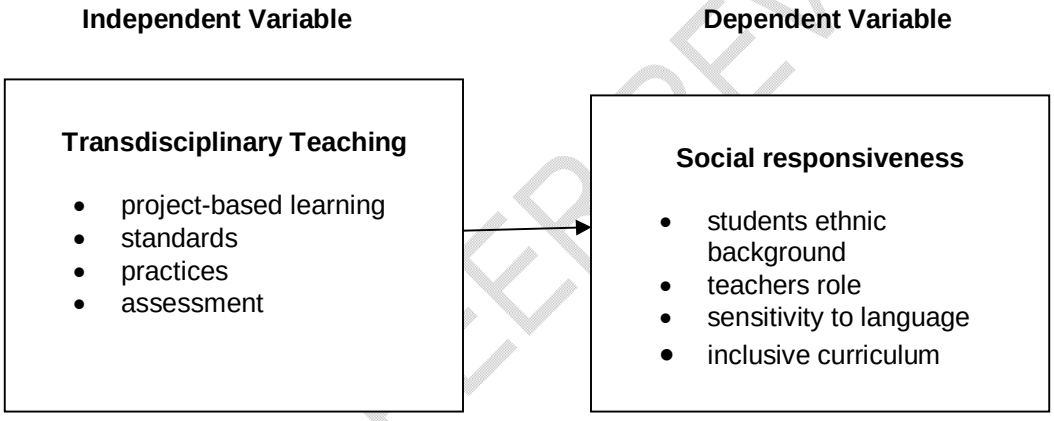

Fig. 1. Conceptual Framework of the Study

2. METHODOLOGY

2.1 Research Design

This study employed a non-experimental quantitative research design, utilizing the correlational method. Quantitative research emphasizes objective measurement and the statistical analysis of data collected through surveys and questionnaires, often involving the manipulation of pre-existing statistical data using computational techniques. The focus of quantitative research is on gathering numerical data and generalizing findings across larger groups or populations to explain particular phenomena (Pregoner & Baguio, 2024).

The primary goal of conducting a quantitative research study is to determine the relationship between an independent variable and a dependent or outcome variable within a population. Quantitative research designs can be categorized as either descriptive or experimental. Descriptive research, in particular, aims to establish associations between variables. This type of research focuses on describing the characteristics of the population or phenomenon being studied, and is more concerned with the "what" of the subject rather than the "why."

Descriptive studies do not explore the underlying causes or explanations for the observed relationships; instead, they describe the nature of the research subject (Pregoner, 2024). In this context, this study examined the relationship between transdisciplinary teaching practices and the social responsiveness of teachers in public elementary schools.

2.2 Research Respondents

The respondents of this study were 132 public elementary school teachers, selected through universal sampling, meaning that all members of the population were considered as potential participants. These teachers assessed both their colleagues and themselves using a survey questionnaire that was administered to them. All participants had at least three years of experience teaching in public schools. The study was conducted during the 2021-2022 school year.

2.3 Research Instrument

The instruments used in this study consisted of two parts: transdisciplinary teaching and social responsiveness of teachers in public elementary schools. Both parts were developed by the researcher based on a review of relevant studies and literature. Prior to administration, the draft of these instruments was subjected to content validation and reliability testing by a panel of experts in the field of Educational Management at the doctoral level. Based on their feedback and suggestions, revisions were made to improve the instruments. For pilot testing, the instruments were administered to 30 teachers at a separate school, like Central Elementary School, to assess their reliability and validity. The results indicated that the instruments were reliable, with a Cronbach's Alpha of 0.719. The participants were asked to respond to 40 questions, which were organized into five subscales.

2.4 Data Gathering Procedure

The data were gathered following a systematic procedure. Initially, the researcher sought permission and endorsement from the Dean of the Graduate School. Once approval was granted, request letters were submitted to the office of the Schools Division Superintendent. After receiving approval from the Superintendent, an endorsement letter was forwarded to the School Heads. Subsequently, a schedule was arranged for the distribution of the pilot testing questionnaires to the target schools and respondents. The questionnaires included an explanation of the study and clear instructions for completing the tests. Once the questionnaires were distributed, they were collected from the respondents. After retrieval, the data were tallied, tabulated, analyzed, and interpreted in alignment with the objectives of the study.

2.5 Data Analysis

The data analysis involved several statistical methods. The mean was used to measure the level of transdisciplinary teaching and social responsiveness of teachers in public elementary schools. To determine the relationships between transdisciplinary teaching and social responsiveness, the Pearson product moment correlation (Pearson r) was employed. Additionally, regression analysis was used to assess the significant influence of transdisciplinary teaching on the social responsiveness of teachers in public elementary schools.

3. RESULTS AND DISCUSSION

3.1 Level of Transdisciplinary Teaching among the Respondents

Table 1. Level of Transdisciplinary Teaching among the Respondents

No	Indicators	Mean (x)	Descriptive Level
1.	project-based learning	3.57	High
2.	standards of learning	3.80	High
3.	instructional practices	2.98	Moderate
4	assessment of learning	3.47	High
	Overall	**3.46**	**High**

Table 1 presents the level of transdisciplinary teaching among the respondents, as measured across four key indicators. The "standards of learning" indicator has the highest mean score of 3.80, which is categorized as "high," indicating that teachers place significant emphasis on meeting learning standards. The "project-based learning" indicator follows with a mean score of 3.57, also classified as "high," suggesting that teachers frequently implement project-based learning approaches in their teaching. “Assessment of learning" has a mean score of 3.47, categorized as "high," indicating that teachers regularly engage in assessing student learning in meaningful ways. However, the "instructional practices" indicator has a lower mean score of 2.98, classified as "moderate," suggesting that there is room for improvement in instructional strategies. Overall, the mean score of 3.46 places the level of transdisciplinary teaching in the "high" category, signifying that, overall, the respondents are demonstrating a strong commitment to transdisciplinary teaching practices and oftentimes manifested by the respondents. This implies that the teachers regularly integrate various disciplines and instructional strategies in their teaching approach, with a particular focus on meeting learning standards, using project-based learning, and assessing student learning. While there is room for improvement in instructional practices, the overall results indicate that the respondents are generally proactive and dedicated to implementing effective transdisciplinary teaching methods.

This finding supports the study of Nordén (2018), which found that teachers who demonstrate a high level of commitment to transdisciplinary teaching methods tend to engage in frequent integration of various subjects and instructional strategies to enhance student learning outcomes. Moreover, the finding aligns with the study of Henckel (2022), which highlighted that teachers who utilize project-based learning and standards-driven approaches are more likely to exhibit a high level of transdisciplinary teaching, improving both the engagement and effectiveness of their student’s learning experiences.

3.2 Level of Social Responsiveness among the Respondents

Table 2. Level of Social Responsiveness among the Respondents

No	Indicators	Mean (x)	Descriptive Level
1.	students ethnic background	3.55	High
2.	teachers role	3.32	Moderate
3.	sensitivity to language	3.55	High
4	inclusive curriculum	3.56	High
	Overall	**3.25**	**High**

Table 2 presents the level of social responsiveness among the respondents across different indicators. The "students' ethnic background," "sensitivity to language," and "inclusive curriculum" indicators all received high mean scores of 3.55, 3.55, and 3.56, respectively, indicating that the respondents are highly responsive to these aspects of social diversity in their teaching. This suggests that teachers are attentive to the cultural backgrounds of their students and are mindful of language sensitivities in their classrooms. Additionally, they demonstrate a commitment to an inclusive curriculum, which takes into account the diverse needs and experiences of all students. However, the "teachers' role" indicator received a moderate score of 3.32, which implies that there is room for improvement in how teachers perceive and enact their social responsibilities in relation to their roles. Despite this, the overall mean score of 3.25 places the level of social responsiveness in the "high" category, indicating that the respondents are generally effective in responding to the social dynamics within their classrooms. This reflects a strong commitment to fostering an inclusive and culturally sensitive learning environment and the social responsiveness among the respondents is oftentimes manifested.

This finding reinforces the study of Kieran and Anderson (2019), which emphasized that teachers with high social responsiveness contribute to a more inclusive classroom environment by actively considering the diverse cultural and social backgrounds of their students. Additionally, the finding corresponds with the study of Farmer et al. (2018), which found that teachers who are attentive to the social dynamics in their classrooms can better tailor their instructional strategies to meet the individual needs of students, fostering an environment of respect and understanding.

3.3 Significant Relationship Between the Transdisciplinary Teaching and Social Responsiveness

Table 3. Significant Relationship Between the Transdisciplinary Teaching and Social Responsiveness

Variables	X	Y	r-value	Degree of Correlation	p-value	Decision (Ho)
Transdisciplinary Teaching	4.34		0. 060	High Correlation	0.040	Rejected
social responsiveness		4.10				

Table 3 presents the results of testing the relationship between transdisciplinary teaching and social responsiveness. The r-value of 0.060 indicates a high degree of positive correlation between the two variables, suggesting that as the level of transdisciplinary teaching increases, the level of social responsiveness also tends to increase, though the

correlation is not very strong. The p-value of 0.040 is below the commonly accepted significance level of 0.05, indicating that the relationship between transdisciplinary teaching and social responsiveness is statistically significant.

Since the p-value is less than 0.05, the null hypothesis (Ho), which posited no significant relationship between the two variables, is rejected. This provides evidence to support the claim that there is a significant positive relationship between transdisciplinary teaching and social responsiveness. In conclusion, the study suggests that teachers who engage more in transdisciplinary teaching practices are likely to demonstrate higher levels of social responsiveness in their teaching.

This finding corroborates the study of Souto-Manning et al. (2019), which found that teachers who actively engage in transdisciplinary teaching practices also exhibit higher levels of social responsiveness, particularly in classrooms that emphasize inclusivity and cultural sensitivity. The study highlights the importance of integrating various subjects and teaching methods to foster a more adaptive and socially responsive learning environment.

Moreover, the finding reinforces the study of Budwig and Alexander (2020), which posits that transdisciplinary teaching methods, by nature, encourage teachers to be more attuned to the social dynamics and individual needs of their students. They argue that such an approach not only facilitates deeper learning but also nurtures teachers' ability to respond sensitively to the diverse backgrounds and perspectives in the classroom. This connection between teaching practices and social responsiveness underscores the potential of transdisciplinary methods to create more inclusive and engaging educational experiences for all students.

3.4 The Domains of Transdisciplinary Teaching Significantly Influence Social Responsiveness

Table 4. The Domains of Transdisciplinary Teaching Significantly Influence Social Responsiveness

Model	Sum of Squares	Degrees of Freedom	Mean Square	p-value	Sig	Decision
Regression	55.3897	1	57.019	.048	0.136	Rejected
Residual	503.301	132	12.5947			
Total	535.101	133				

		Transdisciplinary Teaching			
Cultural Awareness (Indicators)		*B*	β	*t*	*Sig.*
students ethnic background	project-based learning of standards	-.075	-.056	-.503	.611
	learning instructional practices of assessment				

	learning				
teachers role	project-based learning standards of learning instructional practices assessment of learning	.014	.012	.125	.895
sensitivity to language	project-based learning standards of learning instructional practices assessment of learning	-.217	-.205	-1.807	.071
inclusive curriculum	project-based learning standards of learning instructional practices assessment of learning	-.074	-.057	-.502	.610

R	.251
R^2	.071
F	.670
ρ	.048

Table 4 shows the analysis of whether the domains of transdisciplinary teaching significantly influence social responsiveness. The p-value for the regression model is 0.048, which is less than 0.05. This indicates that there is a statistically significant relationship between the domains of transdisciplinary teaching and social responsiveness.

Since the p-value is smaller than the significance level (0.05), the null hypothesis (Ho), which states that there is no significant influence of transdisciplinary teaching on social responsiveness, is rejected. This means that the domains of transdisciplinary teaching do, indeed, have a significant impact on social responsiveness.

This finding validates the theory of Vygotsky's Social Development Theory (1978), which emphasizes the importance of social interaction in learning. According to Vygotsky, the way teachers engage with students through various instructional practices, such as those found in transdisciplinary teaching, significantly influences students' social and cognitive

development. The findings suggest that the integration of multiple disciplines in teaching fosters a more socially responsive environment, as students are better able to connect with diverse perspectives and apply their learning in socially meaningful ways.

Moreover, the finding coincides with the theory of Bronfenbrenner's Ecological Systems Theory (1979), which highlights how different environmental systems influence individual behavior and development. In the context of transdisciplinary teaching, the different domains—such as project-based learning, standards of learning, and assessment—interact to shape the social responsiveness of teachers, reinforcing the idea that broader ecological factors influence educational practices. This theory suggests that a teacher's approach to integrating various disciplines can positively impact their responsiveness to the social and cultural dynamics of the classroom.

4. CONCLUSION

Based on the findings of the study, the following conclusions are drawn. First, the study concludes that the level of transdisciplinary teaching among teachers in public elementary schools, in terms of project-based learning, standards of learning, instructional practices, and assessment of learning, is oftentimes manifested. This indicates that teachers regularly engage in these transdisciplinary teaching practices. Second, the study reveals that the level of social responsiveness of teachers, as reflected in their sensitivity to students' ethnic backgrounds, understanding of their role, sensitivity to language issues, and commitment to an inclusive curriculum, is also oftentimes demonstrated. Third, the study establishes a significant relationship between transdisciplinary teaching and social responsiveness, suggesting that as one improves, the other tends to improve as well. Lastly, the study concludes that the domains of transdisciplinary teaching significantly influence the social responsiveness of teachers, highlighting the impact of effective teaching strategies on fostering a socially responsive educational environment. These findings emphasize the importance of enhancing transdisciplinary teaching to promote social responsiveness, thereby contributing to a more inclusive and effective classroom experience in public elementary schools.

5. RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are proposed. School heads are encouraged to focus on enhancing the transdisciplinary teaching practices of teachers in public elementary schools, particularly in areas requiring further development. This includes fostering authentic project-based learning opportunities that enable students to explore and review projects meaningfully, make connections across disciplines, and apply their learning to real-world situations. Teachers should be guided to create an environment where students construct their own understanding and actively engage in the learning process rather than passively receiving information.

To further promote social responsiveness among teachers, it is suggested that teachers invest time in understanding and valuing the diverse cultural backgrounds of their students. This can involve learning the correct pronunciation of students' names, appreciating the cultural significance behind them, and tailoring instructional materials to meet the needs of non-native English speakers. By doing so, teachers can ensure that all students feel included, respected, and valued in the school community.

In addition, school heads are encouraged to take an active role in fostering programs and activities that address the diverse academic and social needs of students. These activities should create meaningful and inclusive learning experiences that support students' holistic development. To this end, the Department of Education may consider introducing new training initiatives or enhancing existing ones to address emerging educational needs and gaps in current offerings. These could include specialized workshops on inclusive teaching practices, cultural competency training, and innovative strategies for integrating transdisciplinary approaches into the curriculum.

Moreover, a whole-school approach is recommended to strengthen both transdisciplinary teaching and social responsiveness. This involves integrating these aspects into school policies, providing ongoing professional development for teachers, and ensuring equitable access to educational opportunities for all students. By implementing these recommendations, public elementary schools can reinforce their commitment to delivering a comprehensive and inclusive education, fostering a more effective and socially responsive learning environment for students and teachers alike.

Lastly, future researchers may conduct a study to examine the long-term impact of transdisciplinary teaching on student achievement and social-emotional development. Qualitative research methods could be employed to explore teachers' experiences and perspectives on implementing transdisciplinary teaching. Comparative studies may also be valuable in analyzing the effectiveness of transdisciplinary teaching in different educational contexts, such as urban, rural, and suburban schools. By pursuing these research avenues, future studies can contribute to creating more engaging, inclusive, and effective learning environments that prepare students for the challenges of the 21st century.

Ethical Approval:

The data were gathered following a systematic procedure. Initially, the researcher sought permission and endorsement from the Dean of the Graduate School. Once approval was granted, request letters were submitted to the office of the Schools Division Superintendent. After receiving approval from the Superintendent, an endorsement letter was forwarded to the School Heads.

CONSENT

This quantitative study followed stringent ethical standards to protect the privacy and confidentiality of all participants. Prior to data collection, informed consent was obtained from each respondent, who was fully informed about the study's purpose and the measures taken to ensure their privacy. To maintain anonymity, no personally identifiable information was gathered, and each participant was assigned a unique identifier for data analysis. All data were securely stored on encrypted servers with access restricted to the research team. The results were presented in an aggregated format to prevent any individual responses from being traced back to specific participants. Additionally, the statistical analyses were conducted in a way that further protected the anonymity of the respondents, ensuring their privacy throughout the research process.

Disclaimer (Artificial intelligence)
Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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