

TEACHERS' PERCEPTION AND ACCEPTABILITY OF INTERDISCIPLINARY TEACHING APPROACHES INTEGRATING MATHEMATICS, SCIENCE, AND SOCIAL STUDIES

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Abstract

The challenge of effectively integrating interdisciplinary teaching approaches in Mathematics, Science, and Social Studies remains a critical issue in contemporary education, particularly in aligning such methods with curriculum goals and classroom feasibility. This study investigates the perceptions and acceptability of these approaches among teachers at South Cotabato State College. Using descriptive statistics, Pearson's correlation, and ANOVA, the research explores the relationship between teachers' perceptions and their willingness to adopt interdisciplinary methods, as well as differences across academic programs. The findings reveal a strong consensus on the relevance of interdisciplinary teaching but identify concerns regarding resource adequacy and time constraints. The study emphasizes the need for targeted professional development, resource enhancement, and curriculum restructuring to support the effective adoption of interdisciplinary strategies. This research contributes to the broader discourse on educational innovation and the practical implementation of integrated teaching methods.

Keywords: Perception, Acceptability, Interdisciplinary Teaching, Integration, Mathematics, Science, Social Studies.

INTRODUCTION

The compartmentalization of subjects in traditional education systems is increasingly questioned because of the interconnected nature of real-world problems. In response, there is growing support for interdisciplinary approaches that integrate knowledge across multiple fields. This shift is necessary to address issues that span different areas of study, which cannot be fully understood from a single-discipline perspective (Shams, 2024).

As a result, integrating subjects such as Mathematics, Science, and Social Studies in teaching has gained attention (Simanjuntak et al., 2022; VanTassel-Baska & Wood, 2023). This approach aims to provide students with a comprehensive understanding that reflects the challenges of contemporary society. Mathematics is essential in developing critical thinking and problem-solving skills through the cultivation of quantitative reasoning and analytical abilities (Afriansyah et al., 2021).

Science deepens this understanding by examining natural phenomena, including the physical, biological, and chemical processes that shape our world (Emmeche, 2023). Social Studies, in turn, places these scientific and mathematical concepts within broader historical, cultural, and societal contexts, allowing students to understand how these fields relate to one another in the real world (Adams & Kerr, 2022).

Hence, combining these subjects, educators can offer students a broader perspective, encouraging them to think about complex issues from different viewpoints. This method offers a more applied learning experience, equipping students with the skills necessary for today's world. Research on interdisciplinary education stresses the importance of providing students with a broad skill set. VanTassel-Baska & Wood (2023) note that an integrated curriculum enables students to connect ideas from various disciplines and apply them to practical situations.

Studies by Boix-Mansilla and Dawes Duraisingh (2007) also show that interdisciplinary teaching enhances students' ability to think critically, solve problems, and approach challenges in a more thorough manner (Oudenampsen et al., 2023). In addition, combining subjects like Mathematics, Science, and Social Studies promotes teamwork and communication, which are key skills in today's workforce (Farris, 2024).

However, implementing interdisciplinary teaching often faces challenges, especially when it comes to teachers' perceptions and readiness. Haleemet al. (2022) emphasize the role of educators in the success of these approaches.

Their willingness and ability to apply integrated curricula influence how effectively interdisciplinary education impacts student learning. Teachers may encounter obstacles due to traditional training methods, time constraints, and insufficient resources to support integrated teaching (Akram et al., 2022). Understanding teachers' views on interdisciplinary teaching is essential for overcoming these barriers and ensuring successful integration.

This study examines the perceptions of educators at South Cotabato State College regarding the integration of Mathematics, Science, and Social Studies in teaching methods. It looks at how teachers view the relevance, feasibility, and impact of these interdisciplinary approaches on student learning.

Hence, assessing teachers' attitudes toward integrating these subjects, the research contributes to ongoing discussions about educational reform, particularly within the context of South Cotabato State College, to help create an educational environment aligned with the needs of a changing world.

To address these aims, the study seeks to answer the following questions:

1. What is the level of teachers' perception of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies, in terms of:
 - 1.1. relevance to current curriculum and teaching standards, and
 - 1.2. feasibility in terms of classroom implementation and resources?
2. What is the level of teachers' acceptability of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies, in terms of:
 - 2.1. willingness to adopt interdisciplinary methods in teaching, and
 - 2.2. perceived impact on student learning and engagement?

3. Is there a significant relationship between the level of teachers' perception and their level of acceptability of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies?
4. Is there a significant difference in the level of teachers' perception of interdisciplinary teaching approaches across the programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education?
5. Is there a significant difference in the level of teachers' acceptability of interdisciplinary teaching approaches across the programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education?

METHODOLOGY

A. Research Design

The research design employed in this study is descriptive-correlational. The descriptive aspect focuses on systematically capturing and characterizing teachers' perceptions regarding the integration of Mathematics, Science, and Social Studies in teaching. This approach allows for an in-depth exploration of the teachers' views on the relevance, feasibility, and impact of interdisciplinary teaching methods in their classrooms.

The correlational aspect examines the relationship between teachers' perceptions and their acceptability of interdisciplinary teaching approaches. The study assesses how teachers' views on the integration of subjects influence their willingness to implement these methods, helping to identify factors that may affect the adoption of interdisciplinary teaching strategies.

The descriptive-correlational design provides several advantages in educational research. First, it enables a comprehensive examination of the current perceptions and attitudes of teachers while identifying relationships between key variables, such as perception and acceptability (Gutiérrez-Monsalve, 2023).

This design is particularly effective for identifying patterns and understanding the dynamics that influence decision-making in teaching (Santalucia, 2022). Additionally, combining these two aspects allows for a more holistic approach to understanding how teachers' views shape their instructional practices. Correlating perceptions with behaviors provides important information that can inform future educational strategies, curriculum development, and teacher training initiatives.

B. Respondents of the Study

The respondents in this study are educators from South Cotabato State College, encompassing a wide range of academic disciplines. These include not only those teaching Mathematics, Science, and Social Studies, but also faculty members from other programs such as Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education. The selection of respondents from diverse academic backgrounds ensures a comprehensive examination of the perceptions and acceptability of interdisciplinary teaching approaches across various fields of study.

This broad representation of respondents facilitates a comprehensive understanding of how interdisciplinary teaching methods are viewed and potentially integrated within the distinct educational contexts of different programs at the institution.

C. Instrumentation

The instrument utilized in this study was meticulously developed by the researchers and underwent an extensive validation process to ensure its content accuracy and relevance. Expert validation was conducted, where subject matter experts reviewed the instrument for clarity, comprehensiveness, and alignment with the study's objectives. Following expert validation, a pilot testing phase was implemented to further assess the instrument's functionality and reliability.

The reliability of the instrument was quantified using Cronbach's alpha, which yielded a value of 0.874, indicating a high degree of internal consistency. This level of reliability substantiates the instrument's capacity to effectively measure the perceptions and acceptability of interdisciplinary teaching approaches among the respondents. The combination of expert validation and pilot testing ensures the instrument's robustness and appropriateness for capturing the intended data in the context of this study.

D. Statistical Treatment

The data collected in this study were analyzed using both descriptive and inferential statistical methods. Descriptive statistics, such as means, were used to summarize the respondents' perceptions and acceptability of interdisciplinary teaching approaches, providing a clear overview of the data distribution. For inferential analysis, Pearson's correlation coefficient and ANOVA were applied to assess significant relationships and differences between variables. Pearson's r was employed to examine the strength and direction of the relationship between the respondents' perceptions and their level of acceptability of interdisciplinary teaching approaches.

Pearson's r is a parametric measure that assumes the data are normally distributed and suitable for interval-level data. ANOVA was then used to determine if there were significant differences in the teachers' perceptions and acceptability levels across the programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education. ANOVA is a parametric test that compares the means of multiple groups, assuming normality and homogeneity of variance, providing insights into how program type may influence teachers' perceptions and acceptability of interdisciplinary teaching methods.

RESULTS AND DISCUSSION

A. Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Relevance to Current Curriculum and Teaching Standards

The data in Table 1 illustrate teachers' perceptions regarding the relevance of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies to the current

curriculum and teaching standards. The composite means of 4.30 indicates a strong agreement among teachers that such integration is relevant to the educational framework. Specifically, the statement, "I believe that integrating Mathematics, Science, and Social Studies is relevant to the goals set by the current curriculum," received the highest mean of 4.66, reflecting strong agreement.

Similarly, the perception that integration is necessary for meeting teaching standards also garnered a strong agreement with a mean of 4.35. Meanwhile, statements regarding the alignment of interdisciplinary teaching with educational objectives and its consistency with teaching standards received means of 4.19 and 4.10, respectively, indicating general agreement.

Table 1: Level of Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Relevance to Current Curriculum and Teaching Standards

Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Relevance to Current Curriculum and Teaching Standards	Mean	SD	Description
I believe that integrating Mathematics, Science, and Social Studies is relevant to the goals set by the current curriculum.	4.66	0.47	Strongly Agree
I perceive the integration of Mathematics, Science, and Social Studies as a necessary component for meeting the teaching standards in my subject area.	4.35	0.48	Strongly Agree
I feel that interdisciplinary teaching approaches involving Mathematics, Science, and Social Studies align with the current educational objectives set by the curriculum.	4.19	0.85	Agree
In my view, integrating Mathematics, Science, and Social Studies would contribute to achieving the desired learning outcomes as outlined in the current curriculum.	4.20	0.56	Agree
I think that the integration of Mathematics, Science, and Social Studies is consistent with the overall framework of current teaching standards.	4.10	0.66	Agree
Composite Mean	4.30	0.65	Strong Agree

Legend: 1.00-1.80 Strongly Disagree; 1.81-2.60 Disagree; 2.61-3.40 Neither Agree nor Disagree; 3.41-4.20 Agree; 4.21-5.00 Strongly Agree.

These findings suggest that teachers view the integration of these subjects as not only relevant but also essential for aligning with current curriculum goals and teaching standards (Roehrig et al., 2021).

The strong agreement on the relevance of interdisciplinary approaches highlights the potential for these methods to enhance curriculum delivery and meet educational objectives. However, the slight variation in agreement levels across different aspects of relevance suggests areas where further clarification or support may be beneficial (Lo, 2021).

This emphasizes the importance of providing clear guidelines and professional development to ensure that teachers can effectively integrate these subjects in a manner consistent with curriculum standards.

B. Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Feasibility in Terms of Classroom Implementation and Resources

Table 2: Level of Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Feasibility in Terms of Classroom Implementation and Resources

Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Feasibility in Terms of Classroom Implementation and Resources	Mean	SD	Description
I feel confident in my ability to integrate Mathematics, Science, and Social Studies effectively within the available resources.	3.80	0.78	Agree
I believe that adequate teaching materials and resources are available to support the successful integration of Mathematics, Science, and Social Studies in the classroom.	3.78	0.69	Agree
I perceive that the classroom space and facilities are suitable for implementing interdisciplinary teaching approaches that integrate Mathematics, Science, and Social Studies.	4.70	0.46	Strongly Agree
I think that the current availability of time within the curriculum is sufficient to integrate Mathematics, Science, and Social Studies effectively.	3.91	0.79	Agree
I believe that interdisciplinary teaching approaches involving Mathematics, Science, and Social Studies can be implemented smoothly within the existing teaching schedule.	3.68	0.69	Agree
Composite Mean	3.97	0.79	Agree

Legend: 1.00-1.80 Strongly Disagree; 1.81-2.60 Disagree; 2.61-3.40 Neither Agree nor Disagree; 3.41-4.20 Agree; 4.21-5.00 Strongly Agree.

The data in Table 2 reflect teachers' perceptions of the feasibility of implementing interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies within the existing classroom environment and resources. The composite mean of 3.97 suggests that teachers generally agree on their ability to integrate these subjects effectively, though there are areas where improvement may be needed.

Teachers agree on their confidence to integrate the subjects given the available resources, as indicated by the mean values of 3.80 and 3.78 for the statements concerning teaching materials and resources.

Additionally, educators strongly agree, as reflected by a mean of 4.70, that classroom space and facilities are adequate for interdisciplinary teaching, suggesting that the physical environment is seen as supportive of this approach.

The data also show agreement on the availability of time and the feasibility of aligning interdisciplinary methods with the existing curriculum, with mean values ranging from 3.68 to 3.91. While teachers recognize some limitations, their perceptions suggest that interdisciplinary teaching could be effectively implemented with minor adjustments to the current structure.

These results have important implications for resource allocation and instructional planning. While teachers express confidence in their ability to implement interdisciplinary teaching, the data reveal areas where additional support may be required. Although resources and materials are considered adequate, there may still be gaps that could impede the seamless integration of subjects, particularly in resource-intensive areas.

To facilitate the effective adoption of interdisciplinary approaches, educational administrators should prioritize targeted professional development programs focused on resource utilization and interdisciplinary strategies (Mokski et al., 2023; Sisti & Robledo, 2021). The findings also suggest a need to refine curriculum time and teaching schedules to better accommodate interdisciplinary models.

Hence, addressing these areas, schools can enhance teachers' ability to implement interdisciplinary methods successfully, ensuring a more integrated and cohesive educational experience for students.

Table 3: Summary Table on the Level of Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies

Teachers' Perception of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies	Mean	SD	Description
Relevance to Current Curriculum and Teaching Standards	4.30	0.65	Strong Agree
Feasibility in Terms of Classroom Implementation and Resources	3.97	0.79	Agree
Overall Mean	4.14	0.74	Agree

Legend: 1.00-1.80 Strongly Disagree; 1.81-2.60 Disagree; 2.61-3.40 Neither Agree nor Disagree; 3.41-4.20 Agree; 4.21-5.00 Strongly Agree.

Table 3 provides a summary of teachers' perceptions of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies. It highlights two key factors: relevance to the current curriculum and teaching standards, and feasibility in terms of classroom implementation and resources. Teachers strongly agreed that the integration of these subjects is relevant to the curriculum, with a mean score of 4.30.

However, they expressed moderate agreement regarding the feasibility of implementation, with a mean score of 3.97. The overall mean score of 4.14 suggests that teachers recognize the importance of integrating these subjects but have concerns about its practical application in the classroom. These results imply that while teachers acknowledge the value of interdisciplinary approaches, there are challenges related to resources, time, and classroom logistics that may hinder full implementation (Hardy et al., 2021).

To address these concerns, it is essential to provide adequate professional development, ensure the availability of necessary resources, and consider adjustments to teaching schedules to make interdisciplinary teaching more feasible (Joseph & Uzundu, 2024). With these improvements, teachers would likely be better equipped to integrate Mathematics, Science, and Social Studies in a way that benefits student learning and engagement.

C. Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Willingness to Adopt Interdisciplinary Methods in Teaching

Table 4: Level of Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Willingness to Adopt Interdisciplinary Methods in Teaching

Level of Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Willingness to Adopt Interdisciplinary Methods in Teaching	Mean	SD	Description
I am willing to adopt interdisciplinary teaching approaches that integrate Mathematics, Science, and Social Studies in my classroom.	4.54	0.50	Very High
I believe that incorporating interdisciplinary teaching methods is a valuable approach to enhancing student learning.	4.49	0.50	Very High
I am open to experimenting with interdisciplinary teaching methods involving Mathematics, Science, and Social Studies in my lessons.	4.59	0.49	Very High
I feel motivated to incorporate interdisciplinary teaching methods that connect Mathematics, Science, and Social Studies to improve student engagement.	4.48	0.50	Very High
I am enthusiastic about the potential benefits of using interdisciplinary teaching approaches in my subject area.	4.48	0.50	Very High
Composite Mean	4.51	0.50	Very High

Legend: 1.00-1.80 Very Low; 1.81-2.60 Low; 2.61-3.40 Moderate; 3.41-4.20 High; 4.21-5.00 Very High.

Table 4 presents the teachers' acceptability of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies, focusing on their willingness to adopt such methods in the classroom. The composite mean of 4.51, which indicates a very high level of acceptability, reflects a strong inclination among teachers to embrace these interdisciplinary strategies. The individual responses consistently show a positive attitude, with mean scores above 4.40 for various items.

Teachers expressed a very high willingness to experiment with interdisciplinary methods, as indicated by a mean score of 4.59. Additionally, teachers reported a strong motivation to incorporate these methods to enhance student engagement and learning outcomes, with mean scores of 4.48 and 4.49, respectively. These results highlight that teachers acknowledge the value of integrating subjects such as Mathematics, Science, and Social Studies and are eager to incorporate these approaches into their teaching practices.

The implications of these findings suggest that there is a significant readiness among teachers to adopt interdisciplinary teaching methods. This enthusiasm signals the need for continued support in the form of professional development and curriculum integration to maximize the benefits of these approaches (Sitopu et al., 2024).

Providing teachers with appropriate resources, training, and opportunities for collaboration will likely foster the successful implementation of interdisciplinary teaching (Dillon et al., 2021). Furthermore, the high level of acceptability among teachers indicates that interdisciplinary

approaches have the potential to engage students more effectively, thus improving educational outcomes. Ensuring that these strategies are consistently integrated into the curriculum will be essential to sustain the momentum and further enhance teaching practices.

D. Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Perceived Impact on Student Learning and Engagement

Table 5: Level of Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Perceived Impact on Student Learning and Engagement

Level of Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies, in terms of Perceived Impact on Student Learning and Engagement	Mean	SD	Description
I perceive that interdisciplinary teaching approaches will increase student engagement in the classroom.	4.53	0.50	Very High
I think that students are more likely to retain knowledge when Mathematics, Science, and Social Studies are taught through interdisciplinary methods.	4.49	0.50	Very High
I believe that interdisciplinary approaches will help students see the real-world relevance of their learning in Mathematics, Science, and Social Studies.	4.49	0.50	Very High
I perceive that interdisciplinary teaching methods will motivate students to take a more active role in their learning.	4.46	0.50	Very High
I think that students will demonstrate improved problem-solving skills when taught through interdisciplinary methods.	4.53	0.50	Very High
Composite Mean	4.50	0.50	Very High

Legend: 1.00-1.80 Very Low; 1.81-2.60 Low; 2.61-3.40 Moderate; 3.41-4.20 High; 4.21-5.00 Very High.

Table 5 illustrates the level of teachers' acceptability regarding the perceived impact of interdisciplinary teaching approaches, integrating Mathematics, Science, and Social Studies, on student learning and engagement. The results demonstrate that teachers exhibit a very high level of belief in the positive effects of these teaching methods on student outcomes. The composite mean of 4.50 reflects consistently positive responses across all survey items.

Teachers agreed strongly with the notion that interdisciplinary methods increase student engagement, with a mean score of 4.53. They also believed these approaches enhance knowledge retention and foster a deeper understanding of real-world relevance, both receiving mean scores of 4.49. Additionally, teachers perceived that interdisciplinary methods motivate students to actively participate in their learning and improve their problem-solving skills, as indicated by mean scores of 4.46 and 4.53, respectively.

The implications of these findings suggest that teachers recognize the potential of interdisciplinary teaching to significantly boost student engagement and learning outcomes (Lungu & Lungu, 2021). This high level of acceptability aligns with the broader educational goal of preparing students for real-world challenges by showing them the interconnectedness of knowledge across subjects. It also emphasizes the importance of fostering teaching strategies

that encourage active participation, critical thinking, and problem-solving (Dzaiy & Abdullah, 2024). Given the clear positive perception of the impact of interdisciplinary approaches, further efforts should be made to ensure the continued integration of these methods into teaching practices. Professional development programs and curriculum design should focus on reinforcing the benefits of interdisciplinary teaching (Turner et al., 2024), ensuring that teachers are equipped with the tools and strategies to implement these methods effectively in the classroom.

Table 6: Summary Table on Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies

Teachers' Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies	Mean	SD	Description
Willingness to Adopt Interdisciplinary Methods in Teaching	4.51	0.50	Very High
Perceived Impact on Student Learning and Engagement	4.50	0.50	Very High
Overall Mean	4.51	0.50	Very High

Legend: 1.00-1.80 Very Low; 1.81-2.60 Low; 2.61-3.40 Moderate; 3.41-4.20 High; 4.21-5.00 Very High.

Table 6 presents the summary of teachers' acceptability of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies, focusing on two aspects: willingness to adopt interdisciplinary methods in teaching and perceived impact on student learning and engagement. Both aspects received very high ratings, with means of 4.51 and 4.50, respectively. This indicates that teachers are highly receptive to adopting interdisciplinary methods and strongly believe in their potential to positively influence student learning outcomes and engagement. These findings suggest that teachers have a strong inclination to integrate interdisciplinary approaches into their teaching practices, recognizing the benefits for student development. The very high levels of acceptability indicate that with appropriate support, such as professional development and resources, teachers are ready to embrace and apply these methods. The results highlight the need to continue fostering a positive environment for interdisciplinary teaching (Tariq, 2024), ensuring that educators have the necessary tools and encouragement to make these approaches a reality in the classroom.

E. Relationship Between the Level of Teachers' Perception and their Level of Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies

Pearson's r Correlation Test of the Relationship Between Teachers' Perception and Their Acceptability of Interdisciplinary Teaching Approaches Integrating Mathematics, Science, and Social Studies

Variables	Mean	R (Pearson)	Degree of Relationship	p-value	Remark
Perception	4.14	0.4244	Moderate Positive	0.00008734	Significant
Acceptability	4.51				

Tested at 0.05 level of significance

The table presents the results of Pearson's r correlation test to assess the relationship between teachers' perception and their acceptability of interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies. The mean score for perception is 4.14, while the mean for acceptability is 4.51. The Pearson correlation coefficient (r) is 0.4244, indicating a moderate positive relationship between the two variables. This means that as teachers' perception of interdisciplinary teaching approaches improves, their acceptability of such methods also tends to increase. The p -value of 0.00008734 is significantly less than the standard 0.05 level of significance, confirming that the observed relationship is statistically significant.

The significant result suggests that teachers who perceive interdisciplinary teaching approaches as more relevant and feasible are more likely to accept these methods for classroom implementation. This finding accentuates the importance of addressing both teachers' perceptions and their acceptability in the context of educational reforms or innovations. Given the moderate positive relationship, educational strategies aimed at improving teachers' perceptions of interdisciplinary approaches could potentially enhance their willingness to adopt these methods, fostering a more integrative approach to teaching across subjects (Brabler & Sprenger, 2021).

F. Difference in the Level of Teachers' Perception of Interdisciplinary Teaching Approaches Across the Programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education

ANOVA Results for Differences in Teachers' Perception of Interdisciplinary Teaching Approaches Across Different Programs

Source	Sum of Squares	Mean Square	F	p-value	Remarks
Between Groups	0.1244	0.04146	0.7996	0.4979	Not Significant
Within Groups	3.9405	0.05185			
Total	4.0649				

Tested at 0.05 level of significance

The ANOVA results, presented in the table, examine the differences in teachers' perception of interdisciplinary teaching approaches across the programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education. The analysis shows a between-groups sum of squares of 0.1244 and a within-groups sum of squares of 3.9405, resulting in a mean square of 0.04146 for between groups and 0.05185 for within groups. The F statistic is 0.7996 with a p -value of 0.4979. Since the p -value exceeds the 0.05 threshold for significance, the findings indicate that the differences in teachers' perceptions across these programs are not statistically significant.

These results suggest that teachers across different programs hold similar views regarding the acceptability of interdisciplinary teaching approaches. The lack of significant variation implies a uniform perception of the relevance and feasibility of integrating subjects like Mathematics, Science, and Social Studies. This consistency across programs may facilitate the broader adoption of interdisciplinary teaching strategies, as the shared perception can support cohesive

implementation efforts and foster collaborative teaching practices across diverse academic disciplines (Alabdallat et al., 2021).

Difference in the Level of Teachers' Acceptability of Interdisciplinary Teaching Approaches Across the Programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education

ANOVA Results for Differences in Teachers' Acceptability of Interdisciplinary Teaching Approaches Across Different Programs

Source	Sum of Squares	Mean Square	F	p-value	Remarks
Between Groups	0.149	0.04967	2.0196	0.1182	Not Significant
Within Groups	1.869	0.02459			
Total	2.018	0.02554			

Tested at 0.05 level of significance

The ANOVA results presented in the table analyze the differences in the level of teachers' acceptability of interdisciplinary teaching approaches across the programs of Agriculture, Tourism Management, Entrepreneurship, and Technical-Vocational Teacher Education. The between-groups sum of squares is 0.149, with a mean square of 0.04967, while the within-groups sum of squares is 1.869, resulting in a mean square of 0.02459. The calculated F statistic is 2.0196, and the corresponding p-value is 0.1182. Since the p-value is greater than the 0.05 significance level, the results indicate no statistically significant difference in teachers' acceptability levels across the different programs.

The lack of significant difference suggests that teachers from various academic programs share similar levels of acceptability regarding the integration of interdisciplinary teaching methods. This uniformity implies a potential for a consistent implementation of interdisciplinary approaches across diverse educational settings. The shared acceptability may also enhance collaborative efforts and resource-sharing initiatives (Kewei & Aijun, 2024), fostering an educational environment that supports interdisciplinary learning without program-specific biases (Hill et al., 2024).

CONCLUSIONS AND RECOMMENDATIONS

The findings indicate that teachers at South Cotabato State College perceive interdisciplinary teaching approaches integrating Mathematics, Science, and Social Studies as highly relevant to current curriculum goals and moderately feasible for implementation. The positive correlation between perception and acceptability suggests that enhancing teachers' understanding of these approaches could foster greater adoption. Despite generally favorable views, the variability in responses regarding feasibility—particularly in resource adequacy and time allocation—highlights areas requiring institutional support.

To address these challenges, it is recommended that South Cotabato State College invest in professional development programs that focus on practical strategies for integrating interdisciplinary methods. Specific attention should be given to improving resource allocation and classroom infrastructure to alleviate the constraints identified by teachers. Additionally,

curriculum restructuring should be considered to provide adequate time for interdisciplinary teaching, ensuring it aligns with educational standards and enhances student learning outcomes. Creating collaborative platforms for teachers to share best practices could further support the institutionalization of interdisciplinary approaches, fostering a cohesive and innovative teaching environment across all programs.

Acknowledgements

The researchers extend their sincere gratitude to the administration and faculty of South Cotabato State College for their invaluable support and participation in this study. Special appreciation is given to the teachers who contributed their time and perspectives, enriching the research with their experiences. The researchers also acknowledge the guidance and assistance provided by colleagues and academic mentors, whose expertise and encouragement were pivotal in the successful completion of this work. Finally, the researchers express gratitude to the institution's leadership for their dedication to promoting academic research and innovation.

References

- 1) Adams, E. C., & Kerr, S. L. (2022). Always already there: Theorizing an intra-disciplinary social studies. *Pedagogies: An International Journal*, 17(3), 251-270.
- 2) Afriansyah, E. A., Herman, T., & Dahlan, J. A. (2021). Critical thinking skills in mathematics. In *Journal of Physics: Conference Series* (Vol. 1778, No. 1, p. 012013). IOP Publishing.
- 3) Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in psychology*, 13, 920317.
- 4) Alabdallat, B., Alkhamra, H., & Alkhamra, R. (2021). Special education and general education teacher perceptions of collaborative teaching responsibilities and attitudes towards an inclusive environment in Jordan. In *Frontiers in Education* (Vol. 6, p. 739384). Frontiers Media SA.
- 5) Brabler, M., & Sprenger, S. (2021). Fostering sustainability knowledge, attitudes, and behaviours through a tutor-supported interdisciplinary course in education for sustainable development. *Sustainability*, 13(6), 3494.
- 6) Dillon, S., Armstrong, E., Goudy, L., Reynolds, H., & Scurry, S. (2021). Improving special education service delivery through interdisciplinary collaboration. *Teaching Exceptional Children*, 54(1), 36-43.
- 7) Dzaiy, A. H. S., & Abdullah, S. A. (2024). The use of active learning strategies to foster effective teaching in higher education institutions. *Zanco Journal of Human Sciences*, 28(4), 328-351.
- 8) Emmeche, C. (2023). At home in a complex world: Lessons from the frontiers of natural science. In *The Significance of Complexity* (pp. 21-46). Routledge.
- 9) Farris, P. J. (2024). *Elementary and middle school social studies: An interdisciplinary, multicultural approach*. Waveland Press.
- 10) Gutiérrez-Monsalve, J. A., Garzón, J., Gonzalez-Gómez, D., & Segura-Cardona, A. M. (2023). Factors related to academic performance among engineering students: a descriptive correlational research study. *Dyna*, 90(227), 35-44.
- 11) Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable operations and computers*, 3, 275-285.
- 12) Hardy, J. G., Sdepanian, S., Stowell, A. F., Aljohani, A. D., Allen, M. J., Anwar, A., ... & Wright, K. L. (2021). Potential for chemistry in multidisciplinary, interdisciplinary, and transdisciplinary teaching activities in higher education. *Journal of Chemical Education*, 98(4), 1124-1145.

- 13) Hill, R. J., Djokic, M. A., Anderson, A., Barbour, K., Coleman, A. M., Guerra, A. D., ... & Allison, S. D. (2024). From Ridge 2 Reef: An interdisciplinary model for training the next generation of environmental problem solvers. *PloS one*, 19(12), e0314755.
- 14) Joseph, O. B., & Uzundu, N. C. (2024). Curriculums development for interdisciplinary STEM education: A review of models and approaches. *International Journal of Applied Research in Social Sciences*, 6(8), 1575-1592.
- 15) Kewei, C., & Aijun, Y. (2024). Innovative Pathways in Higher Education: Exploring the Connotation, Characteristics, and Implementation of the "Three Entries" Virtual Teaching and Research Section. *International Journal of Education and Humanities*, 4(4), 370-382.
- 16) Lo, C. K. (2021). Design principles for effective teacher professional development in integrated STEM education. *Educational Technology & Society*, 24(4), 136-152.
- 17) Lungu, B., & Lungu, M. (2021). Exploring the effects on student learning and engagement of COVID-19: An innovative and interdisciplinary approach. *Journal of microbiology & biology education*, 22(1), 10-1128.
- 18) Mokski, E., Leal Filho, W., Sehnem, S., & Andrade Guerra, J. B. S. O. D. (2023). Education for sustainable development in higher education institutions: an approach for effective interdisciplinarity. *International Journal of Sustainability in Higher Education*, 24(1), 96-117.
- 19) Oudenampsen, J., Van De Pol, M., Blijlevens, N., & Das, E. (2023). Interdisciplinary education affects student learning: a focus group study. *BMC medical education*, 23(1), 169.
- 20) Roehrig, G. H., Dare, E. A., Ring-Whalen, E., & Wieselmann, J. R. (2021). Understanding coherence and integration in integrated STEM curriculum. *International Journal of STEM Education*, 8, 1-21.
- 21) Santalucia, J. (2022). *Creating Innovation Through Data Science: A Descriptive-Correlational Study Utilizing Data Science for Innovation* (Doctoral dissertation, St. Thomas University).
- 22) Shams, Z. (2024). The Intersection of Disciplines: Enhancing Understanding Through Collaboration. *Pakistan Journal of Multidisciplinary*, 2(1), 46-55.
- 23) Simanjuntak, M. B., Suseno, M., Setiadi, S., Lustyantje, N., & Barus, I. R. G. R. G. (2022). Integration of curricula (curriculum 2013 and cambridge curriculum for junior high school level in three subjects) in pandemic situation. *Ideas: Jurnal Pendidikan, Sosial, dan Budaya*, 8(1), 77-86.
- 24) Sisti, M. K., & Robledo, J. A. (2021). Interdisciplinary collaboration practices between education specialists and related service providers. *Journal of Special Education Apprenticeship*, 10(1), n1.
- 25) Sitopu, J. W., Khairani, M., Roza, M., Judijanto, L., & Aslan, A. (2024). The importance of integrating mathematical literacy in the primary education curriculum: A literature review. *International Journal of Teaching and Learning*, 2(1), 121-134.
- 26) Tariq, M. U. (2024). Enhancing students and learning achievement as 21st-century skills through transdisciplinary approaches. In *Transdisciplinary Approaches to Learning Outcomes in Higher Education* (pp. 220-257). IGI Global.
- 27) Turner, R., Cotton, D., Morrison, D., & Kneale, P. (2024). Embedding interdisciplinary learning into the first-year undergraduate curriculum: drivers and barriers in a cross-institutional enhancement project. *Teaching in Higher Education*, 29(4), 1092-1108.
- 28) VanTassel-Baska, J., & Wood, S. M. (2023). The integrated curriculum model. In *Systems and models for developing programs for the gifted and talented* (pp. 655-691). Routledge.