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Structure, Modeling, Differentiation, and Assessment as an Instructional Approach to Teaching and Learning

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Abstract. Quality education is envisioned to result in higher individual income and is necessary for any country's long-term economic growth. Enhancing student satisfaction and knowledge retention and elevating teacher pedagogical knowledge and competence to new heights can be attained through Structure, Modeling, Differentiation, and Assessment (SMDA), a dynamic instructional approach reshaping the learning landscape in private sectarian schools in achieving quality education. The pilot study determined if SMDA can enhance student satisfaction and knowledge retention and improve teacher pedagogical knowledge and competence. This quantitative research, utilizing a descriptive-correlational research design through a one-group pretest-posttest, measured students' satisfaction and knowledge retention levels and teachers' pedagogical knowledge and competence levels before and after implementing SMDA. The samples included 43 English, Math, and Science teachers and 325 students chosen through stratified sampling from the Marbel Diocesan Notre Dame Schools in South Cotabato, Sarangani, and Koronadal City. The findings indicate that students' satisfaction and knowledge retention significantly improved after implementing SMDA. Teachers demonstrated an enhanced level of competence and pedagogical knowledge following SMDA implementation. Furthermore, the study reveals that student satisfaction is unrelated to knowledge retention, indicating that students learn regardless of approaches. Teachers' pedagogical knowledge is unrelated to their competence, proposing that teachers' pedagogical knowledge does not equate to their competence. The study concluded that SMDA is an intentional and rigorous instructional approach, leading to recommendations for continued implementation, professional development, evaluation, and research on SMDA to improve education quality in the Philippines.

Keywords: Instructional approach; Learning; Pilot study; Teaching.

1.0 Introduction

The World Bank (2019) reported a growing learning crisis in emerging economies, including the Philippines, highlighting a persistent global issue rooted in inadequate policy and curriculum implementation monitoring. Compounding this crisis, the COVID-19 outbreak has led to an international education emergency, severely impacting children's learning and well-being. Despite the Philippines' 1987 Constitution mandating the state to provide quality education at all levels and the passage of Republic Act 10533 (Enhanced Basic Education Act), aimed at reforming and improving the existing curriculum, significant progress remains elusive. Recent international assessments reveal low rankings for the Philippines, underscoring the urgent need to adjust educational standards and instructional methods to enhance quality and foster global competitiveness. In response to these challenges, the Department of Education has overhauled the K-12 curriculum through initiatives such as the MATATAG Curriculum to meet learners' needs better. However, private schools face difficulties adapting to these curricular changes and maintaining enrollment levels compared to public institutions. To avert

widespread closures of private schools, these institutions must innovate and adapt, positioning themselves as preferred choices for parents and students.

To achieve the goal of quality education in public and private schools, teachers must possess the knowledge, skills, attitudes, and values they are expected to impart to students. However, effectively teaching today's diverse student population presents significant challenges (Department of Education, 2017). Several educational theories support the idea that effective teaching and learning rely on key elements such as structure, modeling, differentiation, and assessment. Skinner's operant conditioning emphasizes the importance of reinforcement, while Bandura's social learning theory highlights the power of modeling. Piaget's constructivism advocates differentiated activities to promote deeper learning. These approaches, combined with Sanders' competence theory, suggest that teacher effectiveness goes beyond knowledge and motivation, requiring the ability to make informed decisions in the classroom.

Additionally, there are recently published studies that examined the impact of classroom management, model-based learning approaches, differentiated instruction, and assessment on teaching styles, competencies, beliefs, and academic performance (Conriquez, 2020; Barni et al., 2021; Cunningham, 2022; Pearson et al., 2019; Grain et al., 2022; Kanya et al., 2021 and Roelofs & Sanders, 2007), but literature has yet to be published demonstrating how effectively combining different instructional strategies into one cohesive approach benefits both students and teachers (Dede, 2006). Furthermore, research on integrating structure, modeling, differentiation, and assessment into a single instructional framework is still lacking. This gap raises questions about its potential impact on the teaching-learning process, specifically regarding student satisfaction and knowledge retention, as well as teachers' pedagogical knowledge and teaching competence.

Thus, this pilot study on Structure, Modeling, Differentiation, and Assessment (SMDA) as an instructional approach was conducted in private diocesan schools. The aim was to provide a framework teachers can intentionally and consistently follow in their daily routines. Implementing the SMDA strategy involved temporarily halting the current instructional process, a step that might not have been viable in public schools. The study was conducted in private diocesan schools that are more adaptable and prepared to receive training in this new framework. This procedure is beneficial because it demonstrates the approach's effectiveness in a smaller setting while providing insights that may apply to larger contexts. The SMDA framework aims to improve instruction significantly, address the long-overdue issue of deteriorating educational quality, and offer a promising future for Filipino learners across the country.

2.0 Methodology

2.1 Research Design

The descriptive and correlational research designs using a one-group pretest-posttest were utilized to determine the effect of Structure, Modeling, Differentiation, and Assessment (SMDA) as an instructional approach to determining students' satisfaction and retention of knowledge and teachers' level of pedagogical knowledge and competence in the delivery of instruction in the classroom setting. In the study, the same group of students was given a pre-and post-implementation survey to determine their level of satisfaction and a pre-and post-test in Math, Science, and English to determine their knowledge retention before and after SMDA implementation, respectively. Similarly, the same group of teachers was given a pre-and post-implementation survey to determine their level of pedagogical knowledge and a pre-and post-implementation class observation by their principal before and after SMDA to determine their competence.

As descriptive research, it described the level of students' satisfaction and knowledge retention and teachers' pedagogical knowledge and competence in delivering instruction in the classroom setting. Moreover, the study delved into the significant differences that exist before and after the SMDA instructional approach implementation in the independent variables and dependent variables, including students' level of satisfaction and retention of knowledge, and teachers' level of pedagogical knowledge and competence. Also, the study determined the significant relationship between the student's level of satisfaction with knowledge retention and teachers' level of pedagogical knowledge to their competence in the delivery of instruction after SMDA implementation.

2.2 Research Locale

The study was conducted in the Marbel Diocesan Notre Dame Schools in Sto. Niño, Norala, New Iloilo, San Jose, Milbuk, Glan, Maasim, Kiamba, and Maitum, Philippines. These schools belong to one diocesan system, are led by the Bishop of Marbel, and are managed by the Superintendent of Schools. The schools, through their superintendent, positively accepted the researcher's proposal to train and use the SMDA instructional approach in their schools for the second quarter of the school year 2023-2024.

2.3 Research Participants

The study's respondents were forty-three (43) teachers and three hundred twenty-five (325) randomly selected students from the one thousand seven hundred twenty-eight (1,728) total number of Grade 7 to 10 students of the nine (9) identified Notre Dame schools under the Marbel Diocesan Schools in Region 12: ND Milbuk, ND San Jose, ND Glan, ND Norala, ND Maasim, ND Maitum, ND Kiamba, ND Sto. Niño and ND New Iloilo. The inclusion criteria for selecting the student-respondents include being currently enrolled in Grades 7 to 10 at one of the identified Notre Dame schools, being willing and available to participate in the study, and having the ability to provide valuable insights and perspectives related to the research objectives. The inclusion criteria for teachers include being currently employed as a teacher at one of the identified Notre Dame schools in Region 12, teaching English, Science, and Math to Grade 7 to 10 students at the school, willing and available to participate in the study and demonstrates a commitment to be trained and provide valuable insights and perspectives related to the research objectives. The students evaluated the extent of their satisfaction and knowledge retention before and after implementing the SMDA instructional approach. At the same time, the teachers assessed their pedagogical knowledge and competence before and after implementing the SMDA instructional approach.

2.4 Research Instrument

Four data sources were used in this study. The content of the researcher-developed instrument for evaluating students' satisfaction with teachers' teaching practices was validated using a five-panel validity test. Experts thoroughly reviewed and validated the research instrument's content to ensure it was applicable and accurately represented the intended construct for the specific goal. The findings of content validation showed that all item-level content validity indices (I-CVI) were acceptable, and the scale-level content validity index (S-CVI) was 1.00, indicating that all items were considered valid. A reliability test was also conducted to determine the research tool's consistency. The pilot test included thirty (30) non-respondents from the same student group. After the data were processed, an internal consistency analysis was conducted. Cronbach's Alpha was used to evaluate internal consistency. The study instrument had strong internal reliability, as indicated by the test findings, which showed that the questionnaire's Cronbach's Alpha was 0.863.

The second data source was taken from the second quarter's pretest (conducted before the SMDA implementation) and posttest (conducted after the SMDA implementation). The subject teachers created the tests, and the results in percentages for English, Science, and Math were converted to percentages and then transmuted following the Department of Education transmutation table and grading scale to determine students' knowledge retention levels.

The third data source was gathered using the DepEd's Results-Based Performance Management System (RPMS) Self-Assessment Tool for Teachers to determine their pedagogical knowledge before and after the SMDA implementation. The RPMS was a self-assessment tool that the teachers answered. They rated themselves as having a very high, high, moderate, and low level of implementation in terms of content knowledge and pedagogy, learning environment, diversity of learners, curriculum and planning, assessment reporting, community linkages and professional engagement, personal growth and professional development, and the plus factor for performing various work and activities.

The fourth and last data source was taken through classroom observation by the principal to determine teachers' level of competence in the delivery of instruction and the entire teaching-learning process. The class observation was conducted before and after implementing the SMDA instructional approach. The principals used the diocesan classroom observation tool during observation with the following verbal descriptors: 4 – very high, 3 – high, 2 – low, and 1 – very low.

2.5 Data Gathering Procedure

The following steps were undertaken to ensure the smooth conduct of the study. Initially, the proposal was discussed with the Marbel Diocesan Schools Superintendent and the Dean of the SKSU Graduate School. As part of the decision-making process of adopting the SMDA instructional approach implementation proposal, the Superintendent called for an initial meeting with the principals of the diocesan schools, with whom the researcher presented the proposal and answered clarification questions.

A follow-up meeting was conducted with principals and teachers for further clarification. When the diocesan schools' principals and teachers decided to embrace the approach, the researcher sought the approval of the Marbel Diocesan Schools Superintendent and the Dean of the Graduate School to proceed with the seminar workshop and the conduct of the study.

A two-day seminar workshop in June 2023 was undertaken to determine teachers' awareness of the instructional approaches and train them on how the SMDA instructional approach works in the classroom setting. Another series of seminar workshops was conducted in September and October 2023 to ensure that teachers fully understood the SMDA instructional approach and were ready to implement it in the classroom. Training and consultation before implementation at respective schools were done to ensure teachers' readiness for implementing the SMDA instructional approach.

The class adviser distributed and secured a consent form for parents' or guardians' signatures and an introductory letter containing the study's purpose and other important information before administering the survey questionnaire to the students. The school testing coordinator distributed a pre-implementation survey to student respondents before implementing the SMDA instructional approach in the second quarter. The unit pretest was prepared and conducted by their subject teachers. The same data-gathering process was followed at the end of the second quarter for students. All data needed were gathered by the school testing coordinator and submitted by the principals to the researcher through the Office of the Diocesan Schools Superintendent.

For teacher-respondents, the research instrument to determine teachers' pedagogical knowledge before the use of the SMDA instructional approach was distributed and retrieved during the seminar workshop by the researcher. The post-SMDA instructional approach survey was conducted and collected by the school testing coordinator at the respective schools. To determine the competence level of teachers of the instructional approaches before and after the SMDA implementation, their respective school principals conducted classroom observations. The teachers' data were gathered by the school testing coordinator and submitted by the principals to the researcher through the Office of the Diocesan Schools Superintendent.

Moreover, the respondents were assured that their answers would be kept entirely anonymous for ethical reasons and that the findings would be used only for research and professional development. After retrieving all data—pre- and post-implementation of SMDA instructional approach students' satisfaction surveys, pre- and posttests for the second quarter in English, Math, and Science of students; the RPMS Self-Assessment tool and the classroom observation results of teachers—the data collection, organization, and presentation using tables and figures followed. Data consolidation, statistical analysis, and interpretation were performed to find answers to the research problems.

2.6 Ethical Considerations

The respondents were assured that their answers would be kept entirely anonymous for ethical reasons and that the findings would be used only for research and professional development.

3.0 Results and Discussion

3.1 Students' Satisfaction of Structure, Modeling, Differentiation and Assessment (SMDA)

In terms of Structure

Table 1 shows the level of student satisfaction with structure before SMDA. Data reveals that students are highly satisfied with the various aspects of instructional approaches utilized by teachers that provide structure to the teaching-learning process (M=3.21, SD=0.68) before implementing the SMDA instructional approach. The

structure provides students with clear procedures and expectations. It makes students confident and secure in their learning. Structure makes them engage, stay on task, and maximize learning time.

Table 1. Descriptive statistics of the students' satisfaction with the structure before SMDA

Indicators		Mean	SD	Description
1.	Time allocation for teachers to teach and students to perform activities and work with classmates.	3.37	0.69	Very High
2.	Clear classroom procedures and expectations at the school year's beginning.	3.32	0.58	Very High
3.	Orientation and emphasis on what to learn at the beginning of each lesson.	3.32	0.65	Very High
4.	Administration of pretests at the beginning of a new unit or topic to assess prior knowledge.	3.27	0.69	Very High
5.	Posttests were administered at the end of the unit to check mastery and understanding.	3.26	0.64	Very High
6.	Sequence of how the lessons are being presented.	3.25	0.68	Very High
7.	Orientation and implementation of classroom procedures and expectations.	3.23	0.60	High
8.	Lessons and activities completed at the end of the class period.	3.17	0.69	High
9.	Appropriate and consistent consequences when procedures and expectations are not followed.	3.10	0.72	High
10.	No learning time is wasted from misbehavior and other disruptions.	2.90	0.83	High
Mean		**3.21**	**0.68**	**High**

The findings align with previous research by Emmer et al. (2001), which suggests that clear classroom rules and structures foster a supportive, structured learning environment that boosts satisfaction and academic success. Another study by Yang et al. (2022) also confirms this result. When the teacher communicates clear expectations that structure the teaching-learning process, students experience greater self-confidence and competence satisfaction.

Furthermore, Table 2 shows that students are very satisfied with the SMDA instructional approach utilized by teachers, which provides structure to the teaching-learning process (M=3.38, SD=0.61) at post-SMDA implementation. This implies that the SMDA instructional approach provides students with explicit and consistent procedures and expectations that make students satisfied, engaged, and secure in their learning.

Table 2. Descriptive statistics of the students' satisfaction with the structure after the SMDA

Indicators		Mean	SD	Description
1.	Clear classroom procedures and expectations at the school year's beginning.	3.52	0.53	Very High
2.	Orientation and implementation of classroom procedures and expectations.	3.45	0.52	Very High
3.	Time allocation for teachers to teach and students to perform activities and work with classmates.	3.44	0.56	Very High
4.	Administration of pretests at the beginning of a new unit or topic to assess prior knowledge.	3.43	0.60	Very High
5.	Posttests were administered at the end of the unit to check mastery and understanding.	3.43	0.56	Very High
6.	Orientation and emphasis on what to learn at the beginning of each lesson.	3.39	0.59	Very High
7.	Lessons and activities completed at the end of the class period.	3.38	0.63	Very High
8.	Sequence of how the lessons are being presented.	3.34	0.65	Very High
9.	Appropriate and consistent consequences when procedures and expectations are not followed.	3.23	0.71	High
10.	No learning time is wasted from misbehavior and other disruptions.	3.15	0.75	High
Mean		**3.38**	**0.61**	**Very High**

This finding aligns with the research of Hyun et al. (2017), which found that active learning pedagogical activities significantly enhance students' satisfaction with their individual and group learning processes, regardless of the classroom setting. Their study further strengthens the conclusion that pedagogical practices promoting active learning positively impact students' satisfaction. The result of the study also supports the findings of Umbach and Wawrzynski (2005), who examined faculty practices, student engagement, and student perceptions and found that the more faculty interacted with the students, the more students were challenged and engaged in meaningful activities. With the SMDA instructional approach promoting structure, students have a high satisfaction level post-SMDA implementation, as shown in Table 2.

In terms of Modeling

Table 3 reveals that students were very satisfied with the different modeling aspects before the SMDA implementation (M = 3.33, SD = 0.65). This indicates that the modeling procedures, expectations, and teaching through examples and scaffolding have effectively met the students' needs and expectations. The high satisfaction level also implies that the students have positive perceptions and experiences with the modeling process, which can contribute to their satisfaction, engagement, and learning outcomes.

Table 3. Descriptive statistics of the students' satisfaction with modeling before SMDA

Indicators		Mean	SD	Description
1.	Way of presenting the concepts to be learned in class.	3.44	0.58	Very High
2.	Way of scaffolding (presents the lesson step by step) so they can understand them better.	3.42	0.65	Very High
3.	Treatment of all students (with respect, fairness, and consistency, regardless of their background or behavior).	3.42	0.69	Very High
4.	Clear, concise, easy-to-follow explanations.	3.39	0.62	Very High
5.	Using relevant examples connecting with real life helped them understand the lesson better.	3.36	0.66	Very High
6.	Model the concepts to be learned in class.	3.26	0.61	Very High
7.	Immediate and positive feedback during the modeling of lessons.	3.25	0.67	Very High
8.	Model the skills that need to be acquired.	3.21	0.71	High
9.	Intentional questioning to determine their understanding and address misconceptions.	3.18	0.68	High
Mean		**3.33**	**0.65**	**Very High**

The finding parallels significant research (Gilmour et al., 2019) that highlights the positive effect of teachers' classroom management and teaching skills on academic performance and student-teacher relationships. This leads to satisfaction with classroom practices and teachers' pedagogical skills. Emphasizing explicit instruction, understandable demonstrations and teacher examples are critical for students to grasp concepts and achieve better learning outcomes (Darling-Hammond et al., 2017).

Table 4 shows that using the SMDA instructional approach indicates a high level of satisfaction across various modeling aspects (M = 3.47, SD = 0.58). This suggests that students found the SMDA instructional approach effective and engaging in enhancing their learning experience. Explicit modeling using the SMDA instructional approach can significantly affect the teaching-learning process. Explicit modeling involves demonstrating and explaining concepts, strategies, or processes to students. Modeling in the SMDA framework can improve satisfaction, retention, and application. The approach can have profound implications for improving learning outcomes and student experiences in the teaching-learning environment.

Table 4. Descriptive statistics of the students' satisfaction in modeling after the SMDA

Indicators		Mean	SD	Description
1.	Way of scaffolding (presents the lesson step by step) so they can understand them better.	3.57	0.57	Very High
2.	Way of presenting the concepts to be learned in class.	3.54	0.54	Very High
3.	Treatment of all students (with respect, fairness, and consistency, regardless of their background or behavior).	3.52	0.66	Very High
4.	Use of relevant examples connecting with real life helped them understand the lesson better.	3.47	0.57	Very High
5.	Clear, concise, easy-to-follow explanations.	3.45	0.60	Very High
6.	Model the concepts to be learned in class.	3.45	0.56	Very High
7.	Intentional questioning to determine their understanding and address misconceptions.	3.42	0.58	Very High
8.	Model the skills that need to be acquired.	3.39	0.56	Very High
9.	Immediate and positive feedback during the modeling of lessons.	3.38	0.59	Very High
Mean		**3.47**	**0.58**	**Very High**

The study's results are like those of Alarcon et al. (2022), who concluded that students' satisfaction is due to teaching quality, attitude, and style. Learners are satisfied with modeling, teaching demonstration, and teaching quality. Similarly, the result supports the gradual release of responsibility in teaching where the teacher sets the lesson's goal and models thinking based on learning standards, thus improving performance and satisfaction (Pearson & Gallagher, 1983).

In terms of Differentiation

Table 5 shows that students were very satisfied with the different aspects of differentiation in the teaching-learning process before the SMDA implementation (M = 3.26, SD = 0.65). The result suggests that students were generally content with the varied approaches used in teaching and learning. The high mean score implies that students perceived differentiation positively, indicating that they found value in the diverse methods employed in the teaching process. The low standard deviation suggests a consistent level of satisfaction among the students, with minimal variability in their responses. Overall, these results highlight the effectiveness and acceptance of differentiation strategies in enhancing the teaching-learning experience before the SMDA implementation.

Table 5. Descriptive statistics of the students' satisfaction in differentiation before SMDA

Indicators		Mean	SD	Description
1.	Activities that support their strengths and areas for improvement.	3.36	0.63	Very High
2.	Different activities that help them learn more and improve their engagement in class.	3.36	0.61	Very High
3.	Additional support and resources were given to help students who struggled to catch up with the class.	3.34	0.63	Very High
4.	Group work that promotes cooperative learning among students with different abilities.	3.30	0.68	Very High
5.	Different activities and assessments that help their retention and application of knowledge.	3.28	0.64	Very High
6.	Different activities that help them connect with the topic and apply learning to daily life.	3.26	0.65	Very High
7.	Different approaches that help them process and understand difficult lessons at first.	3.24	0.64	High
8.	Intention to provide opportunities to students who can grasp the concepts faster.	3.19	0.65	High
9.	Different activities to choose from based on their interests and needs.	3.17	0.71	High
10.	Small group teaching and one-on-one teaching opportunities to address their individual needs.	3.13	0.68	High
Mean		**3.26**	**0.65**	**Very High**

The findings of the study support the idea of Tomlinson (2001) that differentiated instruction recognizes students' varied learning requirements, abilities, and interests. It involves personalizing teaching, content, and assessment for learning. Differentiation improves satisfaction, retention, and application by addressing students' readiness levels, learning preferences, and interests through tiered tasks, variable grouping, and teaching resources to meet individual learning needs. The result is also in line with the study of Westberg et al. (1993), which shows the positive impact of differentiated instruction on student engagement and learning outcomes.

Table 6 reveals that students are very satisfied with the different aspects of differentiation in the teaching-learning process after implementing the SMDA instructional approach (M = 3.43, SD = 0.61). The study's results suggest that the SMDA approach has effectively earned student satisfaction with differentiation in teaching-learning.

Table 6. Descriptive statistics of the students' satisfaction in differentiation after SMDA

Indicators		Mean	SD	Description
1.	Additional support and resources were given to help students who struggled to catch up with the class.	3.53	0.59	Very High
2.	Different activities that help them connect with the topic and apply learning to daily life.	3.46	0.60	Very High
3.	Different approaches that help them process and understand difficult lessons at first.	3.45	0.60	Very High
4.	Group work that promotes cooperative learning among students with different abilities.	3.45	0.63	Very High
5.	Activities that support their strengths and areas for improvement.	3.45	0.56	Very High
6.	Different activities and assessments that help their retention and application of knowledge.	3.42	0.58	Very High
7.	Different activities to choose from based on their interests and needs.	3.41	0.60	Very High
8.	Different activities that help them learn more and improve their engagement in class.	3.40	0.61	Very High
9.	Intention to provide opportunities to students who can grasp the concepts faster.	3.34	0.63	Very High
10.	Small group teaching and one-on-one teaching opportunities to address their individual needs.	3.34	0.68	Very High
Mean		**3.43**	**0.61**	**Very High**

This is consistent with research showing that differentiation can improve learning outcomes and student satisfaction. Differentiated education helps students connect with the topic, making learning more enjoyable and fruitful. As instructors use diversified strategies, student achievement, satisfaction, and learning outcomes improve (Gheyssens et al., 2023). Differentiated instruction increases students' interest and motivation, classroom productivity, and a sense of agency and self-worth. Teachers can use strategies like flexible grouping, tiered assignments, changing the learning environment, and implementing various instructional approaches to differentiate education in inclusive classrooms (Pasira, 2022).

In terms of Assessment

Table 7 reveal that students have a very high satisfaction level with the different aspects of assessment in the teaching-learning process before implementing the SMDA instructional approach (M = 3.26, SD = 0.66). The study's results showing high student satisfaction with assessment practices before the SMDA instructional approach implementation offer valuable insights for educators to reinforce effective teaching strategies, validate current assessment practices, focus on continuous improvement, prepare for instructional changes, and enhance student engagement in the teaching-learning process. These implications can guide educators in optimizing their teaching methods to create a more engaging and effective learning environment for students.

Table 7. Descriptive statistics of the students' satisfaction in assessment before SMDA

Indicators	Mean	SD	Description
1. Use various assessment forms (e.g., quizzes, tests, projects, activities, etc.) To assess their understanding of the subject matter.	3.36	0.66	Very High
2. Ways of providing feedback and practice when they struggle to understand the lesson.	3.34	0.66	Very High
3. Remediation and enrichment activities that help improve their assessment scores.	3.33	0.68	Very High
4. Way of providing an opportunity to reflect on their learning.	3.29	0.51	Very High
5. Additional support or intervention when they need it.	3.26	0.63	Very High
6. Use conferencing with them to talk about their goals and academic performance.	3.25	0.66	Very High
7. Timely feedback on assessments to help them improve their learning.	3.24	0.66	High
8. Way of adjusting lessons when their test scores are low.	3.20	0.66	High
9. Connecting to my parents/guardians about their strengths and weaknesses to support their academic growth.	3.17	0.74	High
10. Use of adjusted activities and assessments when their test scores are low.	3.14	0.74	High
Mean	**3.26**	**0.66**	**Very High**

The study's result is like that of the previous study of Hattie (2011), which defined assessment as an important factor for motivating instruction. Assessment practices provide feedback, inform instructional decisions, and significantly impact student achievement. Intentional assessment in the teaching and learning process helps improve educational outcomes. Additionally, the study of Brown (1989) explains the same process of using assessment in the teaching process in the pre-SMDA, which includes establishing clear learning expectations, evaluating students' performance against these expectations, and utilizing the results to adjust and drive instruction that resulted to a very high level of satisfaction to students.

Table 8 reveals that students are very satisfied with the different aspects of assessment in the teaching-learning process after implementing the SMDA instructional approach (M = 3.43, SD = 0.60). This indicates that students are highly satisfied with how teachers use different assessments, interventions, and connections to improve the teaching-learning process while implementing the SMDA instructional approach.

Table 8. Descriptive statistics of the students' satisfaction in assessment after the SMDA

Indicators	Mean	SD	Description
1. Use of various assessment forms (e.g., quizzes, tests, projects, activities, etc.) To assess their understanding of the subject matter.	3.52	0.58	Very High
2. Timely feedback on assessments to help them improve their learning.	3.46	0.56	Very High
3. Remediation and enrichment activities that help improve their assessment scores.	3.46	0.56	Very High
4. Way teachers provide feedback and practice when they struggle to understand the lesson.	3.44	0.57	Very High
5. Way teachers provide an opportunity to reflect on their learning.	3.43	0.59	Very High
6. Use of adjusted activities and assessments when their test scores are low.	3.43	0.61	Very High
7. The way teachers connect to their parents/guardians about their strengths and weaknesses to support their academic growth.	3.41	0.65	Very High
8. Use of conferencing with them to talk about their goals and academic performance.	3.41	0.63	Very High
9. Additional support or intervention when they need it.	3.39	0.58	Very High
10. Way teachers adjust lessons when their test scores are low.	3.35	0.66	Very High
Mean	**3.43**	**0.60**	Very High

The result is supported by the study of Khon (2000), which emphasized the importance of a more holistic and authentic approach to assessment, focusing on student development and understanding rather than just test scores. The SMDA instructional approach works the same way: it helps students grow and feel successful. Further, a previous study acknowledges the value of assessment but is cautious against misusing assessment data to guide instruction. He contends that a moderate focus on assessment can result in teaching to the test and a diminished emphasis on essential learning objectives. The study suggests that despite the value of assessment, educators should guarantee a balanced approach to avoid unintended adverse outcomes (Popham, 2011). The study's findings hold the same idea as those of SMDA, which ensures teachers will be careful not to teach to the test.

3.2 Students' Knowledge Retention

Table 9 reveals that students' knowledge retention in English, Science, and Math before implementing the SMDA instructional approach did not meet expectations (M = 69.61, SD = 4.22). The standard deviations suggest a significant variability in individual performance within each subject. Since concepts for the second quarter are new to students, these pre-test results for the teaching-learning process will help teachers plan accordingly and identify and address specific knowledge gaps in English, Science, and Math. Teachers can use this data to

customize their teaching strategies to target areas where students struggle most. Understanding the variability in student performance can help implement differentiated instruction to cater to individual learning needs. Regular formative assessments can be used to monitor progress and adjust teaching methods accordingly.

Table 9. Descriptive statistics of students' knowledge retention before the SMDA

Subjects	Mean Rating	SD	Qualitative Description
English	70.65	4.76	Did Not Meet Expectations
Science	69.21	4.37	Did Not Meet Expectations
Math	68.98	3.54	Did Not Meet Expectations
Mean	**69.61**	**4.22**	**Did Not Meet Expectations**

Several studies have shown the transformative power of active learning. It enables students to construct deeper understandings and make meaningful connections, essential for long-term knowledge retention and application (Prince, 2004). Moreover, meaningful learning experiences, in which students can relate new knowledge to their prior experiences and real-world contexts, substantially impact retention and application. When students find value in their learning, they are more likely to retain and effectively implement the information in various contexts (Novak & Gowin, 1984). Thus, it will be essential to utilize research-based strategies to help students improve their knowledge retention.

Table 10 indicates that the student's performance in all three subjects is fairly satisfactory. At the same time, the standard deviation for English and Science is lower, suggesting a more consistent level of performance (M = 77.27, SD = 19.58). The result indicates that the SMDA approach has successfully gained students' understanding and application of English, Science, and Math concepts. The approach's emphasis on active learning, critical thinking, and problem-solving has enabled students to understand the subjects. The findings suggest that the SMDA instructional approach is a promising strategy for improving students' learning outcomes in English, Science, and Math.

Table 10. Descriptive statistics of students' knowledge retention after the SMDA

Subjects	Mean Rating	SD	Qualitative Description
English	78.15	9.23	Fairly Satisfactory
Science	76.53	8.44	Fairly Satisfactory
Math	77.13	41.07	Fairly Satisfactory
Mean	**77.27**	**19.58**	**Fairly Satisfactory**

Several studies and frameworks suggest the potential benefits of the approach's key components. For instance, the I do, we do, you do model of instruction, central to the SMDA approach, effectively teaches complex skills (Cleaver et al., 2021). The model emphasizes the importance of introducing skills through lectures and discussions, demonstrating the skills, and then allowing learners to practice and perform the skills independently with feedback from a coach (Pearson & Gallagher, 1983; Duke & Pearson, 2008). Similarly, using varied instructional strategies, such as those employed in the SMDA approach, effectively promotes learning and retention.

3.3 Teachers' Pedagogical Knowledge

Table 11 shows that teachers have highly implemented the different domains of pedagogical knowledge in the teaching-learning process (M = 2.69, SD = 0.54), which is described as high implementation, except for the aspect of Assessment and Reporting (M = 2.40, SD = 0.51), which is described as moderate implementation. This indicates that teachers recognize that their assessment and reporting domain implementation was not as well implemented as the other domains before implementing the SMDA instructional approach.

The results support the study of Abrams et al. (2016), which states that teachers align instruction and assessments with the state curriculum to improve student performance. Teachers employ informal daily evaluations, which are essential to shaping instruction. They also use periodic formal assessments to monitor student progress and remediation efforts. The study of Darling-Hammond et al. (2017) also supports this idea. Teachers' awareness of various teaching strategies and approaches is crucial for engaging and effective learning environments. The research shows that providing teachers with opportunities for professional development and training in different teaching strategies positively affects student engagement and teacher competence. The high implementation of

instructional approaches in the pre-SMDA results from the vast opportunities for professional development undergone by teachers.

Table 11. Descriptive statistics of teachers' pedagogical knowledge before the SMDA

Domains	Mean Rating	SD	Qualitative Description
1. Content Knowledge and Pedagogy	2.75	0.45	High
2. Learning Environment	2.89	0.52	High
3. Assessment and Reporting	2.40	0.51	Moderate
4. Community Linkages and Professional Engagement and Personal Growth and Professional Development	2.78	0.46	High
5. Plus Factor (performed various work/activities that contribute to the teaching-learning process)	2.65	0.78	High
Mean	**2.69**	**0.54**	**High**

Table 12 shows a very high pedagogical knowledge in implementing the different domains in the teaching-learning process (M = 3.25, SD = 0.48. This indicates that teachers have a high level of implementation of the different domains using the SMDA instructional approach.

Table 12. Descriptive statistics of teachers' pedagogical knowledge after the SMDA

Domains	Mean Rating	SD	Qualitative Description
1. Content Knowledge and Pedagogy	3.28	0.41	Very High
2. Learning Environment	3.34	0.47	Very High
3. Assessment and Reporting	3.07	0.50	High
4. Community Linkages and Professional Engagement and Personal Growth and Professional Development	3.24	0.45	High
5. Plus Factor (performed various work/activities that contribute to the teaching-learning process)	3.34	0.57	Very High
Mean	**3.25**	**0.48**	**Very High**

The result of this study can add to the research-based information that utilizing the SMDA instructional approach addresses all the domains of the teaching-learning process. The emphasis on structure, modeling, differentiation, and assessment in the teaching-learning process has resulted in high and very high implementation of the various domains required in the DepEd's RPMS for Teachers. The study's findings supported the idea of Hanushek and Rivkin (2006), which describes teachers who are equipped with a higher level of education and have access to relevant training as better prepared with the pedagogical knowledge and instructional strategies necessary to deliver practical lessons. This, in turn, enhances their teaching skills and fosters a sense of professional growth and value. Teachers feel competent when they master and present the subject meaningfully to engage students and facilitate learning (Shulman, 1987).

3.4 Teachers' Competence

Table 13 shows that teachers are highly competent in the delivery of instruction, as observed by their school principal in a class observation conducted before the implementation of the SMDA instructional approach. This implies that teachers highly implemented the necessary components under Teachers Actions and Student Learning Actions, with an overall mean of 3.07 and a standard deviation of 0.52.

Table 13. Descriptive statistics of teachers' competence before the SMDA

Domains	Mean Rating	SD	Qualitative Description
Teacher Actions	3.13	0.56	High
Student Learning Actions	3.01	0.49	High
Overall Mean	**3.07**	**0.52**	**High**

The results indicate that teacher and student learning actions have high means and low standard deviations, suggesting a high level of consistency in using practical instructional approaches. The mean of 3.13 for teacher actions indicates that teachers consistently implement competent teaching practices. In addition, the mean of 3.01 for student learning actions suggests that students are actively engaged in the learning process. The high mean for teacher actions implies that teachers are effectively using different instructional approaches to meet the needs of their students. The high mean for student learning actions suggests that students are actively engaged in learning and taking responsibility for their learning. The high level of student engagement is likely a result of the teachers' effective teaching practices.

The findings support the study of Hanushek and Rivkin (2006), which states that teachers with a higher level of education and access to relevant training are better endowed with the pedagogical knowledge and instructional strategies required to deliver practical lessons, resulting in greater competence in their teaching. In addition, teachers who cultivate supportive and trusting relationships with their students are more likely to feel adequate in their duties and motivated to continue enhancing their teaching techniques (Roorda et al., 2011).

Table 14 shows a very high level of competence among teachers in the teaching-learning process after the implementation of the SMDA instructional approach. The result further implies that the combination of structure, modeling, differentiation, and assessment in the SMDA instructional approach helps teachers deliver instructions with a very high level of competence. The implementation of SMDA has provided a structure that supports teachers in planning and delivering lessons, which has increased teacher competence. The modeling component of SMDA has enabled teachers to demonstrate and model student skills, which has helped increase student competence. The differentiation component of SMDA helped teachers meet individual student's needs, which has increased student engagement and learning. The assessment component of SMDA has provided teachers with the tools to assess student learning and adjust their teaching accordingly. This study's results demonstrate the SMDA approach's positive impact on teachers' competence and students' engagement in the teaching-learning process. Implementing SMDA can lead to improved teaching practices and increased student learning outcomes.

Table 14. Descriptive statistics of teachers' competence after the SMDA

Domains	Mean Rating	SD	Qualitative Description
Teacher Actions	3.41	0.46	Very High
Student Learning Actions	3.35	0.44	Very High
Overall	**3.38**	**0.45**	**Very High**

The study's findings support several previous studies. Teachers' pedagogical content knowledge, which entails understanding how to teach specific subject matter effectively, is a crucial predictor of competence. Teachers feel competent when they master and present the subject meaningfully to engage students and facilitate learning (Shulman, 1987). In addition, effective classroom management is correlated with teachers' competence in dealing with various student behaviors and preserving a positive learning environment. Strong classroom management skills enable teachers to create a safe and organized environment conducive to learning, resulting in greater confidence in their classroom leadership (Marzano et al., 2009).

3.5 Comparative Analysis of Students' Satisfaction Before and After SMDA Implementation

Table 15 unequivocally demonstrates a significant improvement in student satisfaction with structure, modeling, differentiation, and assessment, with a pre-mean of 3.26 and a post-mean of 3.43, a significant difference of -6.554, and a p-value of 0.000. The analysis reveals a significant difference between the level of student satisfaction before and after the SMDA implementation—the alternative hypothesis is accepted. These compelling findings confirm the effectiveness of SMDA implementation and instill optimism about the potential of these measures to influence student success and outcomes positively.

Table 15. T-test result of the comparative analysis of students' satisfaction before and after SMDA implementation

Measures		Mean	SD	df	t-stat	p-value
Structure	Pre	3.21	0.68	324	-6.111	0.000
	Post	3.38	0.61			
Modeling	Pre	3.33	0.65	324	-5.308	0.000
	Post	3.47	0.58			
Differentiation	Pre	3.26	0.65	324	-5.779	0.000
	Post	3.43	0.61			
Assessment	Pre	3.26	0.66	324	-6.117	0.000
	Post	3.43	0.60			
Overall	**Pre**	**3.26**	**0.66**	**324**	**-6.554**	**0.000**
	Post	**3.43**	**0.60**			

Note: $p<0.05$, significant

The study's findings conform with several studies that explain how structure, differentiation, modeling, and assessment, when implemented in class, can improve students' satisfaction levels. Integrating practical examples,

hands-on experiences, and real-world problem-solving activities into the curriculum can increase student engagement and impart a sense of purpose (Harackiewicz & Hulleman, 2010). Positive learning experiences of mastery and success are potent motivators and sources of student satisfaction. Teachers can encourage better experiences by establishing attainable objectives, providing constructive feedback, and celebrating students' progress and achievements (Bandura, 1997). Teachers' intrinsic interest and curiosity also influence students' motivation and satisfaction with a subject. When students' natural curiosity and desire to investigate are stimulated by learning activities, they become more engaged and eager to learn (Renninger & Hidi, 2016).

3.6 Comparative Analysis of Students' Knowledge Retention Before and After SMDA Implementation

Table 16 shows the mean and standard deviation of students' transmuted English, Science, and Math scores before and after an SMDA implementation used to determine students' knowledge retention. The overall knowledge retention measure shows a significant improvement, with a pre-implementation mean of 69.91 and a post-implementation mean of 77.27, representing a difference of 7.36 points. The standard deviation for the pre-implementation scores is 4.22, while the post-implementation scores are 19.58. The t-statistic for the overall knowledge retention measure is -14.655, with a p-value of 0.000, indicating that the improvement in overall knowledge retention is statistically significant. Thus, the alternative hypothesis is accepted.

Table 16. T-test result of the comparative analysis of students' knowledge retention before and after SMDA implementation

Measures		Mean	SD	df	t-stat	p-value
English	Pre	70.65	4.76	324	-12.906	0.000
	Post	78.15	9.23			
Science	Pre	69.21	4.37	324	-14.159	0.000
	Post	76.53	8.44			
Math	Pre	68.98	3.54	324	-12.291	0.000
	Post	77.13	41.07			
Overall	**Pre**	**69.91**	**4.22**	**324**	**-14.655**	**0.000**
	Post	**77.27**	**19.58**			

Note: $p<0.05$, significant

The results suggest that the novel instructional approach has successfully improved students' knowledge retention across all three subject areas. This is an important finding, as knowledge retention is critical to students' academic success. Further research could explore the specific components of the novel instructional approach that are most effective in promoting knowledge retention and the potential for adapting this approach for use in other subject areas or educational contexts. The result of the study is consistent with Mansilla (2010), which emphasizes providing students with feedback that guides them toward a better comprehension of the material and encourages them to reflect on their learning experiences, improve retention, and promote efficient application. Integrating multiple disciplines and subject areas enables students to recognize the interconnectedness of knowledge, resulting in improved retention and application. Interdisciplinary learning experiences foster a holistic understanding that allows students to apply their knowledge to complex, real-world situations more effectively. Such mechanisms are components of the SMDA instructional approach that contribute to increased knowledge retention of students.

Furthermore, the study's results align with existing research, indicating that incorporating active learning strategies, such as discussions, problem-solving activities, and hands-on experiences, enhances knowledge retention and application. This approach improves academic performance and provides students with a more engaging and rewarding learning experience (Prince, 2004). The SMDA instructional approach, with its focus on differentiated instructions and active learning, can significantly enhance students' academic performance and test scores (Rizalda & Prado, 2022), as demonstrated by the results of this study.

3.7 Comparative Analysis of Teachers' Pedagogical Knowledge Before and After SMDA Implementation

As shown in Table 17, the overall implementation of the instructional approaches domain saw a significant improvement, with the mean score increasing from 2.69 to 3.25. This resulted in a t-stat of -7.279 and a p-value of 0.000, indicating a highly significant improvement. Thus, the alternative hypothesis is accepted. The results indicate a significant improvement in all domains after the implementation of SMDA.

Table 17. T-test result of the comparative analysis of teachers' pedagogical knowledge before and after SMDA implementation

Domains	Before	After	t-stat	p-value
Content Pedagogy	2.75	3.28	-6.696	0.000
Learning Environment	2.89	3.34	-4.314	0.000
Assessment and Reporting	2.4	3.07	-7.415	0.000
Community Linkages and Professional Engagement and Personal Growth and Professional Development	2.78	3.24	-5.053	0.000
Plus Factor	2.65	3.34	-3.665	0.000
Overall	**2.69**	**3.25**	**-7.279**	**0.000**

Note: p<0.05, significant

The study's results corroborate the study of Bransford (2000), which explains how adopting student-centered approaches like inquiry-based and project-based learning increases student engagement, teacher confidence, and competence. In implementing SMDA, students are engaged in different activities, which increases their engagement and teachers' competence. Brookfield (1995) added that teachers shift from a predominantly lecture-based to a student-centered approach, students become more actively engaged, and teachers feel empowered as facilitators of learning. Teachers who engage in reflective teaching practices, such as self-evaluation and requesting feedback, are more likely to be aware of their instructional strengths and areas for improvement. This self-awareness contributes to a teacher's increased competence and confidence as they refine their instructional strategies to engage their students better. The current study provides research-based evidence that the SMDA instructional approach helps teachers improve their results-based performance.

3.8 Comparative Analysis of Teachers' Competence Before and After SMDA Implementation

As shown in Table 18, the data comparing teachers' competence before and after the implementation of the SMDA reveals significant improvements across various domains. The t-statistics for Teacher Actions (-4.709), Student Learning Actions (-6.401), and Overall Level of Teachers' Competence (-6.739) all demonstrate statistically significant improvements with p-values of 0.000. Thus, the alternative hypothesis is accepted. Before the implementation of the SMDA, the mean scores for Teacher Actions, Student Learning Actions, and the Overall Level of Teachers' Competence were 3.13, 3.01, and 3.07, respectively. During the post-implementation, these scores increased to 3.41, 3.35, and 3.38, indicating a notable enhancement in teacher performance and effectiveness.

Table 18. T-test result of the comparative analysis of teachers' competence before and after SMDA implementation

Domains	Before	After	t-stat	p-value
Teacher Actions	3.13	3.41	-4.709	0.000
Student Learning Actions	3.01	3.35	-6.401	0.000
Overall	**3.07**	**3.38**	**-6.739**	**0.000**

Note: p<0.05, significant

These results suggest that the SMDA has positively impacted teachers' competencies, particularly in their instructional practices and student interactions. The findings underscore the effectiveness of student-centered approaches in enhancing overall teaching quality and fostering a more engaging and effective learning environment. Various studies support the implementation of the SMDA and highlight the significance of positive teacher-student relationships and teachers' competence. Roorda et al.'s (2011) research revealed that supportive and trusting relationships between teachers and students significantly influence teachers' competence. Teachers who cultivate such relationships are more likely to feel adequate in their duties and motivated to enhance their teaching techniques.

Furthermore, Guskey (2002) found that teachers who reflect on their teaching methods, solicit feedback, and adjust based on student requirements are more likely to feel competent about meeting their students' learning objectives. This suggests that teachers who engage in reflective practice and are willing to modify their instructional strategies are likelier to be competent and effective in their roles. Therefore, the SMDA approach, which emphasizes student motivation and engagement in the differentiation process, will likely enhance teachers' competence and improve student learning outcomes.

3.9 Relationship Between Students' Satisfaction and Knowledge Retention

The study examines the relationship between students' satisfaction and knowledge retention in the instructional approaches utilized in the teaching-learning process. The correlation between students' satisfaction and

knowledge retention is very low, with an R-value of 0.059 and a p-value of 0.291, greater than the typically used significance level of 0.05. In this case, the alternative hypothesis is rejected. It indicates that students' satisfaction has no significant relationship with their knowledge retention post-SMDA implementation.

Table 19. Correlation analysis between students' satisfaction and retention of knowledge

Domains		r	p-value
Students' Satisfaction Students' Knowledge Retention	Post-SMDA	0.059	0.291

Note: p<0.05, significant

These findings have implications for understanding the role of students' satisfaction in promoting knowledge retention in educational settings. While satisfaction may contribute to better knowledge retention, it may be less crucial to maintain it after the SMDA. Therefore, educators and administrators should consider other factors, such as teaching methods, course content, and assessment strategies, to enhance students' knowledge retention in the post-SMDA phase. Moreover, the study's results align with previous research on student satisfaction and how it is closely tied to students' emotional experiences within the educational environment (Schuhmacher & Markham, 2001).

Contemporary institutions understand the significance of monitoring student satisfaction, which is essential to the overall educational experience (Nair et al., 2010). Similarly, in online education, previous research highlights the importance of course structure, active learning, and the teacher's presence in fostering students' perceived satisfaction and learning (Gray & DiLoreto, 2016). Furthermore, students' satisfaction is heavily influenced by their connection to teachers and program quality, emphasizing the importance of these factors in the educational setting (Jedvaj & Skrbinjek, 2022).

3.10 Relationship Between Teachers' Pedagogical Knowledge and Teaching Competence

The data provided the relationship between teachers' pedagogical knowledge and their competence in post-SMDA settings. The correlation coefficient (r) is 0.262, indicating a moderately low positive relationship. Additionally, the p-value is 0.090, which is still greater than the significance level of 0.05. Thus, the alternative hypothesis is rejected, and further investigation is needed. It suggests that the observed relationship may not be statistically significant. Further investigation is needed to confirm these findings.

Table 20. Correlational analysis between teachers' pedagogical knowledge and competence

Domains		r	p-value
Teachers' Pedagogical Knowledge Teachers' Competence	Post-SMDA	0.262	0.090

Note: p<0.05, significant

The study's results support the study of McCarthy and Lambert (2015), which suggests that teachers' competence is influenced by the support they receive from school administrators and the school environment. Schools that value and invest in their teachers' professional development provide feedback and recognition and cultivate a collaborative culture to increase educators' competence in implementing instructional resources. Furthermore, teachers with solid efficacy beliefs are likelier to set ambitious objectives, persevere through obstacles, and maintain a positive outlook on their teaching abilities, thus improving competence (Tschannen-Moran & Hoy, 2001).

4.0 Conclusion

This study presented key findings on the SMDA instructional approach, demonstrating its effectiveness in enhancing student satisfaction, knowledge retention, and teachers' pedagogical knowledge and competence. The SMDA approach significantly improved the structure, modeling, differentiation, and assessment in the teaching-learning process, creating a conducive learning environment and empowering students to take ownership of their learning while creating a more intentional and supportive setting. Moreover, the SMDA approach positively impacted teachers' pedagogical knowledge, improving teaching and learning outcomes. The approach also significantly enhanced teachers' competence, particularly in instructional practices and student interactions. However, it revealed no significant relationship between students' satisfaction and knowledge retention,

suggesting that SMDA as an instructional approach may seem structured and repetitive but still result in better retention.

Similarly, there was no significant relationship between teachers' pedagogical knowledge and competence. Teachers may explore different methods and approaches, but this may not necessarily determine their competence level. Therefore, similar study in a bigger private or public school is suggested to confirm these findings and explore the underlying factors contributing to these relationships. Nonetheless, the study's findings provide a promising solution to addressing the deteriorating quality of education in the Philippines through the continuous, intentional, and consistent implementation of the SMDA approach. The SMDA approach offers a student-centered approach that enhances overall teaching quality and fosters a more engaging and effective learning environment, ultimately leading to improved student success and outcomes.

5.0 Contributions of Authors

Author 1 played a pivotal role in the conduct of the study, overseeing all aspects from inception to completion. This included writing and editing the manuscript, performing thorough data analysis, and encoding the findings for clarity and accuracy. Author B contributed significantly by meticulously checking the technical details of the research. Their insightful suggestions and constructive comments were instrumental in enhancing the overall quality of the study, ensuring that the final manuscript met the highest standards of rigor and relevance. Their collaborative efforts have resulted in a comprehensive and well-rounded research output.

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7.0 Conflict of Interests

There is no conflict of interest.

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