



# The Mediating Effects of Classroom Management and the Relationship between Differentiated Instruction in Teaching and Student Engagement

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

**Aims:** To determine the Mediating Effects of Classroom Management and the Relationship of Differentiated Instruction to Teaching and Student Engagement.

**Study Design:** Quantitative non-experimental design.

**Place and Duration of Study:** The study was conducted through online survey in public schools of Division of Davao City, Davao del Sur during the school year 2021-2022.

**Methodology:** The respondents were 300 teachers from public schools in Division of Davao City, Davao del Sur, Region XI, Southern Mindanao, Philippines. The selection of respondents was carried out through a stratified sampling technique. The data were collected using google forms.

**Results:** It shows that the relationship between the variables differentiated instruction, student engagement and classroom management was significant. Further, this study rejected the Ho that indicated no significant mediator between Classroom Management and Differentiated Instruction's teaching and student engagement relationship. Therefore, it appears that there is full mediation occurring in this study.

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**Conclusion:** It can be concluded that there is a significant relationship between Student Engagement and Differentiated Instruction, as well as classroom management and Differentiated Instruction. Therefore, it was described in this study that there is full mediation in the Mediating effect of classroom management and the relationship of differentiated instruction of teaching and student engagement. The Schlechty's Student Engagement Continuum theory can be linked to this research, which proves that it requires involvement in the activity to make students' learning more positive. However, students will be more interested in learning because of good lesson planning, methods, strategies and techniques of the teacher that will result in interactive student engagement.

*Keywords: Education; classroom management; differentiated instruction; student engagement; mediating effect.*

## 1. INTRODUCTION

In the field of Learning, student engagement is one of the major challenges that the education system focuses on. Some researchers have identified its positive correlations with academic aspects including obtaining high grades, persistence and persistence. However, the difficulty of why and how this process took place has been problematic, stating that it has not been clear to what extent it has contributed to student engagement and other measures of effective educational practice and even learning activities ( Bryson 12). In addition, most students find it difficult to achieve engagement due to the low quality of the learning activities as well as the teacher's teaching method [1].

In international studies, it is important to study student interaction because in the field of teaching, it is one of the important indicators of the quality of learning activities is the level of student interaction. students in the teaching and learning process. However, Student participation is based on an adequate level of quality in the teacher's teaching method [2].

Meanwhile, when the student is able to freely express his attitude towards environmental learning, there is progress in student participation. The concept of student interaction with society which affects students is influenced by various social elements within the learning environment [3].

In addition, it has been found that student engagement is influenced by the effective use of teaching methods, which leads to long-term learning, belonging to a group, development in interaction with other students in the classroom [4]. Student engagement is important to avoid a lack of desire to learn that can lead to dropping out of school.

However, a researcher proved the existence of a relationship between the use of different teaching methods and student engagement. Considered the use of different teaching methods through group work methods in the field of learning. Having a good teacher's teaching method through group activities can help students engage in academic work and make it a way for students to develop learning.

In addition, in Chandra's study, the relationship between the use of different teaching methods through group work methods and efficient classroom management was shown. According to this research, proper teacher management within the classroom has a major role to play. A teacher who has discipline in the classroom will create a good impression on students that will contribute to their success. The teacher is known as the most important component in teaching and has an important role in learning activities by developing good work that can help students have the opportunity to interact with learning tools, experience, concrete knowledge, development in learning ability, fostering teacher-student relationships, encouraging student-to-student relationships and student engagement with learning tools in the presence of effective teaching methods. These opportunities can help students to pay more attention, engage in group work, ask questions and participate in discussion.

However, there is a correlation between classroom management and student engagement. The teacher is expected to shape the students to interact with fellow students by giving feedback to each student and pay due attention to unpleasant behaviors to reduce disciplinary problems, and encourage students to succeed in academic performance.

Therefore, this research is anchored in the Self-Determination Theory derived from the research

of Edward L. Deci and Richard M. Ryan. This theory is about students' motivation which is related to a person's personality and motivation. It contains two types of motivation-intrinsic and extrinsic motivation which are both powerful forces in shaping a person's behavior. Extrinsic motivation is what prompts a person to act in accordance with an external source that produces an external reward. On the other hand, internal motivation comes from the self. There are internal motivators that result in acting on other things, such as core values, interests, and personal morality.

It was also supported by Schlechty's Student Engagement Continuum to study the impact of intrinsic and extrinsic motivation on different types of student engagement. The study seeks to understand which type of motivation – intrinsic or extrinsic – is more closely aligned with authentic student engagement as identified by Schlechty [5].

Meanwhile, classroom management was supported by a theory of Bruner, a follower of Vygotsky, who was inspired by the theory of social constructivism that linked learning as an active process in which learners develop new ideas based on their previous experience.

The aforementioned theories and models are helpful in explaining the relationship between research variables. This will help to know and get the questions that want to be answered in the research. It will serve as a foundation and support to realize and develop a meaningful result.

In the conceptual framework, the independent variable focuses on Differentiated Instruction derived from Whipple's study (133-134). This is with the goal of students achieving meaningful learning tasks (Parsons et al. 17). It has five indicators: (1) students' interest, (2) assessment, (3) lesson planning, (4) process and (5) product. The first indicator refers to the development of students' interest in learning activities using different teaching methods. In relation to this study, researchers have reported evidence of positive effects using different teaching methods.

Recently, students have developed better interaction and participation in learning activities in the classroom where different teaching methods have been systematically used [6]. The second indicator is assessment which emphasizes the importance of conducting

assessment and giving feedback, involving learners through individual assessment or collaboration through group assessment. The third indicator is lesson planning where Differentiated Instruction is used so that teachers can prepare lessons that will adapt to students' learning differences. The final indicator is the process and the subsequent product, which is necessary to understand the curriculum, determine how it is taught, and help students demonstrate what they have learned.

Through formative assessment (continuous assessments throughout the lesson), summative assessment (assessments at the end of a lesson), or even pre-assessments, teachers are able to assess students' abilities, monitor their development, and adjust teaching accordingly [7].

The independent variable is student interaction derived from Delfino's study [6-9]. Student engagement is commonly described as multidimensional engagement, the range in which students act and express themselves through behavioral, cognitive, and emotional activities. It has four indicators: (1) behavioral interaction, (2) cognitive interaction, (3) internal interaction (4) external interaction. The first indicator is behavioral interaction which is described as a set of observable external behaviors, consisting of several distinct aspects such as absenteeism, disruptive behavior, withdrawal, following instructions, and participation of students in dialogues in accordance with classroom rules and norms [8]. The second indicator is the cognitive interaction which refers to the students' information processing, which can be divided into deep and superficial processes. The third and final indicator is internal and external and is described as the emotional reaction to learning activities in the classroom.

The mediating variable of this study is classroom management derived from the study of Stratton [9]. This refers to the involvement of parents in the education of their children. A mediating variable is a variable that affects one factor to another. The mediator is assumed to affect the outcome. One reason for mediation is to find out and test whether the outcome mechanism affects the initial variables [10].

From the above, it only shows that the use of Differentiated Instruction in teaching and Student Interaction should be studied. However,

classroom management can also be noted as a major factor in student engagement.

Therefore, it is very important to study the combination of three variables, classroom management as a mediator in the relationship between Differentiated Instruction of teaching and Student Engagement.

There are many more studies that will prove the relationship of Differentiated Instruction in Classroom Management and Student Engagement, but in this study, the researcher emphasized the goal of obtaining the mediating effect of classroom management -study and relationship of differentiated instruction of teaching and student interaction. A study on this is needed to further prove that democratic classroom management can greatly help teachers understand its relationship with classroom management and Student Engagement with task [11].

The main purpose of this research is to identify the mediator of Classroom Management in the relationship between Differentiated Instruction and Student Engagement.

With certainty, this study will answer the following questions: To measure the level of Differentiated Instruction based on the following cues: students' interest, assessment, lesson planning, process and product. Students' level of engagement can be described based on the following cues:

cognitive engagement, behavioral engagement, external engagement, internal engagement. To describe the level of classroom Management.

The importance of the relationship between the following indicators can be described: differentiated instruction and student engagement, differentiated instruction and classroom management, classroom management and student engagement, Know Mediating effects of classroom management and the relationship of differentiated instruction and student engagement.

Apart from the global importance, it will be useful in the field of education and the following: To the officials of the Department of Education, the result of this research is a great help in the cultivation and development of the curriculum. Can conduct seminars or workshops that can develop the use of Differentiated Instruction in student engagement. To school administrators, to implement programs that meet the needs of students to participate more in learning. To teachers, to further expand knowledge and strategies to be used in classroom management. To students, to further meet their need for strengthening their motivation in engaging in learning activities. Finally, to the researchers, to be encouraged to conduct this study and the study will serve as a reference to other studies related to Classroom Management and the relationship of Differentiated Instruction of teaching and interaction of student.

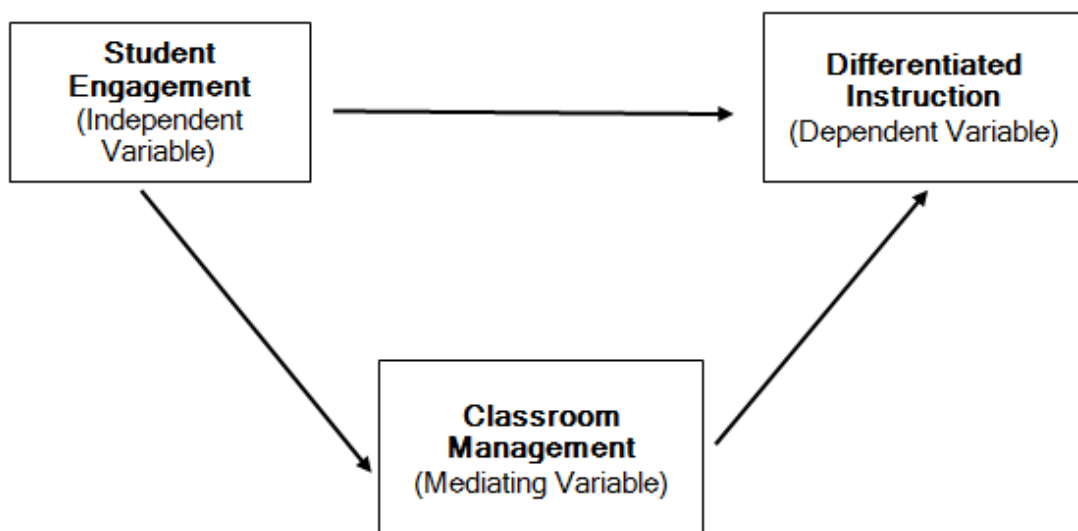


Fig. 1. Conceptual framework of the study

## **2. MATERIALS AND METHODS**

### **2.1 Respondents**

This study was conducted in a public secondary school in the Division of Davao. Participants in the study numbered 300 teachers out of 380 in various departments in grades seven through ten. Meanwhile, non-teaching staff are no longer included in the prospective participants of this study. According to Köseoğlu the number of 202 is enough to participate in the study for mediation research.

Stratified sampling was used as a way to determine his respondents. It is a way to clarify differences between groups in a given population [12].

The researcher made sure that only the seventh to tenth grade teachers participated in the said study so that the research would be fully valid and have more credibility. Non-teaching personnel, administrators and other city schools were not included in the study. The respondent's decision is respected if they do not want to be part of the study. There was no pressure on the participants to answer the questionnaire. The refusal of the participants will be fully accepted by the researcher.

However, they volunteered their time and effort to answer the survey and there was no threat of intimidation. The researcher will also make it clear that there will be no punishment for teachers who do not respond to the study.

### **2.2 Research Instrument**

There are three sets of questionnaires borrowed from different authors. The independent variable focused on Differentiated Instruction derived from Whipple [13]. The independent variable is student engagement derived from Delfino and the mediating variable of this study is classroom management derived from Stratton. That have been adopted by experts in questionnaire making. The comments and suggestions of the experts were well received for the betterment of the study.

Before the data collection was carried out, the researcher had his questionnaire checked by a statistician using Cronbach's alpha and it appeared from his analysis that the three questionnaires scored more than 0.7 which

means that this instrument can be used in research.

The three sets of questionnaires from the independent variable Differentiated Instruction, the independent variable focused on Student Engagement and the mediating variable focused on classroom management were interpreted from a single appropriate scale.

### **2.3 Research Design and Methodology**

This research used a non-experimental quantitative design that also used a descriptive correlational research method. Included qualitative data aimed at discovering the mediating role of classroom management and the relationship between Differentiated Instruction and Student Engagement. Questionnaires are relied upon as the data collection method required for quantitative analysis.

According to Burns and Grove [14], descriptive research "is designed to provide a picture of a situation as it naturally occurs". It can be used to justify current practice and make judgments and to develop theories.

Descriptive statistics and multiple linear regression were used in data analysis to answer the objectives of the study. Meanwhile, from the adapted questionnaire that was analyzed, translated, and validated by the researcher to the evaluators, the researcher analyzed it properly in order to conduct an efficient study. After being validated and revised by the researcher from correcting and adjusting the validators, the researcher prepared it for formal validation. After the questionnaire was arranged, the researcher adjusted everything necessary for the validation of the works at U MERC, the researcher waited for any comments and corrections, adjusted and returned to U MERC for final validation.

After collecting the data, the researcher asked permission from the division manager. The letter was approved by the advisor and the dean of the Graduateschool of the University of Mindanao.

Following this is the giving of the letter and showing the signed letter from the advisor to ensure that the Dean of the High School of the City of Davao agrees with the higher level and at the same time asking for permission to conduct the study.

After carrying out all the formal requests for permission from the concerned is the giving of the Questionnaires. This was conducted through an online survey form for the reason that face-to-face contact is avoided due to our current situation caused by the COVID-19 Pandemic. However, the method of answering the questionnaire was explained to the respondents. In case there was a misunderstanding of the terminology and the context of the statement, the researcher was ready to guide. After collecting the data, the questionnaires are recorded or tallied in preparation for their submission to the statistician. The recorded data was thoroughly analyzed and with the help of the statistics used, it was given an interpretation to achieve the objective of the study.

For a comprehensive interpretation and analysis of the data, the following tools were used: Mean was used to obtain the level of Differentiated Instruction. The Pearson *r*. was used to identify the significant relationship of Differentiated Instruction and Student Engagement. Linear Regression was statistically used to determine if there was an influence of classroom management on other variables.

Linear regression was used to measure the value of the independent variable in the independent variable. Meanwhile, the Sobel *z*. was used in the mediation analysis of this study, the Sobel *z* test was used to further determine the effect of each variable. The sobel *z* test was proposed by Sobel (290) where it is used to test the hypothesis that the relationship between the independent variable (*X*) and independent variable (*Y*) is mediated/affected by a third variable (*Y*); that is if *X* and *Y* have an indirect relationship. In short, the Sobel test examines whether the inclusion of the mediator (*M*) in the regression analysis can reduce the effect of the independent variable (*X*) on the independent variable (*Y*) [15].

### **3. RESULTS AND DISCUSSION**

#### **3.1 Differentiated Instruction**

Table 1 shows the level of Differentiated Instruction. From the five indicators, it obtained ( $x$  4.36 SD .241) which means that it has a very high level in total and always sees the relation of Differentiated Instruction.

The five indicators obtained a very high descriptive level which means that students always see the Relationship of Differentiated Instruction of Teaching. Student interest obtained a 4.31 mean score and Lesson Planning obtained a 4.34 mean score. Meanwhile, the content got a 4.35 mean score and the process got a 4.35 mean score. The last indicator is the product for which it obtained a 4.47 mean score. Overall, the mean score is 4.36 with a very high descriptive level which means that students always see the Relationship of Differentiated Instruction in Learning.

This was supported by the study of Valiande who reported evidence of a positive effect using differentiated teaching instruction, so that students developed better interaction and participation in learning activities in the classroom where differentiated instruction was systematically used. In addition, the quality of the use of differentiated instruction provided by the teacher has a significant impact on the interest and learning of the students. Meanwhile, Huebner explained that based on the current results of his research, the use of differentiated teaching instruction, based on the existing knowledge, interest, and individual ability of the student has proven to be helpful in increasing the score of the students. In addition, among the methods of implementing differentiated instruction are the grouping of students, assessment, project-based learning, the application of different strategies to achieve student learning, and the most important is the choice of the right model and method of the teacher to increase the ability of a student.

In addition, as a result of the results of this research, the participants only proved that when the descriptive level of the teachers is high, it means that there is a good use of differentiated instruction of teaching, therefore, he more arouses the interest of the students to participate and develop their learning.

#### **3.2 Student Engagement**

Table 2 shows the level of Student Engagement as an independent variable in this research.

From the three types of students' interaction, in total it obtained a mean score of 4.34 which means that there is a very high descriptive level and students always experience the interaction.

**Table 1. Level of differentiated Instruction**

Indicators	Mean	SD	Descriptive Level
Student interest	4.31	.396	Very High
Lesson planning	4.34	.439	Very High
Content	4.35	.435	Very High
Process	4.35	.478	Very High
product	4.47	.481	Very High
<b>Total</b>	<b>4.36</b>	<b>.241</b>	<b>Very High</b>

**Table 2. Level of student engagement**

Indicators	Mean	SD	Descriptive Level
Behavioral	4.30	.376	Very High
Knowledge	4.42	.381	Very High
Emotional	4.32	.383	Very High
<b>Total</b>	<b>4.34</b>	<b>.243</b>	<b>Very High</b>

Behavioral engagement got a mean score of 4.30, cognitive engagement got a mean score of 4.42 and emotional engagement got a mean score of 4.32 both of which got a very high descriptive level meaning always experienced of students the interaction.

Behavioral interaction results showed that almost all students ask questions in class, participate by raising their hands, do homework, come to class every day, take lesson notes, read, -studying on time, thus doing well in tests, getting high grades and receiving positive feedback from the teacher. It only shows the students' willingness to learn well through positive interaction behavior. According to Nguyen, Tuan Dinh, et al. [16] in their study, the high behavioral engagement and interaction of students with their peers has the same association with other students. Thus, in validation, students' peers play a significant role in their behavioral interactions. The teacher should look closely at activities that will improve students' participation in their peer. In addition, it was also supported by various studies that due to the positive impact of interacting with students' behavior on their success, Caraway et al. [17], and the decrease in absenteeism students [18] much research has focused on identifying school and classroom characteristics in relation to behavioral interaction.

According to Wytykowska, Agata, and Anna Gabińska [19], in their study the effect of emotion, promotion vs. prevention focus, and pidbak in social interaction, discovered based on their study the positive effect of positive emotions as well as the orientation of promotion in students' interaction. That is, students are more able to activate their social interaction when there are positive emotions in their environment.

According to Barlow, Allyson, and Shane Brown [20], they suggested that teachers need a contextual understanding of how to implement strategies so that their students do not perceive them as ineffective teachers. The results of their study also show that others suggest resistance to immediate change as a result of the teachers' belief that many students do not agree with the research-based strategy in the classroom-specifically in the interaction –relationship with their fellow students. In fact, as a result of this research, the importance of alignment teachers in shaping student-student interaction was seen, which proves that students have high interaction. In lecture activities when they interact with their peers [21] This was supported by the study of DeVito (16) who said that students are highly related to their learning when they understand well what the teacher expects and when they have the opportunity to participate in making any class decision.

Based on the result, the importance of the teacher's method and teaching strategies are also described to further enable students to participate actively. And, the result also showed that the use of technology in teaching more arouses the attention of students to participate in any class work. Relatedly, emotional engagement also revealed a very high descriptive level in which students show a willingness to work with other students in class work, incorporating different perspectives on work. Tasks, teaches other students voluntarily, participates in community work, socializes with other students with different views and beliefs, has a desire to learn, has self-confidence, shows joy in class, working with and teacher, and talking with the teacher about future desires. Based on the results, it is a big challenge for

teachers to further improve the skills, methods, methods and strategies in any of its programs to connect students more. It was also discovered that the teacher's role in shaping students' learning is very important. This was supported by the study of Groves, et al. [22], which states that the teacher-student relationship is said to be most important. According to Wang, Ming-Te, et al. [23], as a result of their study about the emotional engagement of Finnish students, realized that students are not satisfied with learning within the school and they do not see the importance of learning.

Additionally, emotional engagement and school anxiety have different associations with academic and psychological aspects. Research findings emphasize the importance of examining positive and negative emotional processes to improve understanding of emotional interactions and the different effects they have on students' development. Quality contact with their teacher [24], approachability and the desire to connect with students in class are some of the main reasons Bonney and Kevin [25]. This was also supported by Ferlazzo's study which stated that the teacher who establishes a positive relationship between his students is the one who influences them more to learn. Furthermore, according to Streb, Judith, et al. [26], because emotional arousal is critical to learning, educational institutions should consider the role of self-determination in learning and in creating a learning environment that supports autonomy, social relationships and ability.

### 3.3 Classroom Management

Table 3 reveals the level of classroom affection as a mediating variable in this research. It can be observed that from the four (4) indicators, it obtained a very high descriptive level with ( $\bar{x}$  4.32 SD .301) in total. It simply means that the teacher is always in control of the classroom.

The result in this part means that the participants were constantly exposed to the expressed questions about Classroom Management.

Dealing with classroom management got 4.33 mean score, Specific teaching techniques got 4.32 mean score, Communication with parents 4.32 mean score and plan and support got 4.31 mean score. Overall, it obtained a 4.32 mean score which means that it has a very high descriptive level and always demonstrates Classroom Management.

This is supported by Eisenman, Gordon, et al. [27], when classroom management focuses on learning, it cannot be avoided as a teaching topic. When teachers recognize classroom management techniques, this has an impact on learning that has become a variable that needs to be addressed in teacher preparation, educational theory, and research.

This was supported by Reinke, Wendy M., et al. [28], who stated that the change was similar to that reported in their study, which showed improvement in classroom management variables among teachers who received a universal classroom management intervention compared to teachers who did not receive the training. . Having a reliable and valid measure to evaluate and monitor teacher use of universal classroom management skills can be beneficial.

Therefore, a very high descriptive level of classroom Management has a positive implication on student learning.

### 3.4 Analysis of the Relationship of Variables

Table 4 shows the correlation analysis of each variable.

Table 4 reveals the results of the correlation of the variables. From the independent variable and non-independent variable, it obtained ( $r = 0.163$ ,  $p = 0.006$ ) which means there is a significant correlation between Student Engagement and Differentiated Instruction. Thus, the Ho hypothesis that there is a significant relationship between the two variables is rejected.

**Table 3. Level of classroom management**

Indicator	Mean	SD	Descriptive Level
Dealing with Classroom Management	4.33	.530	Very High
Specific Teaching Techniques	4.32	.422	Very High
Contact with Parents	4.32	.418	Very High
Plan and Support	4.31	.431	Very High
<b>Total</b>	4.32	.432	Very High



**Table 4. Relationship of variables**

Pair	Variables	Correlation Coefficient	p-value	Decision on Ho
IV at DV	Student Engagement and Differentiated Instruction	0.163	0.006	Reject
IV at MV	Student Engagement and the Impact of Classroom Management	0.634	0.000	Reject
MV at DV	Classroom Management and Differentiated Instruction	0.148	0.014	Reject

Relatedly, from the independent variable to the mediating variable, the correlation coefficient obtained ( $r=0.634$ ,  $p =0.014$ ) which means that there is a significant correlation between Student Engagement and Management Impact of Classroom and mean to reject Ho because there is no significant relationship between the variables.

Meanwhile, in the final analysis of the mediating variable relationship with the independent variable, the result can be seen ( $r=0.148$ ,  $p \leq 0.05$ ) which means that there is a significant correlation between Classroom Management and Differentiated Instruction and means to reject Ho because there is significant correlation between variables.

This research described a significant correlation between Student Engagement and Differentiated Instruction. That is, it only proves that the use of Differentiated Instruction has a significant relationship with student engagement.

The research of Akin et al., (35) concluded that the exercises and use of Differentiated Instruction of teaching were found to have a positive effect on students' engagement in learning activities. Apart from the application of Differentiated Instruction in teaching, one of the requirements that the teacher can carry out is to deal with issues that have to do with the physical environment such as the arrangement of seats, weather conditions, planning such as the development of effective lessons, different teaching methods and effective classroom management Further, students' engagement in academic and social activities at school motivates excellence or improves performance but is still based on how the teacher is able to provide assessments and use others' different teaching methods [29].

Meanwhile, the results showed that there is a significant relationship between Classroom Management and Differentiated Instruction. The

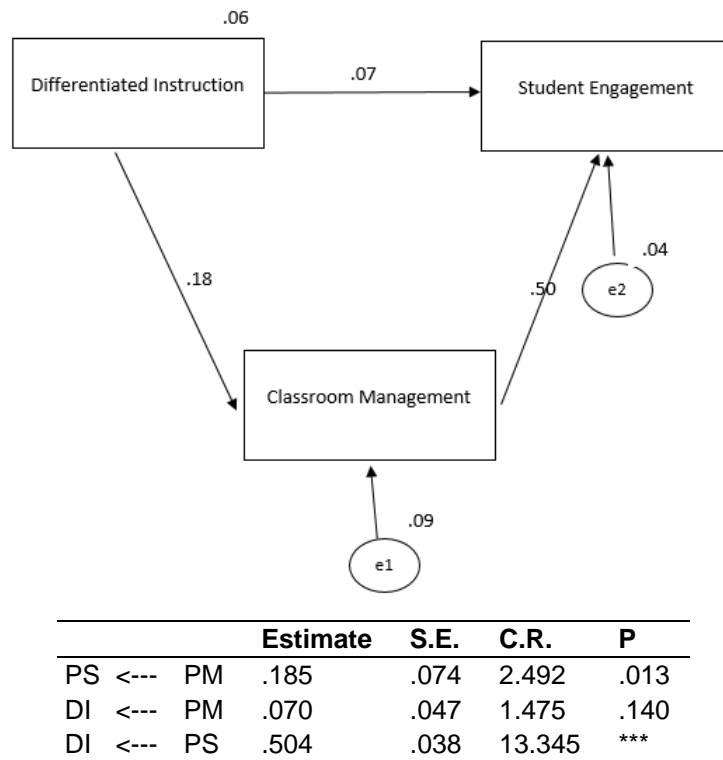
study by Mumtaz et al. supported that adequate teacher preparation is an important first step in providing knowledge and opportunities to hone classroom management knowledge. Also, in the present study, when a teacher spends enough time and time in preparing his class, defining his goal that he wants to achieve after the lesson using concrete teaching skills, and using differentiated instruction has students are more likely to get high grades and be successful in learning.

Additionally, Konstantinou-Katzi et al. [13] proved that the use of Differentiated Instruction of teaching has an effect on the development of student engagement, motivation and development in academic learning. Therefore, the whole class has interactive participation due to the use of Differentiated Instruction.

### 3.5 Mediation Analysis of Three Variables

Using path analysis the outcome of Student Engagement (X) in Classroom Management (M) was identified; Student Engagement (X) in Differentiated Instruction (Y); and Classroom Management (M) on Differentiated Instruction (Y) is significant with the sign unchanged (sign unchanged), therefore, Classroom Management fully mediates the relationship between Differentiated Instruction of Teaching and Student Engagement. Table 4 shows that for every unit increase in Differentiated Instruction there is a corresponding increase of 0.18 units in Classroom Management (M). Also, for every unit increase in Differentiated Instruction there is a corresponding 0.07 increase in Student Engagement. Finally, for every unit increase in Classroom Management there is a corresponding 0.50 unit increase in Student Engagement.

Overall, following the PM-PS-DI path, for every unit increase in Student Engagement, there was a 0.07 unit increase in Differentiated Instruction. This indicates that using Differentiated Instruction



**Fig. 2. Mediating outcomes**

can help improve Student Engagement, but requires effective Classroom Management by the teacher. Therefore, higher levels of Classroom Management mediate the use of Differentiated Instruction for improved Student Engagement.

#### 4. CONCLUSION AND RECOMMENDATION

In this part of the research, the conclusion and recommendations from the research results are stated in each problem in the mediating effect of classroom management and the relationship of differentiated instruction of teaching and student interaction, based on the outcome of the research, it was determined as follows:

Based on the level of Differentiated Instruction, the five indicators (Student interest, lesson planning, content, process and product) obtained a very high descriptive level which means that students always see the Relationship of Differentiated Instruction in Teaching. Therefore, it is appropriate for teachers to keep being resourceful and aware of innovative strategies that will be suitable for students' learning to have more interactive learning.

Meanwhile, in student engagement, the three indicators (behavioral engagement, cognitive engagement and emotional engagement) also obtained a very high descriptive level which means that students always experience interaction. A positive result that a teacher must maintain to further stimulate the interest of students to participate in classroom activities.

On the other hand, the level of classroom management obtained a very high descriptive level from all its indicators (specific teaching techniques, communication with parents and planning and support), this means that it is always demonstrated the teacher manages the classroom. Therefore, any methods, strategies and techniques used by the teacher in classroom management are more likely to be retained.

In this study, the researcher realized that there is a significant relationship between Student Engagement and Differentiated Instruction, as well as classroom management and Differentiated instruction. Therefore, it was described in this study that there is full mediation in the Mediator effect of classroom management and the relationship of differentiated instruction of teaching and student engagement.

In conclusion, Schlechty's Student Engagement Continuum theory can be linked to this research, which proves that it requires activity involvement to make students' learning more positive. However, students will be more interested in learning because of good lesson planning, methods, strategies and techniques of the teacher that will result in interactive student interaction.

Meanwhile, based on the findings of the researcher, on student interaction and the relationship of differentiated instruction, and as a mediating effect of classroom management, the researcher recommends the following:

As a result of the very high results of the descriptive level of the Relationship of Differentiated Instruction of teaching and Student Engagement, the researcher suggests that each department should maintain a good planning and development of a good syllabus in relation to the use of Differentiated Instruction of teaching to maintain interactive learning and further develop student engagement. In addition, give enough rehearsals and seminars or webinars to teachers to further hone and develop effective classroom management. In addition, further expand the imagination in providing learning activities that will arouse the interest of students, participate in free webinars about innovative methods and techniques to further enhance the implementation of the subject to be taught.

However, despite the very high descriptive level of classroom management, in the part of planning with parents, the researcher suggests having enough time and time to interact with parents by communicating using modern technology, email or google meet to better meet the need and plan efficiently the maintenance of strategies, methods, methods and activity programs in the classroom and even at home to maintain a high level of correlation of differentiated instruction of teaching and student interaction.

And, it is suggested to the next researcher to have a comparative study about this in public and private teachers and schools.

### **ETHICAL APPROVAL AND CONSENT**

The researcher ensured that it complied with the standards for conducting the study including the protocol for the assessment and management of the population and data. All the necessary documents including the manuscript, valid questionnaire, and forms were submitted to the

UMERC or University of Mindanao Ethics Review Committee. Along with this, the ethics of the conducted study were also followed and considered such as voluntary participation, confidentiality of data, risks and benefits to be obtained by the participants, and the process of requesting permission for the conducted study. After fulfilling the necessary papers for approval, the researcher was given a Certificate of Approval with UMERC Protocol No. UMERC 2022-103.

### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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