CHAPTER IV

ANALYSIS AND DISCUSSION

In this chapter, the researcher discusses the findings based on the instruments used and the result of data analyses. The data collected from different sources have been organized in order to bring out effective findings and conclusions.

The researcher will present the focus of this study which is the Benefits of Implementing Station Rotation method in teaching math Grade 4 in a classroom. This research uses the qualitative method and descriptive case study approach.

In qualitative research, the researcher is required to collect data based on the fact in the field. The researcher then reports the original things that happened on the field by using case study approach. The researcher analyzes and describes the data obtained in depth and in a descriptive form.

4.1 Pre Research

` 4.1.1 Research Phenomena

During three and a half month internship in a school, ABC Lippo Village the researcher observe and trying to find problems, issue or a case that occur in grade 4 classrooms. The research gets to teach and know what it feels like to be a real teacher and to handle a classroom so that the researcher could learn from the experience and apply it in the future.

After the second month of the internship, the researcher then decides to do research about Station Rotation method that is often used by the homeroom teacher during math. The Station Rotation method is a method where the students

are divided into small groups and rotate through stations. This method had so many benefits in students learning and one of the phenomena that stood out for the researcher to see at that time is how through the Station Rotation the students show that they are really enjoying the learning Process.

The researcher aim on doing research about Station Rotation method is to see why is it beneficial in teaching math grade 4 students.

4.1.2. Literature Review

After finding what to research about, the researcher then went into the next step which is to find theory that could support the research about Station Rotation method and indicator of the benefits of Station Rotation.

4.1.3 Consultation with mentor and field experience supervisor

To support the research, the researcher had a consultation with the teacher mentor and the field experience supervisor for their opinions and suggestions towards the researcher research. Then, the researcher starts to prepare the instrument that the researcher wants to use to collect all the research data with the help of field experience supervisor.

4.2 Research Result

4.2.1 The Benefits of Station Rotation Method

1. Creates smaller learning communities within larger class

(See Appendix D1)

Teacher A : *"I try to have several automatic arrangements just in the way I have things set up every time the students change desk they are assign with their elbow partner who they can discuss with.*" *But within each subject I have group that change based on the students needs so within a given unit I'll group students*

who has similarities in the unit together and pull them for special instruction in station rotation make sure that their needs as a group unique from the class are met "

Teacher B: *"Sometimes I do it automatically based on the student's seats. Second, I will group based on their achievement levels slow with slow. Sometimes also I did mix abilities group so I divide them into group of three one students who has the higher ability can help the other students"*

2. Why do you need to create smaller learning communities within larger class (SR-CSL)?

Teacher A: *" Students need to discuss and interact in order to really internalize and understand and build on the ideas of learning in order to think critically and in the whole class"*

Teacher B: *"For differentiate learning especially when I group the students based on their achievement level so I can do the things that the students need"*

In the interview, the researcher conduct, the teacher explain that creating smaller learning communities is something that the teacher would always did automatically and sometimes it could be changed according to the topic the teacher was trying to teach. The researcher could affirm this answer because the researcher have been on the class for the past four months and saw how the homeroom teacher group students usually she had the automatic group discussion called the "elbow partners" (students who sits next to each other) this group is made according to the sitting arrangement in the class and for the math teacher because the students are sited in as a group of four to five so usually she just group the students according to the group they have.

But this automatic group only use if the teacher wants a quick discussion during the lesson but in the Station Rotation usually the teacher would divide the

students according to their capabilities. That's why the researcher agrees with the statement that smaller learning communities also help teacher group the students with similarities and different abilities to get special instruction so that their needs as group unique from the class are met.

Through smaller learning communities also the students needs of interacting with one another are shown when they discuss and helping with one another in order to really internalize and understand what they learn to be able to think critically the students show that they feel motivated knowing that their friends and teacher are there to help them, The teacher could also help making sure the students have their turn to talk, listen and participate in the learning process this happen during the discussion when it is the teacher led station. The researcher also saw that through the smaller learning communities the students who are shy to answer in a whole class feel more comfortable talking to their teachers about the lesson if they had any difficulties with the discussion.

Table 4.1 1
Observation Checklist Statement 1, 2

Question	**Observer 1**		**Observer 2**		**Observer 3**		**Observer 4**	
	Yes	No	Yes	No	Yes	No	Yes	No
A. Teacher divide the students into small groups	✓		✓		✓		✓	
B. Teacher work with the small group	✓		✓		✓		✓	

Based on the Observation Checklist above, all the observer answer Yes that they saw the teacher divide the students into small groups and the teacher work with the small group. According to what the researcher saw during the

implementation of Station Rotation in grade 4 math class. The teacher start the lesson by explaining about each station the students are going to visit and for how long they are going to stay in that station after gave the explanation the teacher then divide the students into small group learning.

Table 4.1.1
Questions1, 2

Questions	Yes	No
Does your teacher create smaller learning communities (small group)?	20(100%)	(0%)
Do you think you can learn better in the small group than the larger class?	18(90%)	2(10%)

In the questionnaire result above the 100% from 20 students answer Yes that they saw the teacher create smaller learning communities. On the second question 90% students answer Yes that they can learn better in the smaller group than the larger class while the other 10% didn't. from the result the researcher assume that because of students different ways of learning in this case almost all the students learn better if it's a small group learning while for the other 10% they probably have different way of learning than the small learning communities that could help them learning for example as whole class or just as individuals.

2. Indicator: Employs a variety of tasks and activities

Teacher A :" In the rotation I use some games and some workbook time and interaction with the teacher and some hands on learning just to make sure meets all the learning styles of different kind of students are address"

Teacher B :"Because the students needed and I learned that students have different level of achievement and different speed in understanding the material I gave to them"

According to the teachers, employing a variety of tasks and activities such as games, workbook, interaction with the teacher and hands-on learning are effective because the students need it and it could help the teacher address all the learning styles of different kind of students. Students spent whole time memorizing basic facts like addition, subtraction and multiplication so if it's just drilling the class would be really boring. Having different tasks and activities will be more interesting and fun for the students sometimes they didn't even realize that they are learning because they are enjoying it.

From what the researcher observe the researcher could affirm the teachers statement because the station the teachers created are vary with different task and activities this motivated the students to learn because they tend to be excited of finished their work in the station they are in and curious to know what are they going to do in the next station.

Table 4.1 2
Observation Checklist Statement 3

Question	Observer 1		Observer 2		Observer 3		Observer 4	
	Yes	No	Yes	No	Yes	No	Yes	No

A. Teacher gave different tasks and activities for students	✓	✓	✓	✓

From the Observation Checklist result above all the Observer answer Yes on the question the teacher gave different tasks and activities for students. the different task that the teacher gave usually are as many as the station and the activities could be a game not just some random game but related to the topic that they are learning, workbook, hands on learning and interaction with the teacher.

Table 4.3 1

Question 3

Question	Yes	No
Does the teacher give you different tasks and activities?	20(100%)	(0%)

In the students questionnaire result above 100% students answer Yes that the teacher gave different tasks and activities during the implementing of Station Rotation. The different task and activities is dividing into each station, at that time there is four stations and students had 20 minutes to spend in each stations and from what the researcher saw the students are enjoying the rotation and most of them shows that they like rotation because there is game and hands on learning in the learning process.

3. Indicator: Allow students to engage with information

Teacher A: "I also try to teach the students to be metacognitive and teach them that there is something inside you that sometimes just has to look at

something and say if this looks boring but it's important and therefore I'm going to invest myself in it anyway"

Teacher B: "learning if I think the learning goal is achievable for them and they will engage because when they get the feeling they could do what teachers ask them to do"

Teacher A: *" I try to teach them however much their thinking that you are doing that's how much learning you are doing so if you decide to get involve and think and try then that's what's important "*

Teacher B: *"Yes, I think they need if they don't engage with the lesson they could not achieve what they need to achieve*

From the teachers interview the teacher stated that if the students engage with the information they will understand that learning is something that isn't always fun and it could sometimes be boring but if it's important they would still invest themselves to study about it and by engaging they will understand why the teacher always teach them that however much thinking they're doing that's how much learning they are doing and that to learn is to decide making and choice to be involved. From this explanation the research can conclude that the teacher want the students to changes their perspectives on learning so that in the future not only because of the learning that is fun the students will engage but even if the learning isn't fun the students will still engage with the learning. The variety task and activities that the Station Rotation created shows that learning could be fun but not all the station are fun station there are for example worksheet station and teacher led station where the students needs to be really focus on finishing the assessment even though the students not really liking this station but the students really shows that they are committed to the learning by really focusing on what they learn, when the students are committed with their learning the students will easily

engaging with all the information they learn in the class even just as simple as answering and giving questions about the information they receive.

Table 4.1 3

Observation Checklist Statement 4,5,6

Questions	**Observer 1**		**Observer 2**		**Observer 3**		**Observer 4**	
	Yes	No	Yes	No	Yes	No	Yes	No
A. students are paying attention to the teacher explanation	✓		✓		✓		✓	
B. students answering question	✓		✓		✓		✓	
C. students ask questions if they don't understand	✓		✓		✓		✓	

From the result shown in table 4.1 4, all the observer answer Yes that they saw the students are paying attention to the teacher explanation, the students answer question and ask question if they didn't understand the lesson. Because of the smaller learning communities it is easier for the students to give all their attention to the teacher explanation. Students engage really well by answering the question the teacher ask during the explanation, they will directly ask question if there is some part of the topic that they still not understand. Through students answering and giving question it is easier for the teacher to know that the students are really engaging with the information.

Table 4.3 2

Questions 4, 5, 6

Questions	**Yes**	**No**

Do you listen to the teacher explanation?	20(100%)	(0%)
Do you ask question if you don't understand the tasks and the activities?	15(75%)	5(25%)
Do you work in every task the teacher gave you?	18(90%)	2(10%)

From the table 4.3.3 result above on the first question 100% students answer Yes that they listen to the teacher explanation. Second question 75% students answer Yes that they will ask question if they don't understand the tasks and activities given by the teacher and 25% will not. Third question 90% student answer Yes that they work in every task the teacher gave while the other 10% answer no. this results happen because of the smaller learning communities the Station Rotation Created that makes possible for students to learn better.

4. Indicator: Teachers spend more time working directly with individual students

Teacher A: " *Those question are the main reason that I like to do rotation or based learning or small based learning in the whole class the kids who demand the lesson doesn't always the kids who needs attention and so it's easy to have students who don't understand and are just trying so hard and quietly working doing it all the way and still wrong"*

Teacher B: *" During the lesson when I applied the method I move around to see, I think every teacher who applied this method will know which students who need help so when I was delivering I will immediately checking and helping the students who need help"*

Teacher A: *so I can observe their process and its small enough group that I can see them all at once and actually see that everyone are doing it correctly where as in the whole group and somebody on the other side of the room if it's the*

whole class there's no way I can't see their notebook to know how they are working with the problem"

Teacher B: *"Because we need to make sure every student in our class understand it is our job as a teacher, and if they face challenges we could help them to overcome it or maybe create different method and strategy"*

According to the teacher, the fourth indicator Teachers spend more time working directly with individual students is beneficial because the teacher explain that it is the main reason why the teacher did the Station Rotation because the teacher consider one on one interaction to be something that is important for the learning process. The teacher also state that when it is the whole class students who demand the lesson doesn't always the students who need the teacher attention and through Station Rotation it is easy for the teacher to have students who don't understand and are just trying so hard quietly working doing it all the way and still wrong. This case usually happen if it's learning in a whole class but if it's Station Rotation the teacher could easily spot these kinds of students and immediately helps them. From this results also the researcher conclude that the teacher not only teach but also paying attention to each students learning, the teacher making sure if all of the students she teach understand about the topic they are learning and wanted to see students understanding of the topic.

Table 4.1 4

Observation Checklist Statement 7

Question	**Observer 1**		**Observer 2**		**Observer 3**		**Observer 4**	
	Yes	No	Yes	No	Yes	No	Yes	No
A. The teacher spend more time working with each students	✓		✓			✓	✓	

From the table 4.1.4 result three out of four observer answer Yes that they saw the teacher spend more time working with each students while one of the observer answer no. from this result the observer assume that during the Station Rotation method all the observer are walking around observing each stations and not all the things that happen in each stations from beginning to the end could be observe by the observer that's why only three out of four observer who saw that the teacher spend time working with each students.

Table 4.3 3

Questions 7

Question	Yes	No
Does the teacher spend time explain the lesson to you face to face?	15(75%)	5(25%)

In the table shown that the 75% out of the 20 students in total answer Yes that the teacher spends the time to explain the lesson to the students face to face. While the other 25% students answer No. During the Station Rotation implementation there will be a time where the students ask question or the teacher saw that the students still makes mistakes. This gave the teacher opportunity to have one on one interaction with that kind of students. so from the results the researcher conclude that it is possible for the teacher to spend time explain the lesson for students face to face and for those students who answer No the researcher assume that the students who already understand the lesson and got no mistakes on their work.

5. Indicator: Improve learning outcomes

Teacher A: "*as I work through with students really it's the opportunity for one on one interaction with every students that come with rotation that seems to make a big different for students in improving and really what shows that in the assessment meet way through and at the end of the unit the A test"*

Teacher B: "Improving not merely having perfect grades and other achievement but if they show me just a little Changes like how their attitudes on working problems"

The teacher states that there is constantly assessment informal and formal going on in the classroom. Through this assessment after the implementation of the Station Rotation there is big different in students grades and it consider to be an improvement on students learning through the opportunity of one and one interaction with the students that the teacher had the teacher could explain all the difficulties that the students face and the friends who are also supporting the students to feel more motivated on learning by helping one another and it shows that in the assessment meet way through and at the end of the unit A test that students have improve on their learning.

Not only improving on their grades Station Rotation has also improved students attitudes towards their learning. From the fact that the researcher saw this method have been use oftenly, the students in grade 4 understand the method flow really well that's why they always show enthusiasm when the teacher told them they are going to do Station Rotation. They also know if they had difficulties in learning it is so much easier if the teacher were there because they could ask the teacher right away and because of the smaller learning communities the Station Rotation created there is not that many students in the group making it easier for the students to ask for more help from the teacher. This situation causing the students to give up easily when they have difficulties instead they will have the

mindset of trying to do their best even if its difficult because in the end the teacher will help me by explaining the best way to solve this problem.

From the interview also the researcher could conclude that the improvement that the teacher are seeking isn't only during the Station Rotation implementation but an improvement that last longer such as a change of students attitudes on learning.

Table 4.1 5

Observation Checklist Statement 8,9,10

Questions	Observer 1		Observer 2		Observer 3		Observer 4	
	Yes	No	Yes	No	Yes	No	Yes	No
A. The students can answer all question correctly	✓			✓				
B. The students show step on how to solve the question	✓		✓		✓		✓	
C. The students ask for more question to challenge their learning		✓		✓		✓		

From the results shown above that one out of four observer answer Yes they saw the students answer all the question correctly while one observer answer No that they didn't see the students answer all the question correctly and the other 2 observer didn't gave their answer. On the second question all the observer answer Yes that they saw the students show step on how to solve the question the teacher gave. On the third question 3 out of 4 observers answer No that they didn't saw the students ask question to challenge their learning while one observer didn't answer. The researcher conclude from the data that through this instrument

the improvement of learning outcomes wasn't really shown during the implementation of Station Rotation.

Table 4.3 4

Questions 8,9,10

Questions	Yes	No
Do you answer all the teacher question correctly?	10(50%)	10(50%)
Do you show the step in solving the question?	18(90%)	2(10%)
Do you ask for more challenging question from your teacher after you understand the topic?	12(60%)	8(40%)

Table 4.3.5 shown the first question 50% students answer Yes that they answer all the teacher question correctly while the other 50% students didn't.

The second 90% students answer Yes that they show step in solving question and the other 10 % didn't. The researcher assume that the other 10% students who choose No are the students who are comfortable to just write the answer of the question because they think the step doesn't matter as long as their answer are correct when actually what the teacher wanted to see is the step on how they solve the question this students usually said that they already solve it in their head as an excuse for them to not write the steps.

The third question 60% students answer Yes that they ask for more challenging question from the teacher after they understand the topic while the other 40% didn't. this is because the other 40% students think that the question the teacher gave are already challenging for them so there is no need to ask for more challenging question. Even though only 50% of students who think they can answer the teacher questions correctly the researcher believes that from this

instruments Station Rotation shows improvements in students learning outcomes because the students still show step on how they solve question and ask for more challenging question.

6. Indicator: Individualize their teaching

Teacher A: "*there is a big different in their working speed and not creating problems but one of the factor I take into account is making a group is working speed additionally what I often do if somebody is done after somebody else I'll say ok so now write me and explanation of why you use work or I try to make them a little bit further and put it into language instead of just showing the steps so that they have something to do while I was working with students who are a little bit slower in catching up* "

Teacher B: "*If they were working too fast I have other work for them so I already prepare something for the fastest learner, or in the beginning I will just differentiate the question and for the slow learner if their friend got 10 questions they will only got 5 so they could gain confidence"*

The teacher's states that the teacher always ready on preparing more questions, games and etc for the fast learner students so they didn't disturb their friend and she will differentiate the question for the slow learner students they will only get 5 questions if their friends got 10 so that it could gain their confidence on finishing the assessment together and they don't feel like they are left behind. If there is students who are done after somebody else the teacher will tell them to write the explanation and put it into language or wrote it instead of just showing the steps so that they have something to do while the teacher works with the students who are having difficulties.

The interview shows that during the Implementation of Station Rotation the teacher should always prepare more assessment because the teachers needs to

always be anticipated with the students especially to those students who are finishing faster than the other students, if the teacher not prepares then it will shows that the teacher doesn't really know how to handle student's individual differences.

Table 4.1 6

Observation Checklist Statement 11

Question	Observer 1		Observer 2		Observer 3		Observer 4	
	Yes	No	Yes	No	Yes	No	Yes	No
A. Teacher work with students' individual differences	✓		✓			✓	✓	

From the data result three out of four observers answer Yes that they saw the teacher work with students individual differences while the other one answer No. The researcher assume that the one observer who choose no probably wasn't there went the teacher work with students individual differences. Individual differences that the researcher saw during the implementation of Station Rotation are the fast learner students and the slow learner students.

Table 4.3 5

Questions 11,12,13,14

Questions	Yes	No
Does the teacher gave more question if you finish faster than any of your friends?	10(50%)	8(40%)
Does the teacher help you if all of your friends are finish and you aren't?	17(85%)	2(10%)
Does the teacher wait for you even if you work really slowly?	15(75%)	5(25%)
Does the teacher show you how to work faster?	18(90%)	2(10%)

From the data in the table 4.3.6 Students 50% from 20 students answer Yes that the teacher gave more question after the students finish faster than any of their friends while the other 40% didn't. on the second question 85% students answer Yes The teacher help them if their friends are finish while they aren't and the other 10% answer No. third question 75% students answer Yes that the teacher wait for them even if they work really slowly and the other 25% answer no. The last Question 90% of the students answer Yes that the teacher show how to work faster while the other 10% students answer No. from this data the researcher conclude that the teacher work with students individual differences by giving more question for the students who are fast learner while the teacher helping the slow learner students so the 40% students who answer No might be the slow learner students. On the second Questions 85% Students answer Yes that the teacher will help them if they are not finish with their work this is because the teacher want the opportunity of working one on one with the students to know how far the students learning. The other two question shows how the teacher work with the students individual differences by waiting for them and show them the way to solve the question faster.

4.3 Data Analysis

1. Smaller learning communities

From the data result the researcher concludes that smaller learning communities are implemented during Station Rotation. It is beneficial because the teacher group the students not as random groups. The teacher had a purpose in grouping the students. In this case the grade 4 homeroom teacher group the students based on their similarities, for example a group of fast learner and a group of a slow learner. These groups are created so that the students' needs are met.

The teacher is in charge with one of the stations so it helps students to interact with the teacher more, get explanation for the part that they didn't understand from the teacher right away and the teacher could check their work immediately. From the questionnaire the students themselves think that they learn better when it is a smaller group than as a larger class.

2. **Employ a variety of task and activities**

From the data result the researcher conclude that this is beneficial on students learning because according to the interview the teacher states that they could address students' needs with different learning styles. During the math rotation different task and activities are prepared in each station by the teacher in order to challenge students various skill levels. The teacher can design dynamic learning station activities that employ different learning modalities and allow for more differentiation and individualization to improve comprehension, retention and the student's ability to apply information. On the interview the teacher also states that the students will not get bored because the same task are given all over again but the students will enjoy the learning because of different task and activities.

3. **Allow students to engage with the information**

It is beneficial because from the Observation Checklist and the student's questionnaire, the observers and the students agree that through Station Rotation students could engage with the information by paying attention, listening to the teacher explanation, asking and answering question and also work with every task the teacher gave.

According to Teacher B Station Rotation allow students to engage with the learning because the learning goal is achievable for them and Teacher A states that if the students engage with the information they will

have new perspectives on learning by understand that learning isn't always a fun process and by engaging they will understand why the teacher always teach them that to learn is to do decision making for themselves.

4. **Make it possible for teachers to spend more time working directly with individual Students**

   This is beneficial because from the interview the teacher states that it is one of the main reasons why the teacher implements Station Rotation at the first place, so that the teacher could have the opportunity to work one on one with the students. As the observer and students questionnaire also support this indicator.

   In Station Rotation small group, the teacher could move around observing students learning process and see if they got all correct or make mistakes all at once, through this the teacher had the opportunity to help the students right away which in a whole class would be really difficult to do.

5. **Improving learning outcomes**

   From the data result improving learning outcomes is beneficial because the Teacher A states that it shows through informal and formal assessment going on in the classroom there is a big different of improvement after the Implementation of Station Rotation while Teacher B states that improvement is not only shown in student's grades but also their attitudes towards learning. The students also support this in the questionnaire through Station Rotation that they can show the step in solving question and they will ask for more challenging question from the teacher if they already understand the topic that they learn.

6. Individualize their teaching

This is beneficial for students learning because in Station Rotation it challenges the teacher to individualize their learning through the smaller learning groups Station Rotation created. They could see student's strength and weaknesses in their learning and help them to improve. Like what the teacher A states in the interview that if the faster learner finishes before the other students she will work with that students and push their learning more by asking them to write the step on how they solve the question, and while the faster learning students working with the assessment the teacher will use that opportunity to help the slower learner students.

Station Rotation has prove to be beneficial and as a Christian teacher we should work wholeheartedly (*Colossians 3:23*) through teaching our students even though Station Rotation needs extra work to prepare each station activities but consider all the benefits it gives this method should be often use in our classroom. And also through our hard work in preparing Station Rotation lesson the students could feel that we teach not only for them to improve their learning but also to show that as a teacher we are truly care with their learning.