INTEGRATING ETHICS INTO MATHEMATICS EDUCATION: A PHILOSOPHICAL AUTO/ETHNOGRAPHIC INQUIRY INTO INDONESIAN MATHEMATICS EDUCATION

Mangaratua Marianus Simanjorang
Graduated in Mathematics Education from Universitas HKBP Nommensen, Master of Education in Mathematics Education from Universitas Negeri Surabaya

This thesis is presented as part of the requirements for the award of the degree of Doctor of Philosophy

Murdoch University
School of Education

June
2016
DECLARATION OF ORIGINALITY

I declare that this thesis is my own account of my research and contains as its main content work, which has not previously been submitted for a degree at any tertiary education institution.

Mangaratua Marianus Simanjorang 30th June 2016
ABSTRACT

Unity in diversity is the foundation principle of my country. For me this is the simplest yet clearest description of Indonesia. There is no Indonesia without diversity, and no Indonesia without unity. Differences that are implicit in diversity can be a reason for conflict or for the origin of harmony, depending on how we relate and respond to the other. My anxiety about potential conflict and my dream for a harmonious life in relation to the diversity of my country raises a question in my mind: what is my role as a mathematics educator to make that dream come true? This thought about my relation with the other and my ability to respond to the existence of the other brings forward a concern for ethics. Ethical responsibility may become the answer to both my anxiety and my dream, which then raises another question: how can I integrate ethics into mathematics education? This thesis is a story about my journey in pursuing an answer to these anxiety/dream questions.

Trying to understand the meaning of the ancient term 'ethics' is like a journey in a deep dark jungle; filled with uncertainty, anything might happen. On this journey confusion, anxiety and loneliness frequently made me exhausted. However, when I reflected on these experiences I found that a light was illuminating my way. Adopting a multi-paradigmatic research approach, I shifted from one epistemology to another in appropriate ways. By means of critical self-reflection within a philosophical auto/ethnography I tried to construct a coherent understanding of the issues. I found the importance of listening when seeking understanding in differences, which allowed me to conceive of an integrative ethics perspective, with critical inclusivity as the quality standard. Drawing on a critical narrative inquiry method this thesis represents the story of my transformative learning experience.

Keywords: ethics, responsibility, philosophical auto/ethnography, critical narrative inquiry, integrative ethics, critical inclusivity, transformative learning
ACKNOWLEDGEMENTS

I am a wanderer...
In a place where people see me as a stranger
I am seeking for what can be found
Waiting for the unexpected
In a race with time
Filled with hope and rhyme
Exhaustion is a friend
But with no shoulder to lean on

Suddenly...
A smiley face offering a coffee candy
“Time for a coffee before continuing the journey.”
He said...
Did he listen to my friend?
Or is he a wanderer’s fan?
Who knows...

But I know
I am happy because of a smiley candy
I am a wanderer...
In a place where I meet people who make me a happy stranger

The term ‘stranger’ I use in the poem above may be interpreted as my position as an international student. I literally came to Australia as a stranger from another country. The term can also be interpreted as my position on the topic that I reflect on this study that is ethics. I see this study as a journey and myself as the wanderer. My background as a mathematics education scholar provides me with a minimal encounter with the discussion about the concepts of ethics. Hence, this background makes me a stranger in my journey to find out how to integrate ethics into mathematics education.

Having this position as an explorer constrains me to collect bit by bit the pieces of the big picture that I am looking for in this journey. The process is indeed challenging and also exhausting. However, having this position also allows me to meet good and kind people who will help me to lessen my burden by the ‘smiley candy’ that they give me. I want to use this opportunity to express my gratitude for those people.

Bill Atweh, my initial supervisor, I thank you for your care at the beginning of my journey. You helped me to figure out the initial concept of my study.

Peter Taylor, my principal supervisor, I sincerely thank you for your guidance and support, which have helped me ‘to find what can be found’, to face the many challenges and overcome my anxiety and exhaustion, and eventually to evolve.
Susan Ledger, my co-supervisor, I thank you for your help and support for me to be able to finish this journey.

Brian Fisher, I am very grateful for your help to polish my writing and also my thinking. You have made it possible for me to arrive at this point.

Flora Sitorus, mathematics teacher of SD Budi Mulia 1, and the great community of SD Budi Mulia 1 especially students of year 3 on year 2012, I thank you for your collaboration and participation in this study.

_Lae_ Elly Hotman Purba, _Ito_ Rita Maria Sinaga and family; _Om_ Johannes Rusli, _Tante_ Lea Teedja and family, I deeply thank you for receiving me in your home. You have made my life a lot easier, and not only that, you also have let me experience the living amongst family when I was far from home.

Kashiraj Pandey, Neni Mariana, Rebeca Loftus, Nui Orawan, Naif Alsulami, and all fellow members of Transformative Education Research Centre, thank you for the thought, fellowship and solidarity that helped me by filling the empty space of loneliness in this journey.

Pardomuan Sinambela and Bornok Sinaga, I thank you for being there whenever I needed you.

Higher degree research students of The School of Education of Murdoch University, especially Helen Dempsey, and the past community of SMEC, I thank you all for accepting me with your smiles and laughter and all the support you provided for me.

BERMUTU DIKTI scholarship programme, I thank you for the funding available for me in this journey.

I am also thankful to Universitas Negeri Medan and Murdoch University for giving me the opportunity to undertake this journey and the on going support to finish it.

My late father, may you rest in peace, this is another step further as a response to your prayer. My mother, my brother and sisters, I thank you for your support and prayers. You were the first inspiration for me to take another step forward on this journey.

I also want to extend my thanks to all my friends, colleagues and students that I cannot mention one by one, for all your support which has encouraged and empowered me in this journey.

And my greatest thanks and praise is to God for all the graces I have had and for what I have been able to achieve in this journey. May my achievement in this journey become a source of grace for others and for myself.
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CHAPTER I
INTRODUCTION

I am chosen...
I am called...
To leave my comfort zone
To quit the establishment
To reflect on confusion
To carry on suffering
To overcome the struggle...
To improve my self
To be a better me
Not to become the other person
But to be my true own self
Actualizing the real me...
For Not merely for myself
But for others
For the responsibility
Which has been delegated to me
As the essence of my existence

INTRODUCTION

A fresh wind is blowing into my face as I open my door early in the morning of this hot summer. It reminds me of my hometown which has nice weather, not too hot but also not too cold. It is a little town, which is coloured by the diversity of its people – their education, economy, occupation, race, culture and religion. As usual in my country, it is a multi-ethnic and multi-religion town, although there is still a majority. Even my big family shares this diversity. My relatives consist of different races, religions, education and occupations, like a micro representation of my country. I was born and raised in this little town, playing together with my friends and my relatives from different cultures, ethnicities, and religions, living in diversity. Who am I? Living in a heterogeneous society urges me to reflect on this single question. Would I be a different person if I lived in a homogeneous society?

In this chapter I try to reveal my self and my story. It is a story about how I am being shaped through my experiences. Experiences that I had as a member of a
family, a member of society, and as a mathematics educator. From these experiences emerged a sense of responsibility and a dream of living in harmony. The dream that urges me to study how I can integrate ethics into mathematics instruction.

**MYSELF, MY EXPERIENCE AND MY RESPONSIBILITY**

People around me call me *Mangara*, or simply *Ara*. For you who have never encountered me or heard about me before, this short order of letters would not tell you anything about me. It is not enough to tell you who I am. However, for those who know me, as soon as they hear this name they will have images emerge in their minds immediately. Just like when I hear my friend’s name or my brother’s or relative’s, images and memories pop up instantly in my head. Just now I start to imagine my mother, brother and sisters, even my late father. Honestly, just by remembering them it is enough to make me miss them. I want to see them soon. However, I cannot go home offhand and see them immediately. I am in the middle of my study now. I have to succeed in my study. Bringing home the good news of my success in this study will bring pride, joy and happiness to them. They wish for my success in this study as well as I do. They pray for me. Thus the success of my study is not for me only. It is also for them who share the same wish as me. Abandoning this study would be the same as ignoring their wish, and furthermore ignoring them. Therefore I have a responsibility to fulfil this wish. However that is not the end. I have a responsibility to the university that gave me this opportunity to study. I also have a responsibility to my future students and my colleagues to share the best fruits of this study, as support for the whole improvement process of the university. So in this way the responsibility I have is not only for those who share the same wish as me or those who I know but also for future students who I have not yet encountered. Bringing the best that I can is my responsibility to others.

This reflection has come to this point only by remembering my relatives. Even though I am not encountering them I still feel the vocation of responsibility.
Talking about relatives, I was born in a small family. My father was a teacher and my mother is a humble wife. My father was a teacher respected by his students and his colleagues. He was brilliant, charismatic and quite strict, as expected from his background. My parents were born in the period after Indonesian independence, which was unstable politically and economically. They grew up in a period filled by rebellion; that was indeed a very hard period of life. They hardly ate proper food since it was very expensive and hard to find. Sometimes they had to hide in a bunker to avoid facing the rebels. The situation became worse when they had to move into the jungle for their safety, and to eat what they could find there. Imagining this background helps me to understand the way they raised us. Somehow both of them chose different ways to raise us, my father with his strictness and my mother with her patience. This fact makes me realize that such a situation could be responded to in different ways and could result in different actions. However, both of them shared the same love for their children and had a strong work ethic. To meet our needs my father taught in schools to earn more money, while my mother sold vegetables and little household things. Their dream was simple, to ensure that we, their children, would not experience the same difficulties and to provide an opportunity for us to study as high as possible. The last dream is a common dream for Bataknese families, and we are a Bataknese family.

Batak is one of thousands of tribes in Indonesia. They originally lived around Toba Lake in North Sumatera. Most of the people live as farmers, fishermen, civil servants or merchants. Batak people have a vision for the next generation, “Anakhonhi do hamoraon di ahu”, which can be translated as “my child is my treasure”. They put all their effort into making their children better than themselves. Provision of education and further study is how they achieve this goal, often they send their children away from home to study. This song’s lyric describes it well;

\[
\begin{align*}
\text{Marhoi hoi pe au inang da tu dolok tu} & \quad \text{It doesn’t matter for me to travel through mountains and valleys} \\
\text{toruan mangalului ngolu-ngolu nabo\text{ }} & \quad \text{To have something to save for our living} \\
\text{parbodarian asal ma sahat gelleng hi da sai sahat tu} & \quad \text{As long as my child can reach the goal} \\
\text{tujuan} & \\
\end{align*}
\]
Batak people believe that education is one of the best ways to improve their life. That is why they struggle to be able to send their children to favourite schools or universities around the country. This is one of the most important reasons why we can find Batak people all over the country. For social interaction Batak people have a unique philosophy known as “Dalihan Na Tolu”. Dalihan means stove, Tolu means three, while Na is a conjunction meaning that or which. Traditionally Batak people cook on top of three equal size stones as a stove. So literally, Dalihan Na Tolu means, “three legs stove”. It symbolizes three-sub parties that build the social interaction system of Bataknese culture (Sinaga, 2007). These sub parties are Hula-hula, Boru and Dongan tubu. And the core of Dalihan Na Tolu is:

\[
\text{Somba marhula-hula, elek marboru, manat mardongan tubu}
\]

(Respect to Hula-hula, be kind to Boru, mind your Dongan tubu).

As an illustration imagine that a couple will hold a ceremony. Hula-hula comes from the wife’s family. Since Bataknese use a patrilineal system, Hula-hula always means the wife’s brothers’ family. Since wife is seen as a blessing that gives birth to the new generation, the Hula-hula party has the role of blessing that couple’s family. That is why one should respect the source of this blessing. Boru literally means daughter. So the Boru party comes from the husband’s
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sisters’ family. This party has the responsibility to make sure that the ceremony goes well, from preparation until finish. That is why it is important to be kind to Boru, since they always give what they have to make sure everything goes well. Dongan tubu comes from the husband’s brother’s family. Dongan tubu has the same position as the husband. The ceremony is theirs to perform, so Dongan tubu should accompany the couple on this ceremony. It is important to mind the Dongan tubu, to avoid misunderstanding or conflict. There is a Batakness proverb that says, “hau na jonok do na boi marsiogosan” (friction only happens to close wooden branches). There is a large probability of having conflict between closely related persons, like brothers or relatives. That is why it is important to be mindful of the other in this relationship.

There is a metaphor in this philosophy. The food cooked with this three-legged stove is a symbol of a problem (Sinaga, 2007). All three legs are needed to give support so the food can be cooked well. Analogically, the owner of the problem should ask Dongan tubu (brothers) first, then gather all parties together to solve the problem. However, in reality it is hard to find equal size stones. Than there is another party known as Sihal-sihal, which is literally a small stone used to supplement for the smallest leg of the stone to make it perfectly balanced. In Batakinese social system this fourth party is called Dongan sahuta, which means neighbour. Considering that someone may migrate to another area there is a possibility that part of the neighbourhood is not the relative of that person, directly or indirectly. However, the solution of any problem should consider the neighbour’s existence, for example: the decision could affect the neighbourhood; as respect for the neighbourhood/local custom; or to provide balanced support when the three main parties cannot arrive at one decision, usually based on local custom. Thus the fourth party, which is Dongan sahuta, completes the three main parties in Dalihan Na Tolu. This social interaction is known as Suhi ni ampang na opat. Suhi means edge, opat means four and ampang is a paddy holder with a 20 litre volume, which has four edges, and usually is used to measure the yield. It is also a metaphor for how all edges come together to
support each other to hold the paddies. Thus all four parties should be involved in solving any problem in society.

The equal size of the three stone legs of the stove symbolizes justice and democracy (Sinaga, 2007). All parties have equal position in making a decision. The decision taken cannot be unilateral but should be agreed by all parties. In case there exists inequality, which results in inability to make a decision, then the fourth party, Dongan sahuta, plays a role. This social interaction system shows that Batak people have a concern with rights, responsibility, cooperation, democracy, respect and equity (Sinaga, 2007). Batak people daily life is coloured with this system. I grew up under the influence of this system through my parents and interactions with my relatives. However this system is not the only one that influenced me, since we lived in a Javanese neighbourhood and we were the only Batak people in this neighbourhood. Everyday I experienced the gentleness and hospitality of these people, in addition to differences in our customs.

Diversity could be strength as well as weakness. There was a funny situation in my childhood when I played with my Javanese playmates and we encountered a group of kids from another neighbourhood who were Batak people. Unfortunately the game did not end well but was in dispute. Then my friends started shouting “Oo.. Batak!” in a racist way while leaving and continued shouting other bad things about Batak people, and the same came from the other group. I could not speak but remained silent, and thought, “who do they think I am; how do they see me”. Somehow it seemed that they had accepted me as their social member, without realizing our differences.

Understanding differences has helped me improve myself and strengthen my standing, while respecting differences. However, without respect, it could also lead to schism. The fact that even little kids could shout racist things makes me wonder how they came to hold that perception. That kind of thing would not come from the kids themselves. It was most likely due to the influence of the social environment. It could be that the kids were told this or heard things incompletely and constructed their own perception. Either way it worries me.
may seem to be only a little thing, however if this antagonism grows, then tragic conflicts between races can occur, as has happened in places in Indonesia such as the tragedy in Sampit on 2001 and the conflict in Ambon on 1999. Memorizing these horrible tragic conflicts makes it hard for me to breathe. Sometimes I cannot imagine, even I am afraid to imagine, the future of my country if such conflict continues.

It is true that in diversity there are differences but it is also true that the differences in diversity may become the origin of harmony. The sound of a piano itself is good to hear, however when it comes together with a different instrument it could help form the harmony of an orchestra. It depends on how each element relates to the other, whether dominating or respecting the other. The way we respond to the other may determine the others’ reaction, and vice versa. When I experience a positive feeling from the other I feel comfortable and become more open. However, when I experience a negative feeling from the other then negative pressure from this feeling naturally pushes me to defend myself and close myself to the source of this pressure. So it is important to reflect on our ability to respond to the other. This ‘response ability’ actually is one of the interpretations of the term ‘responsibility’ (Atweh & Brady, 2009). Then, how should I respond to the other?

For me, responding to the other is about how I acknowledge the other, especially when I encounter the other. As a member of a society, encountering the other is an undeniable event. And, furthermore, it is human nature to build relationships with others as a social creature. However, I realize that since each individual possess their own needs, demands and dreams, and has an urge to fulfil them, and so when people live together in a community, there is a large probability for discord between these needs, demands and dreams. Conflict may occur when this happens. Considering this situation while living in a community, I have a responsibility to the others in my community to form relationships that establish a harmonious social life in that community. This responsibility, which occurs in my relationships with others, brings forth ethics.
“Ethics is born when I encounter the other, while I am close to the other” (Egéa-Kuehne, 2008, p.29). Since I have these relationships in my daily life thus I am called to live ethically in my community.

However, to be called to live ethically is not sufficient in my position as an educator. I also bring a responsibility to help the other, especially my students, to live ethically. So a question is raised in my mind: how can education help students to have a concern for or to consider ethical responsibility in their lives? As an educator, I frequently think about the way I should educate my students. I believe that education is not only about teaching or training, but also nurturing. A way to prepare the students to overcome changes in a dynamic future. Like a seedbed, where the seed is planted until strong enough to be moved and to grow while facing every condition and climate change.

Reflecting on education brings me back to my early school period, especially when examinations stimulated tension among us. We were under constant pressure to pass the exam. Somehow it could be a good moment for us to evaluate our progress. Unfortunately it also provided an opportunity for some students to take shortcuts. For those who chose this shortcut, it was not the process of their development that was important, but passing the examination. There was a tendency to simply pass the examination instead of mastering the competences for solving the problems. The end result might seem to be the same, which is to pass the exam, however the importance of comprehension (or understanding) was lost. To make learning meaningful, we construct fully connected schema in our minds. These schema eventually help us to figure out the ‘big picture’, thus allowing us to develop different plans within the schema to start and finish at any point (Skemp, 2006). On some occasions I have experienced the benefit of having sufficient understanding of a certain topic that enabled me to solve a problem, by presenting it in a different way from the examples we had learnt before or by modifying what we had learned to fit the problem. In other words, with sufficient understanding we can creatively adapt and modify our existing knowledge to solve actual problems. And for me this is a simple example of the wise words in Latin that I heard when
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I was in high school, “Non scholae sed vitae discimus” (we learn not merely for school but for life).

I have grown up in Catholic school education, from primary school until high school, where I learned not only knowledge but also the values that colour the Catholic school education, especially love and charity. I remember how we went to a rehabilitation centre for disabled children from our primary school. We sang songs, brought food and learned how they learn to be independent, to overcome their disability by mastering skills that can be used in their lives. It amazed me to see how they can master such skill beautifully. On another occasion we visited an orphanage, brought donations of food, clothes, and cash, which we collected during Lent season (40 days before Easter is a period of preparation for Easter). I learned through such activity more than what I can hear. I realized how lucky I am with all that I have, and that was how I learned to be more grateful. I also learned to share with the other, including non-physical goods like knowledge or positive feelings. The word ‘other’ that is used here implicitly means ‘no exception’.

Regarding the term ‘no exception’, I remember the story of a good Samaritan who helped a Jewish person, who was a victim of robbery, when other Jewish people, even a religious leader, ignored him and passed by. This Samaritan willingly helped the Jewish person, even though Jewish people usually looked down on the Samaritans. That is the greatest example for me of how love and charity can overcome any barrier, with no exception. I learned from my friends from different race and religions. We learned, helped each other, played together and well without any barrier. When I was in high school I read the title of a poem “No Man is an Island”, and later I knew that it was classic literature created by John Donne (1624). Reading this poem offered me an image about how people connect with each other. How one existence affects the other and is affected by the other, just like the human body. If eyes exists for eyes alone then what is the meaning of their existence? When eyes have too much light, than the eyelids close a little and the ‘neighbour’ neck moves to give a suitable angle to the eyes, even the palm comes up from ‘far away’ and helps in blocking the
excess light. That is how the existence of each part of the body affects and is affected by the other, in harmony.

Furthermore I ask myself what is the meaning of my existence? What role do I have, is it an eye, hand, finger, or something else? Back to reality, in front of my little computer that stays still with me in these reflections, I realize that I am an educator who needs to think critically about how I educate my students; who lives and grows in diversity and brings up certain values while respecting others’ values; and who has a dream about harmonious relationships within differences in diversity. Taking this as my basis, then, I ask the question of myself: how can I approach ethical responsibility while teaching mathematics?

**EXPERIENCE IS THE BEST TEACHER**

Being an educator is blessed for me. I experienced it when I teach my students or when I share what I have learned, what I have known, to the other, then I master it even better (Silberman, 2006). Because when I share my knowledge I am also reflecting on the way I understand and the way I can help the other to understand. Frequently I experience a better way to understand something when I am teaching my students. Sometimes I find the problem that prevents someone from understanding or the way that helps someone to understand better. These experiences help me to improve myself. Experience is the best teacher; this is a wise saying that I have often heard in my country, and I definitely agree with it.

Experiencing opportunities to improve myself from my professional environment is another thing that I should be grateful for. As a mathematics educator, these experiences could come from my encounters with students, colleagues, the principal, or even from myself. I started my professional job as a teacher in a senior high school. This school has male students only and they live in a dormitory within the school area. Each semester the teachers, administrative and dormitory staff meet to evaluate each student’s development. The two main points that are evaluated are attitude and achievement. Students who are considered not to meet the required standard
are warned or expelled and sent back home. The first time I attended this meeting I was surprised at how those teachers and staff could recognize each student very well. They considered the student’s family background and personal matters when discussing each student. I was wondering how they knew so much about every student.

This school was very unique for me. The first unique aspect is that the school and the dormitory are one. It can be said that as soon as the students take one step outside the classroom they are home already. Being at home seems to make them feel free, relaxed and at home. These feelings affect the relationship between the students and teachers. They are very close but without losing respect. It is the kind of relationship that is rarely found in other schools. They can talk and deliver jokes freely. The students can consult on private matters without being worried that the matter will be found on the school’s weekly bulletin board. It is like a relationship between friends, between a parent and children. Students and teachers accept and respect each other.

In my country we have a large ‘power distance’ (de Haan, Meiliasari & Sari, 2010, p.134). Power distance is related to hierarchy, that is, “the degree of inequality between the people that is assumed to be a natural state of affairs” (Hofstede, Pedersen & Hofstede, 2005:36). In a society with small power distance people will accept each other as equals, while in large power distance society like my country, we can find a very obvious social hierarchy that reflects a high degree of inequality between people within the society. Parents are more powerful than children, and this kind of relationship could be found anywhere in society, such as leader/subordinate, older/younger, or teacher-lecturer/student. According to this hierarchical context, it is not common to have the kind of relationship that exists in the high school I mentioned above. It so happened once that this kind of relationship offended the pride of a new teacher who was filling in for a senior teacher due to his ill health. As a result he never returned to the school again. Apparently there are many teachers who hold such pride, maintaining a higher social status by trying to keep a distance from the students.
For me, however, pride and respect are supposed to be gained from personal performance and quality rather than being given automatically by position or social status. Before arguing about this statement, I want to reflect again about why I am proud to have a certain status or position, such as a teacher. Some people may say it is a noble job, and some may say it is knowledge that is not possessed by all people. Commonly it is said that a teacher's position or status is assumed to have something valuable. So the next question is whether or not I have that valuable quality, whether or not my performance shows that valuable quality. Am I a noble person when being a teacher; do I master proper knowledge for being a teacher; does my performance reflect the nobility or the knowledge that I have? Thinking that I am worthy of having respect from my students merely because I am a teacher does not show my greatness as a teacher.

Students are human beings with senses, feelings, and reasoning, no different from teachers. When a teacher can sense a positive response from the students and feel happy about that, then the students also sense and feel the same way. That is one way students can sense the sincerity of a teacher, especially when they meet regularly in scheduled lessons. When teachers give all they have, showing that their quality and teaching is whole-hearted, then the students will be inspired by it. It is this sincerity that touches the students, so the teacher, who comes from a large power distance society, can leave his/her pride behind without losing the respect of the students. This is a great lesson I gained from that unique high school.

However, it was not only the students who were inspired by the teachers’ sincerity at that school, but also me as their colleague and fellow teacher. This inspiration has coloured my further professional experience. That was how I tried to teach at a subsequent high school, even though there were big differences between this and the previous school. The latter is a private school without a student dormitory with many students having very low motivation to study. It seemed that they only wanted to have the status of being a student, showing no interest in learning. Even worse, the term ‘respect’ was odd for them. It seemed that the only thing that controlled them was fear. Fear of
punishment, fear of whether their parents would know about their faults. For me, however, this fear showed that they still had an important quality. “Berani karena benar, takut karena salah” is a wise saying in Indonesian, meaning that we will bring courage with us when we are right but we will have fear when we have done something wrong. The fear that students had, showed that they were still concerned about right and wrong. And for me this meant that there was still hope. Bringing this hope along with my professional job helped me to maintain the sincerity of my teaching practice.

My hope for something better, the improvement of my students, had kept me going. It was my concern for the other, my responsibility as a teacher, my role as a human being that helped me to be consistent on the road of sincerity. It was really a hard time for me. Frequently I had to question myself about my position in the classroom. Being influenced by a large power distance derived from my cultural background sometimes a conflict emerges within myself. Sometimes my pride struggled inside, asking for privilege. I was tempted to claim the recognition of my higher position from the students. A claim that I was worthy of having respect merely because I was a teacher. A claim to my own weakness, at the end. Weakness since I would have failed to show that I am worthy of that respect, weakness because I would be begging for respect. “Hassit mulak mangido umassitan mulak mangalean”, is a proverb in Bataknese language that means ‘it hurts when our request is rejected but hurts more when our giving is rejected’. This was the feeling I frequently had when I had tried to give all I had and the students did not seem to care. However, hope for my students’ improvement helped me to stand strong. I tried to understand the problem, gave more effort to listening to them, rather than talking more and advising them. And it did not go unnoticed; eventually the sincerity touched the students. When I tried to listen they started to speak. Realizing that there was someone listening to them seemed to move them to listen as well. They listened, felt and saw. That is how they came to realize that my intention was for their improvement. And they could not deny that they needed to improve, at least to graduate from high school. Realizing the need to improve gave birth to a good
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relationship between us, and that was how respect came to exist in this relationship. And the change toward improvement was right in front of us.

When I teach I am learning
When I share I have my share as well
When I encounter the other I experience myself
Being disrespected pushed me to learn how to respect
Being ignored in the needs' demand taught me how to serve
Being rejected told me how to open myself
Being not heard asked me to listen
Struggling with pride led me to become a humble being
Holding the hope helped me to stand still
Consistency in sincerity brought me to pass through the barrier
Listening to each other opened the gate of understanding
Better understanding cultivated a good relationship
Laying in front of us the willingness for improvement
When I give I have more without being given.

All my experiences, the sweet ones and the bitter as well, had brought me to a state where I really enjoyed being a teacher. However, two of my undergraduate lecturers pushed me to go forward to take a Masters degree course. At that time a Masters degree was a luxury for me. It was expensive and I had to go overseas for that purpose, which meant leaving my friends and relatives and also my job that I had enjoyed so much. “Do not waste your potential by stopping at this stage only, you can do more and better if you continue your study”, was the advice I had from those kind lecturers. They had concern for me. Their concern, and the will and desire to do more encouraged me to leave my comfort zone and move forward to an uncertain future. Experiencing the concern of my lecturers taught me that our concern for others could provide a way for them or at least show the way towards something better and self-improvement. And for sure there are so many good things that I have achieved since I followed their advice. I learned many new and valuable things while taking the Masters course. I have met great lecturers and the opportunity to write this doctoral thesis is one of the many achievements that I had never believed or imagined possible.

Passing the Masters degree led me to the experience of being a university lecturer. Sometimes I do not think that I am worthy of being a lecturer. It might be because I am still influenced by the large power distance issue. For me, a lecturer has a higher social status, mastering the knowledge deeply so one can
become a teacher of teachers, and that is why I think that I am not yet worthy. I still need to learn much more. This was also the reason for me to be happy when being involved in professional learning programmes on our campus.

Being active and involved in these programmes gave me an opportunity to understand more about our university and the academic environment. It reminded me why I prefer students to be active so they can construct their own knowledge. I do not want them to be ‘an empty glass’ that is passively waiting to be filled by the teacher. I want them to be subjects who are actively searching for and constructing meaning, since they have been gifted with great potential they have infinite capabilities (Dahlberg, Moss & Pence, 2000).

Being active let me learn something behind the scenes, not only how the lecturer prepares and conducts the lecture, but also how the university activities are prepared and conducted. These background experiences led me to understand about the policies applied in our university. According to my senior lecturer, there have been many changes in our university compared to the period before I arrived. One of those changes was when, in 2009, our Rector issued a policy about integrating ‘soft skills’ into our academic practice. By this policy we need to focus not only on developing our students’ technical skills but also non-technical skills. It seems that this policy was based on studies conducted between 1986 and 2006, which emphasized that “soft skills would be critical to future workplace effectiveness” (Brungardt, 2011, p.3). Some of these studies affirmed that soft skills are a bigger success factor in the workplace than hard skills. At the end, this policy emphasizes not only the cognitive and psychomotor domains, but especially the affective domain, focusing on values in academic practice. And this gave me the opportunity to include values in my lecturing practice I was able to discuss with my students about values, diversity and equity, relationship with others and harmony. This gave me hope that these students would (i) develop values in addition to disciplinary knowledge and (ii) become agents for cultivating harmonious relationships in our diverse society.

Although I had only 3 years’ experience of being a lecturer before I commenced this doctoral study, it was a great time for me. It helped me to improve myself,
especially by imbibing the wisdom and motivation of our Rector at that time. I remember the first time he officially welcomed us. In 2008 there were 100 of us, new civil servants, in my generation. He put his dream to us by saying,

This generation is one hundred golden generation, if you see bad habits from the older generation, just let it be, do not care about it. However, do care about your generation and those who come after you. Let those bad habits stop here, right now and let us start new good things with your generation, for a better future of this university of ours. Let this generation bring a transformation to a better state of our university. Please go to study in higher education when there is a chance, and if it is possible I prefer you to go overseas, we will support you.

Frequently I made an excuse for doing nothing by blaming the system, the leaders or others. Actually by blaming those, indirectly I was admitting my own inability. By centralizing my view merely outside myself I forgot the thing inside myself, what I am able to do. I put myself in an endless cycle and had no choice but go with the flow. However, this message on our welcoming day amplified the whispering voice inside me to break the cycle, transform the flow, and initiate a new and better era, by starting with myself, ourselves, our generation.

These experiences really encouraged me to continue my steps to improving myself through another educational experience, hoping that my growth could contribute to the community where I belong. Experience is truly the best teacher for me.

**WHAT DO I WANT TO STUDY IN THIS RESEARCH?**

In the past the term ‘research’ for me was always related to data and the way to collect and analyze it. However, when writing this thesis I am asking myself what research is for me. Earlier as a Bachelor’s degree student I understood research as merely a way to gain my graduation in the same way my students simply wanted to pass their exams. When I did my study I learned something from the experience, however I had no intention other than to fulfill the requirement to graduate. Furthermore, when I received my Masters degree, I could say, “I’m the master with all confidence I have”. I understood that from the learning process research is a way to develop knowledge or to advance
understanding. Through research I can examine or verify an assumption or hypothesis. I can also use research to develop resources, such as learning materials or tools, or to evaluate a programme.

Now as a doctoral research student I find that the more I learn I realize the less knowledge I have. I once felt confident and mature with my Masters degree, but now I feel that I’m nothing. I’m just a kid in this massive world of knowledge. Thus I have come to realize that research is about my self-development, the way of my own development and improvement. Research is always about a problem or a question that has no answer. What we have initially is only a hypothesis, a conjecture, or an intuition. This problem or question could originally come from ourselves or another party. However, when we find the answer through research, we gain better understanding. That is how development goes.

Carrying the dream of self-improvement, of harmonious relationship in diversity, and bringing change and transformation through my profession as an educator, has led me to the question of how I can integrate ethics into mathematics instruction. Based on this question and considering an approach to mathematics instruction that I became familiar with during my Masters degree study, known as Pembelajaran Matematika Realistik Indonesia (PMRI), I want to develop a pedagogical approach within PMRI that focuses on inculcating ethical responsibility. In doing so I ask my self questions such as:

1. What do I understand about ethics?
2. How can I integrate ethics into mathematics education?
3. How have I improved, as a mathematics teacher educator, during this study?

As part of my professional self-improvement journey I will use my personal experiences in this study as a source of data for critical reflection. Through this reflection I will have an opportunity to explore myself deeply and transform my understanding in a continuous process of professional improvement.
WHAT IS THE SIGNIFICANT CONTRIBUTION OF THIS RESEARCH?

The first and foremost contribution of this research is my own improvement. Critical reflection used in this study will bring deeper understanding and self-empowerment. This reflection will give me a voice and help me to listen critically and creatively to that voice. Providing moments for listening will help me to explore and reveal my own ethical values.

Another contribution of this research is that the results can be used as a theoretical and methodological framework for those who are concerned about searching for ethical responsibility. Since it is rare to talk about ethical responsibility in mathematics education this study can be a key reference for mathematics educators and for other educational researchers interested in ethical responsibility within their field of study.

This study is also significant for other reasons. Teachers who are involved as participants in this study will have the opportunity to learn more about teaching mathematics for/with ethical responsibility, especially those who have previously used the PMRI approach. By considering the issue of ethical responsibility teachers will consider not only students’ responsibility but also their own, because they are also part of the learning environment. Thus, the impact of this study is not only for the student but also the teacher, and further for the school itself. In the end, a small transformation of each individual hopefully brings a larger transformation to the broader community.
CHAPTER II
METHODOLOGY

INTRODUCTION

In the previous chapter, I tried to reveal my dreams and something of myself. I have shown by self-reflection, carried out through Chapter I, how my life experiences, especially my educational and cultural background, have contributed to who I am right now and also to what I intend to investigate in this research. Having the dream that raised the research questions and the intention to find the answers to those questions brings me to the question of how I go about finding the answers. This question brings me to reflect on the methodology that I need to design.

This chapter discusses the shifting methodology that I designed for this research. The chapter does not only explain the methods I used, but it is also about my own lived experience. It relates something of my personal development of: how I switched my view of reality (which is my ontology); the way I constructed my knowledge about that reality (which is my epistemology), and the values that I held while doing this research (which is my axiology). In fact, my path in this research was not always linear or as smooth as I had imagined initially. There were difficulties, confusions and struggles, which sometimes pushed me to deviate from my initial plan. In the end, those changes transformed how I viewed the key issues of my research.

The chapter starts with my reflection on the early period of my PhD research, which involved designing an 'action research' study. However, due to unforeseen circumstances an emergent research design occurred. The second section explains how I became involved in a process of 'shifting paradigms' which led to developing a 'philosophical auto/ethnographic' research design. The third section narrates my choice of 'critical narrative inquiry' as a way to represent, and the method to study, my personal lived experiences. At the end of this chapter I explain the quality standards that govern this research.
THE EARLY PERIOD OF MY PHD RESEARCH

The way we perceive something influences the way we react to that thing. Some people see a snake as a dangerous animal so they avoid it. However, some people see it as a cute creature so they live with it in their home. Hunters see animals as prey, and they hunt them. Meanwhile, Greenpeace people regard animals as other living things that share the world with us, so they are willing to share the world with them. The same thing happens analogically with research. In Chapter 1, I mentioned how I came to see research differently, in line with my educational growth. My view changed from merely seeing research as a requirement to seeing it as a tool for finding answers and, in the end, regarding it as a means of engaging in self-improvement. This type of changing of one’s view does not happen in the blink of an eye. There was, for me, an ongoing reflective and experiential process that was filled with confusion, conflict, struggle, resistance, and also inspiration.

Initially, under my previous supervisor, Associate Professor Bill Atweh, I chose action research as a methodology for my study. Scholarly details of this initial research design are presented in Appendix VI. Using this research design, I would be aiming to develop guidelines on how to design mathematics instruction with a focus on ethical responsibility. This guide would be regarded as effective if the concern with ethics was found to be present in the teacher’s subsequent instructional process and the students achieved a good performance on mathematics tasks.

On reflection, however, these criteria left a question in my mind. It seemed that I would only be measuring students’ academic performance. I am a mathematics teacher and I teach mathematics. I am not an ethics teacher, and ethics is not my subject. So it is right to evaluate my students’ performance in maths, yet what about the ethical side, which was my real dream in this research? Having guidelines is necessary but not sufficient since a list of what to do and what not to do, to some extent, misses the essential factor. Using a checklist I could say that I observe the teacher perform something related to ethics in the mathematics class, but it would not tell me what the student and teacher...
understand or had learned at that moment. It seemed that I would miss the impact of ethics related activity in the classroom for both the student and teacher, which was the main aim of my study. Explaining what to do is not all that I wanted to have from this research. I wanted to gain a deeper understanding of the students, the teacher and myself related to the key issue of ethical responsibility. Unfortunately, I could not continue this study with my previous supervisor since he would soon leave Curtin University for his own professional journey. This unanticipated situation opened the opportunity for me to shift from action research to a different methodology.

**SHIFTING PARADIGMS**

The 11th of January 2013 was my first formal meeting with Peter C. Taylor, another professor. Three of us, Peter, Bill and myself, discussed the possibility for me to continue my work with Peter. A question from Peter that struck me at that first meeting was, “How about your subjectivity?” I could only steal a glance at Bill for support or confirmation, and then I replied, “I never thought about it.” The meeting ended after Bill said, “I leave you in good hands”.

At that moment, I was not really sure whether that last statement was really a statement or a wish, since I could not tell exactly what is in the other’s mind. Yet I can tell what was in my mind. There was anxiety. I was anxious about imminent things related to my study. Would I lose everything that I had been doing so far? But what worried me the most was the word ‘subjectivity’. When I say that I had never thought about it, I was asking myself whether it was necessary for me to think about my subjectivity. Was it not something that I must avoid while doing research? Was it not a taboo for a researcher?

For me at that moment subjectivity was a dangerous word within research. It was dangerous for being related to the word ‘bias’. By employing my subjectivity, I would be risking my research due to a lack of clarity with the boundary between my subjectivity and the delusion of projecting my own limited view (Drapeau, 2002). However, an equally concerning question also arose in the moment of my reflection about subjectivity. How can I become truly
objective while before me there are subjects with their own subjectivities? The students and the teacher, who are involved in my study, are not merely objects of my study. I could not treat them just as experimental objects, as in a scientific laboratory. In this study, I am dealing with others’ experiences and mine as well. And subjectivity is inevitably imbued in those experiences. Thus, the effort of removing subjectivity may unduly simplify and reduce the completeness of those experiences. This condition could reduce their meaning and in the end divert me from fully understanding their meaning. Is this not the concept of bias as well?

Earlier I mentioned that instead of explaining, in this case, ethical responsibility, I wanted to understand it deeply. On reflection, I came to realise that embracing subjectivity would help me to see the completeness and complexity of experience and to construct a deep understanding of it. It would help me to understand the subjects deeply as well. By saying subjects, I mean all those who are involved in the experience, including myself. So by embracing subjectivity, I would gain greater understanding about the other and myself. However, this new understanding did not erase the anxiety from my mind, rather it raised mindfulness and caution in my steps.

**Bias – Subjectivity**

- I and my senses
- I and my emotions
- I and my feelings
- I and myself
- Are we different?
- Are we separated?

*Am I not being reduced without any of them?*
*All together define me as a person*
*A subject with its own subjectivity*
*Subjectivity that makes a person unique*
*Uniqueness that demands to take differences into account*
*My subjectivity allows me to be related closely to other subjects*
*While awareness of differences opens my eyes wider*
*Bringing up completeness and complexity*
*Allows me to see more and deeper*

*Am I being delusional when I can see something that others cannot?*
Chapter II Methodology

My doubt and confusion about the role of my subjectivity in this research raised some fundamental questions, which represent the crises that I faced. Being in the position of a lecturer who is sent to study overseas requires unavoidable responsibility. It is an obligation for me to bring valuable knowledge for my own development to be shared in my professional practice. As a person who grows in an academic environment where objectivity is a must embracing subjectivity is a big challenge. First of all, how do I convince myself about the need for subjectivity in my study? With this conviction then I would be able confidently to explain or even perhaps defend the need of subjectivity to my colleagues, who hold firmly that objectivity is a must, while as a lecturer who will supervise my students in their research, later on I need to know how to check the quality of my students’ work if they choose to embrace their own subjectivity. All these challenges culminate into one question, which is how can I legitimate the result of my study or others’ if subjectivity is involved in the study?

If subjectivity is being taken into account then by default the previous way that I used to represent the study will be inadequate. Such a way is intended to avoid subjectivity. So, how can I reveal my experiences with subjectivity? How can I capture lived experience (Denzin & Lincoln, 2005)? How can I write so the students’, teacher’s and my voice are heard? How should I represent my study when I am embracing subjectivity?

The other question that bothered me was about the impact of my research. Will this research just end as a document for a requirement for my degree? If the product of this study is only this thesis, then anything related to this study will stop when the thesis is completed. Should this study contribute to theory, yet will it touch the ground on the practical activity level? How will this study affect my students, my professional environment and me? How should I conduct this study such that the outcome is not only my thesis, but the action of doing this research itself brings benefit to my professional environment and to myself?

Denzin and Lincoln (2005) called these three ‘crises’ as the crisis of legitimation, the crisis of representation, and the crisis of praxis.
MAKING MEANING OF MY EXPERIENCES

It seems that having a mathematics education background with a strong influence from the statistical approach situated me not far from positivist or post-positivist research approaches, though I did not realise what positivism and post-positivism were at that time. It was like an invisible force that was guiding my view of research. I am not saying that every person with this statistical-mathematical background will have a similar view to mine, but I can say that it did influence me.

Research for me had always been about an effort to find the truth (Willis, 2007) or maybe to get closer to the truth. By saying getting closer to the truth, here I was embracing the doubt that the ultimate truth had yet been uncovered. At the same time, I had no doubt that the truth was out there to be uncovered (Guba, 1990). Hence, in spite of this doubt, I can now say that I am a post-positivist rather than a positivist researcher, who confidently affirms that good research should result in a theory that reflects the truth (Willis, 2007). This level of epidemic uncertainty comes from what I found in the history of science, which shows how one theory comes after another and may advance the old one or replace it. This fact asserts the tentative certainty (Slay, 2007) that such theory or knowledge may claim. Just think about how the heliocentric theory replaced the old geocentric theory or how the concept of the atom changed over centuries, and how behaviourist, constructivist and many other theories came one after another.

By embracing the post-positivist view, I aimed to find the universal truth that can be generalised across contexts (Willis, 2007) and to make predictions. Indeed, here the only way to find this universal truth, as envisioned in positivism, is through the scientific method, which seeks objectivity and is likely to attempt to control all variables (Willis, 2007), according to the particular research situation. These are the views I had initially when I chose action research for achieving my goal in this research. I wanted to find a universal guide for integrating ethics into mathematics instruction. While doing that, I was holding tightly on to the objectivity criterion for collecting and analysing
data and controlling variables, for example, the approach used by the teacher for teaching and the environment in which the students are learning. Actually, action research itself could be said to have its origin in another paradigm; as Lather (2006) wrote, action research relates to the critical paradigm. Yet, I was still looking at action research from a post-positivist point of view. So, I can say that I am using action research from a different perspective. It reminds me of the old saying from my tribe,

*Ai martampuk do bulung, marbona sangkalan.*
*Ai marnata do suhut, marnampuna ugasan.*

(Every leaf has a leafstalk, every cutting board has a top and bottom side. In every ceremony there is indeed a host and the master of a ceremony)

Freely interpreted, this saying means that we need to consider our position and attitude on every occasion. Metaphorically applied, while we are guests we should not act as the host of a ceremony. We need to respect how the host chooses to manage the ceremony. If I apply this saying analogically to my research case, then the post-positivist approach could not be employed as a “host” since action research comes from another paradigm. So action research should be done according to the original paradigmatic view from which it originates.

My encounters with both of my supervisors made me more aware of my limits in this research. So, I can say that it is not my place nor is it the time yet to attempt an in-depth explanation of the place of ethical responsibility in mathematics education. Yet, I am eager to gain more understanding about this issue. Henceforth, instead of explaining the place of ethical responsibility in mathematics education, I would rather understand more about it. Now by shifting my view from trying to ‘explain’ to trying to ‘understand’ this issue, I feel the need to change my standpoint as well. If I want to gain understanding, I need to reflect critically on my own experiences, in which I encounter the other and myself. In other words, rather than looking for the truth out there, I start to consider searching for the truth inside myself as well. At this point I start to consider the different nature of truth, as mentioned by Lakoff and Johnson (2003); the truth is relative to person’s conceptual systems or, in other words,
truth is based on our individual understanding. We gain our understanding of truth through meaning construction carried out in interpreting our experience (Taylor, 2015). I now need to consider the matter that each person may interpret experiences differently from each other. In respect of this difference I realise that it is not appropriate for me to impose my understandings on others, yet neither is it appropriate for me to take for granted the truth seen solely from another's point of view. So, for my understanding, I need to critically inquire into and interpret any experience I have while relating the ideas of another person.

According to this conclusion of mine, I do not think that post-positivism is the appropriate one to use as the principal paradigm in my research because I have a lot of considerations that are not well handled by the post-positivist paradigm. My concern about these issues, based on my reflection, makes my subjectivity something that cannot be avoided, rather, I need to bring it forward for careful consideration. Moreover, the ontology I use is no longer that conceived in post-positivism, since I also am considering seeking ontological understanding from something inside myself now, not merely from the ‘objective’ measurable outside. Therefore, the epistemology should correspond to this view as well, and the rigid scientific approach is no longer enough. I cannot just separate myself conceptually from other subjects in this research. Instead, I want to gain more understanding through being more closely related to the other. I want to understand not only from my point of view but also from the other's. As regards gaining more understanding in this research, I want to inquire and re-inquire into existing theory and understanding, especially mine, of ethics and mathematics education and their putative relationship. Hence, I am considering employing a multi-paradigmatic approach in this research, which is termed ‘critical-interpretive-postmodernism’ (Denzin & Lincoln, 2011).

I will use an interpretive perspective since in this research I want to generate my understanding based on the context of my experiences (Taylor, Settelmaier & Luitel, 2012). By reflecting on these experiences, I am interpreting my thoughts and others’, what values and beliefs we have, and how are we socially related. Since each subject has a unique interpretation of those matters, then
they are inseparable from the subject. So in the process of inquiry, indeed, I cannot avoid subjectivity in order to generate understanding. And the interpretive paradigm allows me to embrace my subjectivity in the process of inquiry (Taylor et al., 2012).

This research for me is also about bringing change to mathematics education in general and particularly myself. It is about change in how I (and other people) see mathematics education, from value free (Bishop, 2008) to value related, thus moving from a focus only on cognitive to a consideration of other domains such as the affective domain. I hope that understanding will be revealed from the interpretation of experiences and will encourage people to think critically about how mathematics education can play a role in developing a better society. This suits the critical paradigm well, as mentioned by Taylor and Medina (2013), that critical inquiry raises critical consciousness and encourages the construction of a moral vision of a better society. In this case, it raises teachers’ conscious awareness about established values and beliefs that shape their roles in the teacher-centred classroom (Taylor, 2008), after which a teacher could critically and creatively think of developing a better approach to learning and teaching.

I started this research from cultural plurality as my background. I have been holding the dream of harmony in diversity. I want this plurality to become a strength not a weakness of my society. I want to live peacefully not tensely within the differences. This idea brings me to consider the postmodernist paradigm, which embraces the principle of pluralism (Taylor, et al., 2012). I believe that one of the keys to my dream is the ability to accept differences, since when we exclude any differences we create an exclusive partition with a strong border that would strictly disallow anything from another partition to cross the border. And when that still happens it will likely lead to conflict. On the contrary, openness will reduce this probability through mutual respect and understanding. However, I realise that openness may not only raise respect of differences but also may put myself in a vulnerable position. Fortunately, the fundamental principle of postmodernism suggests that I need “to be suspicious of all grand narratives” (Taylor, et al., 2012, p. 379). It asserts that being open is
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not necessarily to accept everything as equally true. This principle is a reminder that any truth claim comes from certain rationale or belief system, and it cannot claim its superiority over others (Taylor, et al., 2012). And, for me, this is the point where respect emerges.

Another benefit of postmodernism that interests me is that it literally employs the beauty of art. Art provides me with a wide range of ways to represent my thoughts. I can use poems, images, or stories to express them. In addition to the beauty of art-based representation, it may engage the reader in a more critical reflection (Taylor & Medina, 2013). Since every art piece that is used as a means of representation masks a particular meaning that cannot be seen instantly, accordingly in order to be able to uncover this meaning the reader needs to reflect critically. If I may say, it shows the richness of the variety of logics (Taylor, et al., 2012) of postmodernism is. By engaging the reader in critical reflection this kind of representation may provide more meanings than what is written.

By situating myself at a multi-paradigmatic (critical-interpretive-post modernist) standpoint, I have more flexibility in the methodology and the methods I may employ in this research. The multi-paradigmatic view allows me to create various combinations of methods within those paradigms to suit my needs in conducting this research. This flexibility, then, allows me to choose critical narrative inquiry as the primary method enclosed within a philosophical auto/ethnographic methodology.

CRITICAL NARRATIVE INQUIRY WITHIN PHILOSOPHICAL AUTO/ETHNOGRAPHY

Why do I choose narrative inquiry? I love stories. I like to read, to listen to and to watch stories. Ever since primary school, each time I get a new Indonesian language textbook, the first thing I do is look for stories within the book and read one after another. Although sometimes I find stories that I have heard before, I still enjoy reading them again as if it is the first time. Maybe this is because each writer writes differently or the way the stories were written
touches and triggers my feelings, my emotions in such a way that I feel like I am experiencing the story directly when I am reading it.

Based on the view that the researcher is the primary instrument (Richardson, 2005) in a qualitative study, the interpretive paradigm considers the researcher’s social and historical position as a vital element in doing a study (Carter, Lapum, Lavallee & Martin, 2014). Within this position, I hold certain assumptions and way of thinking, which impact the way I approach my study. Carspecken (1996, p.5) suggested that, “the ideology of the researcher, including her values, is supposed to enter intrinsically and inseparably into the methods, interpretations, and epistemology of critical research”. Somehow this position is contained and covered in my life story. So, I need to uncover it. One way to do it is by narrating the story; since, for narrating the story, I need to remember the feelings, the emotions, the background and every meaningful thing related to that story. Through narrative I can bring up my life story, my experiences, in all its complexity and richness (Webster & Metrova, 2007).

However, if it is only about remembering the past, then just narrating is not enough. I need to reflect on each moment experienced in the story, to make it alive again, to see what has happened in my experiences and inquire into it. As Webster and Metrova (2007, p.4) say, “it requires going beyond the use of narrative as rhetorical structure, to an analytic examination of the underlying insights and assumptions that the story illustrates”. Here, narrative inquiry is not only about telling the story but representing the phenomena of my experiences and the methods used to study the experiences, as well (Connelly & Clandinin, 1990).

The flexibility of representation in a postmodernist arts-based study provides an answer to the crisis of representation that I mentioned earlier. As suggested by Connelly and Clandinin (1990), a good narrative should invite the reader to experience the study and read it vicariously. For this purpose, the language criteria used for a post-positivist research form is not rich enough to be used here. It is as if we are squeezing the language of the narrative when we insist on using it (Connelly & Clandinin, 1990). In order to enable the reader to
experience the study vicariously, I need to invite them into my personal perspective, to see through my subjectivity. The arts-based expression from postmodernism provides an opportunity to use an impressionistic tale (Van Maanen, 1988) to reveal my personal perspective in a particular moment (Lynn & Deborah, 2005). By combining it with narrative inquiry methods (Clandinin & Connelly, 1996) I can “create deeper and more emotionally subjective awareness for the reader” (Slay, 2007:98). For this reason, in my narrative I carefully use dialogic engagement to express the interaction between participants and myself in the teaching practice in this study, and analogies to explain contexts and ideas.

The term ‘critical’ combined with narrative inquiry shows my concern with critical voice. It represents the value orientation of criticalists, which include redressing social inequalities and affecting positive social change (Carspecken, 1996). The later, positive social change is in line with my dream about a better society that is characterised by plurality. Therefore, I have considered the view from critical theory. However, change into a better society is not the only assumption. As I cited above, criticalists commonly base their research on the goal of redressing social inequalities as well. At the beginning of this study, I had not realised about the existence of social inequalities in a mathematics classroom. My lack of awareness of inequalities does not necessarily mean that they do not exist. They could be hidden, or I did not recognise them because they are accepted as natural (Carspecken, 1996), which is proof of the existence of social inequality itself. If this is the case, then I am part of that inequality, and I need to critically change myself. And employing a critical view will help me to unearth this assumption later in this study.

Since this study entails understanding the Indonesian education through my personal experiences, then auto/ethnography is the most suitable approach. According to Ellis (2004, p.xix), “autoethnography connects the autobiographical and personal to the cultural, social and political”. By inquiring through the avenue of my own experiences, I use my eyes to look at myself in relation to the culture where I gained these experiences. I focus on myself to gain more understanding of the culture, in this case, mathematics education. By
using auto/ethnography, I may reveal not only what I see through my eyes and the way I see, but also my whole self, including my actions, emotions, feelings, thoughts, which involve introspection and self expression. When I am able to write a story about all of these aspects, then, it would be an indicator for how deeply I understand myself.

In order to seek a deeper understanding of myself I was initially thinking about using critical reflection as my vehicle in this auto/ethnographic journey. However, when I was consulting my analysis, which I have presented in my narrative story, my supervisor recognised that I have used another vehicle as well as critical reflection. With a smile and widely opened eyes in that discussion, he said to me: "What you are doing is a philosophical inquiry. Though you are not the first who is doing it. Most of my students have done this, at least they have tried to do so, and many of them decided to stop doing it because there is a catch with this approach. Usually, if you choose philosophical inquiry, you will need a longer time to finish, while you do not have forever for your PhD. So, I shall leave it to your consideration whether you want to continue with this philosophy regarding how much time you want to spend to finish your study."

What my supervisor said was totally beyond my expectation. My admiration towards those great thinkers that are called philosophers gave me an uneasy feeling. Philosophers for me are wisdom lovers. Their love towards wisdom drove them into deep thinking, which results in an enormous range of knowledge. Their possession of this vast knowledge makes me assume that philosophers are persons with wisdom beyond that of ordinary people like me. My admiration towards them makes me hesitate to acknowledge my use of philosophical inquiry. Instantaneous assessment I applied to myself when I heard those words from my supervisor told me that I am far from being a philosopher, yet what could happen if I dare to put my foot in their working area. Would it not be arrogant to try to take this step?

However, aside from this consideration, I was also wondering what it was that my supervisor saw in my narration that connected it to philosophical inquiry.
So, instead of basing my view on my assumption about philosophers only, I started to search in the literature more about philosophical inquiry. It is not too much to say that sciences, including education, benefit greatly from philosophy since most sciences came from philosophy (Scriven, 1988). Foundational questions that have been answered by philosophy have become the foundation of science, for example the idea of molecule and atom. Thus, it is also possible that philosophers and educators benefit each other. When philosophers want to develop understanding about knowledge they may benefit from studies in education about learning, while educators may use some help from philosophy to develop their knowledge about learning (Scriven, 1988). Further, I learned that philosophy does not necessarily develop and defend its view based on empirical data because its inquiry is not necessarily about the empirical word but about the nature of our concepts about the empirical world, which makes philosophy a conceptual analysis (Daly, 2010). This finding illuminated my wonder about the traces of philosophy in my narration.

Conceptual analysis may characterise philosophical work, yet it does not exclusively belong to philosophy. It is open to other disciplines to use conceptual analysis. In mathematics, which in fact has abstract (non-empirical) objects, we also use conceptual analysis, especially in an analytical subject. In my opinion, conceptual analysis is covered by deductive characteristic of mathematics that explains why mathematics values its definitions, axioms and theorems. In other words, subconsciously I used conceptual analysis in my reflection when I was writing my narrative stories. As a person who has grown under the influence of mathematics, conceptual analysis has become part of my way of thinking before I engaged in this study. Instead of denying what I already have, it is better for me to acknowledge and make use of it in the best possible way, especially when my interest in this study is about ethics, which is not far from philosophy.

Being illuminated in such a way I realise that my uneasy feeling was coming from an invalid conclusion based on my mistake about the different truth-values of an ‘implication’ \((if \ p \ then \ q)\) and its ‘converse’ \((if \ q \ then \ p)\). Philosophers may use conceptual analysis, but those who use conceptual analysis are not
necessarily philosophers (Scriven, 1988). I was hesitating in acknowledging the use of philosophical inquiry in this study because my admiration towards philosophers made me feel that I am not worthy to call myself a philosopher. Realising my invalid conclusion ceases my uneasiness, while allowing me to keep my admiration for those great thinkers. However, Scriven (1988) encouraged the usage of philosophical inquiry in education while also emphasising the need for a limitation to the amount of analysis, since too much effort in such analysis would turn an educational study into a philosophical one.

Even though philosophical inquiry does not necessarily depend on empirical data, it does not reject such data. In fact, some studies might even require such data (Daly, 2010). This fact opens the possibility of collaboration between auto/ethnography and philosophical inquiry. In this study, therefore, I am using philosophical inquiry as a complement to auto/ethnography in order to extract conceptual understanding from my experiences as they relate to ethics and mathematics education. Hence, I call this methodology a 'philosophical-auto/ethnography'.

COMBINING DATA AND LIVED EXPERIENCES FROM BOTH METHODOLOGIES

In this study, I am investigating how to integrate ethics into mathematics education in the Indonesian education system. Using the initial action research methodology that I designed for this study (see Appendix VI), I conducted fieldwork in a primary school, 'SD Budi Mulia 1', in my hometown in Sumatera. As a Catholic school, its educational practices are governed by a Catholic ethos. The school has an excellent reputation for quality and discipline. It is so well regarded by the local community that it always has many more candidates for enrolment than its capacity allows. My interest in integrating ethics into mathematics resonated with the school's values. Thus the principal allowed me to conduct my study in this school. Initially I collaborated with a mathematics teacher along with her 60 Year 3 students with the shared goal of integrating ethics into her teaching practice. The data from this fieldwork, especially observation notes and conversation transcripts, are incorporated into Chapter V.
Chapter II Methodology

Having shifted from an action research methodology to a philosophical autho/ethnography, I draw on my broader lived experiences, especially my social, cultural and educational background that shaped my experience as a student and teacher. These experiences strongly influence all chapters, since I, as the key instrument in this thesis, was shaped by those experiences. Because I could not pour out all my lived experiences in this thesis, I select critical events that relate most directly to the purpose of my study.

In developing Chapter VI, I draw on my lived experience of teaching private students, a brother and sister. They are Indonesian citizens who came to Australia with their family because their father had a job in a company in Perth for a period of time. Because of the differences between Australian and Indonesian curricula and the fact that they were to return to Indonesia, the parents asked me to help their children to learn mathematics so they would not have a problem later in facing the transition from Australia to Indonesia. My experience in helping them learn mathematics allowed me to learn about the benefit of trying to shift my point of view to the student’s point of view based on a pedagogy of listening that I describe in Chapter V. I also discuss in Chapter VI the connection between my effort in this practice as a teacher and my integrative ethics viewpoint, which I describe in Chapter III.

QUALITY STANDARDS

How can I legitimate this research? The first crisis that I found when turning my perspective away from post-positivism is the crisis of legitimacy (Denzin & Lincoln, 2005). It is related to the quality standards of my research. Since I have shifted to another paradigm then the quality standards of post-positivism, such as validity and reliability, cannot answer my needs, as they were developed on a different epistemological base. So to be able to legitimate my research I need to use appropriate quality standards regarding the paradigms I use now. Since I am using a multi-paradigmatic approach – critical-interpretive-postmodernism – then I shall use quality standards derived from these three paradigms: critical reflexivity, praxis, representation, trustworthiness, authenticity, and crystallisation.
Critical reflexivity

As a human being, when I study about being human, my subjectivity will always be there and needs to be acknowledged, explored and used creatively (Okely, 1975). So, to construct knowledge through interpretation of my experiences (Van Maanen, 1988) I need to be more conscious about myself. And this critical reflexivity is the way to a more radical self-consciousness (Callaway, 1992). As described by Sandelowski and Barroso (2002, p.216), “reflexivity implies the ability to reflect inward toward oneself as an inquirer; outward to the cultural, historical, linguistic, political, and other forces that shape everything about inquiry; and, in between researcher and participant to the social interaction they share”.

![Figure 2.1. Reflexivity view](image)

Subjectivity may deviate me from my path in this study, but by using critical reflexivity I watch myself construct my story as if I am another person. Through it, I may identify the potentiality of my bias (Glesne, 2006). With critical reflexivity, I may present my critical view and at the same time be critical of my own self (Rahmawati, 2012). Therefore, with critical reflexivity (see Figure 2.2), I can become objective while embracing my subjectivity (D’Cruz, Gillingham, & Melendez, 2007).

Praxis

Praxis is the standard I need to make my dream of a better society come true. If the change is what I want, then the result of this study is not merely a written document. My thesis is not only a symbol of the completion of my study. It
should become an invitation, a sounding voice that calls the reader toward the desired change. Therefore, I need to write in such a way that can stimulate the reader to take deliberate action towards changing practice (Taylor & Wallace, 1996). For this purpose, this thesis should not only be a mere final report of my study. In order to engage the reader, this thesis should reveal the process of the study itself. My writing should not only describe the result of my reflection and inquiry, but also become the reflection and the inquiry itself, which is possible since I am using narrative inquiry as a method in this study. In addition to this method, I use the first person position in my writing, in order to allow the reader to look at my study from the perspective of the ‘I’. I expect that through such perspective the reader may find him/herself involved in the process of inquiry of this study.

**Representation**

I like movies as much as I like stories since movies bring stories alive. However, sometimes I have found that some movies, which were created based on a great book, disappoint me. It seems that the movie does not represent the book well, because the way they represent the book is poorer than the imagination that was stimulated in me by reading the book. Having this experience makes me think about how well I represent my experiences in my writing.

In this study, I make meaning from my experiences. Therefore, the standard of representation of my experiences is very important. The experience should be described as richly as possible so the readers are engaged to experience it themselves through the subject’s view. By saying through the subject’s view, I consider the case when my experience is related to other people, where the subject is not myself. Making my writing heard is important, but how it will sound and whose voice will be heard are not less important. Therefore, I need to consider the way in which I represent my experience, especially when it is related to another subject. I need not reduce the subject’s view to the object of my own view (Taylor & Wallace, 1996). I need to make my voice heard as well as others’ voices when they become the subject of my inquiry.
Trustworthiness

According to Guba and Lincoln (1989), trustworthiness, which is rooted in constructivism, is a quality standard that is parallel to the validity, reliability and objectivity of post-positivism. As a researcher who grew up under post-positivist influences, having a quality standard parallel to those of post-positivism has made me a bit more comfortable. That is why I am using trustworthiness in this study to show the worthiness of this study. Through trustworthiness I am showing that: (i) I have confidence in the 'truth' of the findings about others (Credibility); (ii) the findings from this study may have applicability in other contexts (Transferability); (iii) the findings are consistent and could be repeated (Dependability); and (iv) the findings are grounded in the realities of my respondents and not simply in my own bias, or self-interest (Confirmability) (Guba & Lincoln, 1989). To evaluate my enactment of the criteria I shall use: (i) member-checking, where the interpretive findings are tested with the participants from whom the data were originally obtained. In this study I and the teacher always sit together after the class to discuss what we have done in the classroom. I used this opportunity to share my observation notes and interpretations with the teacher in order to do member checking. For data related to the students, I would confirm my observations and interpretations through my subsequent conversations with students; (ii) 'thick description' by providing sufficiently detailed descriptions that the findings can be evaluated in terms of the settings or situations to which the findings could be transferable; (iii) an 'external audit' to evaluate the accuracy of the process and the findings, whether they are well supported by the data; and (iv) an 'audit trail' by describing transparently the research process from the beginning to the development and reporting of the findings (Guba & Lincoln, 1989).

Authenticity

Whereas trustworthiness is based on constructivist assumptions, authenticity springs directly from ethical assumptions (Guba & Lincoln, 1989). There are five categories of authenticity: (i) ‘fairness’ – I need to collect and represent participants’ constructions and values in a balanced and even handed way; (ii)
‘ontological authenticity’ – by participating in this study participants have an opportunity to improve their own constructions and understandings about their world by gaining more information and a more sophisticated practice; (iii) ‘educative authenticity’ – how the study allows participants to develop a deeper understanding and appreciation of the other; (iv) ‘catalytic authenticity’ – how the study stimulates and facilitates the participants to act; and (v) ‘tactical authenticity’ – how participants are being empowered by participating in the study (Guba & Lincoln, 1989; Schwandt, 2007).

Utilizing authenticity as a quality standard in this study means that I have to apply these five categories in doing my study. In such way, I may be able to establish an authentic relationship with the participants in my study. These five categories may act as guidance for me regarding how I should relate ethically to the participants in this study. From my perspective, these categories emphasize my responsibility toward the participants. They remind me that this study is not solely about accomplishing my inquiry as a researcher. In this study I encounter the participants who call me to respond to their existence as the subjects. As subjects I need to listen to their thoughts (see Chapters V and VI) and then to express these thoughts through their authentic voices, regardless of the differences between our thoughts. I need to avoid reducing or modifying their thoughts to my own voice. This kind of response is inline with my ethical standpoint to respect the others and not to reduce them to the same as myself (see Chapters III and VII). I also need to consider the benefit and development of the participants. This consideration is also part of my responsibility in response to their being in this study. Under the influence of the critical paradigm, as I have explained before in this chapter, I am thinking critically in this study about how mathematics education can play a role in developing a better society. This thought brings me to the consideration of transformative learning (see Chapter V) that may encourage and empower the participants of this study, the teacher and the students, to be critical self-reflective thinkers (Taylor, 2013).
Crystallization

Slay (2007) metaphorically described the qualitative researcher as a bricoleur, who crafts pieces together into a seamless whole. Qualitative researchers “study things in their natural settings, attempting to make sense of, or interpret phenomena regarding the meanings people bring to them” (Denzin & Lincoln, 1994:3). Since each individual can see things or phenomena differently, a qualitative researcher needs to bring these differences together and generate understanding based on an interpretation of them. As advised by Richardson (2005), what we see depends on our own perspectives, therefore I need to value perspectival differences. The metaphor of a crystal may help to understand this standard. A crystal has many surfaces with different angles in a symmetrical way that allows it to refract light and create different beautiful colours. Crystallisation shows how acknowledgement of different perspectives provides deep, complex and richer understanding (Richardson, 2005).

This quality standard is inline with integrative ethics and critical inclusivity that emerge in this study (see Chapters III and VII). The inclusive characteristic of integrative ethics respects differences. Therefore in this study I need to be open to differences in a critical and also a respectful way. My openness, in a respectful way, to differences may help me to understand more about different perspectives. If I close myself and reject the differences then I may lose the opportunity to understand other perspectives. In addition to this openness, being critical may polish my understanding on the differences. If I am going to use the crystal metaphor again then this critical characteristic may give shape to the crystal. This shape will determine how beautiful is the crystal when reflecting the light.

SYNOPSIS

As my research proceeds, I see many new things that cause me to change bit by bit. In this chapter, I have revealed the transformation of my research methodology as I encountered different research paradigms and chose those that best suit my dream. My critical reflection on research paradigms enabled
me to realise how I had initially designed an action research methodology while holding an inadequate view from post-positivism. This shows how much the previous paradigm had influenced me, and that I had not fully realised its influence. The challenge I have taken in shifting between paradigms helped me to transform myself, and enabled me to inquire from a multi-paradigmatic perspective.

This paradigm shifting changed the characteristics of my research. Hence, I expanded my focus from my experiences in the classroom to being about my life story. I am not limiting myself to my classroom experiences, but am looking more widely at my life experiences. Through philosophical auto/ethnographic inquiry I want to combine theories that I have learned and experiences that I have had to develop rich conceptual meaning of them.

Paradigm shifting requires a change in corresponding quality standards, and I have explained my choice of appropriate quality standards to govern this research.

In the next chapter, I shall reflect on my understanding of ethics. Ethics is an ancient term that has been discussed through the eons. I shall discuss different views of ethics. These views and my cultural and social backgrounds, in the end, bring me to a consideration of 'integrated ethics', which later on shapes my view of this research.
CHAPTER III
WORLDVIEW OF ETHICS

INTRODUCTION

Time goes by...
New day comes, old days pass
Each hour... minute... second... has gone away,
The clock is ticking
Tic-toc-tic-toc...
And I’m wondering...
I have done nothing...
Facing reality while holding a dream of a life that sweet
Found myself wandering and lost in silence and loneliness
Training my mind and disciplining my spirit
For something better no more ... no less ...

Earlier in Chapter II, I have discussed the methodology I use to find the answer to my questions in this study. I have revealed how I switched from an initial research design to another design that emerged in this study. This emerging process reflected my own growth in the process of this study, especially my understanding about research.

Aside from my growth in understanding research, I also feel my need to grow in understanding ethics. Thus, I want to discuss different views on ethics. Indeed, in this little chapter, I cannot reveal all concepts of ethics that exist. So, I try to focus on the main views amongst the various concepts available. My effort in understanding ethics eventually brings me to an emerging concept of ethics, which I call integrative ethics.
SIGN OF ETHICS FROM NATURE

Having a dream reminds me of reality. Acknowledging reality while putting a dream as my purpose, provides a gap to be filled with effort and strategies. Being confronted with this gap, I am aware of my limitations. I only have two little hands that cannot even cover my own face. However, I believe that I have a responsibility within my existence in this reality. There must be something I can do. So the question is what is the best I can do with these two little hands. When I am thinking about this question, nature attracts me to turn my head. I can see the giant tree pointing to the sky while the tiny green grasses are spreading and gripping the earth. Lovely coloured bird twittering, cheering marching group of little tiny ants. All are happening under the blue sky with warm shining sun. Suddenly my eyes catch an elegant manoeuvre of a Willy Wagtail in the air. I am wondering what is the aim of that agile manoeuvre. Does it just want to show off in front of me? Then I realize that it tried to catch a flying insect. I am instantly stupefied, that funny looking little bird is a predator.

My imagination is floating away into the concept maps of the predator, allowing me to instantly imagine some predators I have known before: lion, tiger, wolf, snake, crocodile, piranha, shark, eagle and many more. Still lost in my imagination I start to imagine how those predators catch their prey. Sneaking, chasing, pouncing, gripping, biting or pecking, and other phases of hunting are playing in my mind both in slow or fast motion, just like a movie from Discovery Channel. Predators have their own way of hunting, either by group or individually, direct hunting or stealing from others, like hyena, or even just waiting for its ration like the proud male lion after the lionesses return from the hunt, what a king of the jungle. When looking from the predators’ side this moment looks so amazing. It shows the speed, power, skill and gallantry of the predators. However, when I switch my focus to the prey, the same amazing moment turns to a miserable moment. It shows the fear, struggle, helplessness and powerlessness of the prey. I imagine
the sorrowful eye and the heavy breath of a deer in its last moment when the
lioness bites its throat while the other members of the deer herd are watching
from a distance with a sad gaze and voice. Two extremely different situations
from two different views coexist in one moment.

However, these predators kill for survival, for food, and they kill just as many as
they can eat. They do not sacrifice the other for fun or personal satisfaction. I do
not know whether those animals have a ‘school’ to learn about nature’s balance.
I do not know if they have a philosopher to tell them about harmony. I do not
know if they learn about sustainability. Yet the way those creatures connect
with each other, the way they play their natural role shows the existence of
harmony, balance and sustainability. Inhaling deeply brings me back to
consciousness while being amazed by nature. Then how is it about humans, as
members of nature, as well?

I realise that sometimes human life to a certain extent is no different from life in
the jungle. Human life is enriched by differences and similarities. Just like the
big tree and tiny grass that live under the same sky and harvest the same
sunshine, there are rich people and poor people who share the same need for
food, happiness, comfort, etc. There are people with full power and authority.
There are, however, also people with much less power. Humans also compete
and struggle to preserve their existence. Within this environment of
competition and struggling, there are people who sacrifice and those being
sacrificed. There are moments where some people become victims of other
people and other moments when someone becomes a saviour of other persons.
Whether we are *homo homini lupus* (a human is a wolf for the other human) or
*homo homini socius* (a human is a friend for the other human), it is up to us what
to choose. While thinking about these choices my mind jumps back to the
hunting moment of the lionesses. Some people may say that it is natural for the
lionesses to hunt the deer, they need food to eat and it is good for nature’s
balance. When the lioness stops hunting the deer, then its population could
grow larger, and they may consume more plants, which means the destruction
of some species of plants that can cause another problem to another species.
Yet, is any argument analogous to this enough to justify sacrificing action in
human life? Is there any sound reasoning that approves this action? Is it right or wrong to sacrifice other people for my own purpose? How can I fulfil my needs without disrupting others’ needs or is it even possible? How am I supposed to live along with the other? These questions bring me to a word known as ‘ethics’.

ETHICS IN A DIFFERENT LIGHT

Being born into this world made me an intrinsic part of it, situating me in relationships within a massive network. Siblings, families, colleagues and friends are people whom I am clearly related to. However, sometimes this network becomes too broad and fuzzy. I could be related to a person whom I have not recognized or encountered yet. It might happen since people, whom I am related to, bring along their own relations. And that is how a massive and complex network arises. The differences and similarities open a great possibility for conflict as well as for happiness and harmony when we are living with the other, each of whom possesses needs, desires and goals. For me, this possibility brings forth the need for consideration of ethics.

This very old word, ethics, has been discussed for a very long period and been understood in different ways. The first time I encountered this ancient word and tried to understand it, was like being in a debating room full of people. They use strange terms, which are unfamiliar to me. And they do not bother to tell new people, who enter the room like me, about what has been discussed before (Hinman, 2008). It certainly put me into a deep dark jungle, where there are different kinds of plants, each with their beauty and uniqueness. It is a place where differences and contradictions exist along with similarity and fuzziness. There is black and white yet even grey and other colours. In this jungle I walked with small steps, wandering around trying to find out where I am standing, trying to understand the environment around me in a critical way, without even knowing my direction. Honestly, sometimes I felt exhausted from wandering around this huge area. Confusion, anxiety, and loneliness were frequently by my side. And for sure there were times when those feelings made this quest of critical reflection much harder. When those moments came, the darkness
looked darker and the burden felt heavier, the fatigue caused more pain and the thirst felt drier. At this moment sometimes my ego asked for priority. I felt the need for some special treatment, to have a privilege or even an excuse. Frequently this self-justification turned me along a different path. Instead of exploring and understanding the jungle, I would choose to stay and forget that I am lost. There was a moment when I forgot my first goal, the reason for being in the jungle. Yet somehow, by realizing that I was in this kind of moment, I could understand how sometimes people make an excuse and forget about their concerns for the other. Fortunately, I have a supervisor, Peter Taylor, who woke me up with a friendly greeting and brought me back to the ground. It was he who said that I have to learn to live with my internal anxiety, while keeping a strong moral stand, and a commitment to contribute to making changes. This commitment is the reason for me to enter the jungle. It is a commitment born from the dream of change for a better future. For sure I do not belong in this jungle. I did not come from it, yet I came to it to reflect on myself, to explore and develop more understanding about my society, my environment, and myself. With this understanding then this jungle will not be a place in the middle of nowhere anymore, rather it will be a favourite place for me to visit more and more. It will be a place of silence, a hermitage, to gain more knowledge and inspiration for something better.

The eagerness to stay lost, as an effect of my self-justification, and the consideration of the first goal of my dream, indeed raised an internal conflict within me. Holding tight to the dream and commitment, however, turned my sight upside down. That friendly greeting is just like a little light in the darkness that helped me to see from the other side. The existence of darkness helped me to realize my longing for the light. The extreme thirst brought me to an awareness of my need for refreshing water. The loneliness indicated my need for the other. And the heavy burden reminded me of the preciousness and beauty of help, no matter how small it is. These all reminded me of the story about a prisoner who needed ten long years of solitary confinement in a cold-dark room to realize the beauty of an ant (De Mello, 2003). So, being lost in this critical reflection was not necessarily a bad thing. It provided me a moment to
see into myself, just like reflecting myself in a mirror. It was the moment to consider and respect my own limits. This was a special moment that I would not have experienced daily in regular time.

With a little light, I mustered my strength and will to continue my quest of exploring the dark jungle. Every step was counted, each shape was observed, and any sound was listened to. I was looking, listening and feeling to have enough pieces of the puzzle to construct a coherent understanding. Considering my limits I realized that there is no genuinely complete set of pieces, yet I still needed to have a big picture, my own map of this jungle. So, I tried to reach a higher place to look back at the areas that I had travelled through. From this view I could see that it is hard to find exact partitions within the jungle, since sometimes some areas seem to share common things while containing other different things, for some unknown reasons. Trying to figure out the big picture, I found some names such as: ethics of virtue, Kantian (deontology), Utilitarianism, religious ethics, and ethics of encounter. Indeed there are so many more names or concepts, as Bernard William (2006:17) said, “perhaps we need as many [ethical] concepts to describe it as we find we need, and no fewer”. However, again working with a sense of my limits drove me to the word ‘enough’.

Socrates (William, 2006; Ahbel-Rappe & Kamtekar, 2009) once asked the question, “How should one live?”. It is a short question, yet after a very long period of time this question is still valid. Maybe it is worth to be seen as an everlasting question. It is a very fundamental question that can be responded to from many points of view, which will end with a lot of different answers and arguments. If I myself was asked this question, I may think about my way of living or the style of my life as an individual. I may also think about my life as part of a social community. It could be about how I see myself, how I see the other, how the other sees me, or even how I want the other to see me. It might also be about how I treat myself and how I treat the other, what is my responsibility as an individual and as a part of community. So now I am starting to raise questions in order to find an answer to that fundamental question. In fact, there is another old question derived from that first question that had been
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deeply considered by moral philosophers, which is, “What kind of person do I want to be?”.  

Ethics of Virtue

Recently there are so many superhero movies being released, for example: Man of Steel (Superman), Ironman, Wolverine, Hulk, Spiderman, and Batman. And I am a big fan of those superheroes. Since I was a kid, I have liked to watch superhero movies or read superhero comics. I still remember the first superheroes I knew from the movie: Megaloman, a man who can transform into a giant hero with the ability to make fire from his long hair; Ultraman also can transform to a super power giant to fight with a giant monster; Lionman, a samurai who can transform into a lion-like human with his ultimate sword. All these superheroes possess a super power that allows them to fight against evil characters and protect powerless people. I remember how I always straight away imitated the super hero action after I saw the movie. And of course I was not the only one, all my playmates who knew the story wanted to play the superhero role when we were playing together. Nobody wanted to be the bad guy. So we decided to play the superhero and bad guy roles in rotation. I wonder why we liked to be the superhero rather than the bad guy. If most people like to see the superhero with that virtue character, why is there still lack of virtue in many people’s action? Did we consider about the goodness or just the power, since the superhero always wins against the bad guy by using super power?

Story indeed has a great potential for delivering a message. However, it is possible that each person who listens to the same story grasps a different message. When I listened to a superhero story my imagination was triggered. Images that emerged continuously changed in my mind along with the story. The story came alive in my mind. Somehow those images related to my previous experiences. That is how the images and the story made sense to me, since those are related to my own experiences. Hence, it is not surprising that every person
may have different interpretations and grasp different messages from a story, since the experience may be different for each other.

People who listened to a certain superhero story may be attracted or moved for different reasons. One may be moved by their admiration about the ability or the power of the hero while the other may be moved by the action of fighting for good against evil, or may be just moved by the emotion through the movie. Usually the message that people gain from what they listen to or experience depends on what factor they are attracted to or moved by. After listening to such stories people may gain a message about trying to find ways to gain more power or choose a way to develop a virtuous character.

The story about virtue has been told through the ages in various ways. It is likely that every nation has a lot of virtue stories. With recent technology those stories are being shared between nations. However, what is the meaning of this virtue? Is it only about a brave hero who gives his/her life for the country? How is virtue related to ethics? Aristotle used the word virtue when he explained his idea about ethics. Therefore some people call his idea the ethics of virtue. According to Aristotle, virtue is “a habit or disposition of the soul, involving both feeling and action, to seek the mean in all things relative to us, where the mean is defined through reason as the prudent man would define it” (Hinman, 2008, p.268). Based on this definition, the genus proxima of virtue is a habit or disposition by which a person is able to determine the mean between two opposite extremes: excess and deficiency (Crisp, 2004). Generosity, as an example, can be seen as a mean between wastefulness and stinginess. Since it is a habit or disposition then this character is not congenital. It is something that can be cultivated. By saying that it involves feelings and actions then virtue is not merely a feeling or a capability to act. It is a state of character that makes humans good and able to perform well (Crisp, 2004).

The interesting thing for me when reading this definition is the assertion on reasoning and a prudent person for defining the mean between excess and deficiency. Reasoning is necessary since, as mentioned in the definition, the mean is relative to us. The mean is not a product of arithmetic calculation and is
not necessarily the same for every person, yet it is relative to us. Then reasoning plays a great role here in determining the mean. That is how virtuous characters, such as courage, generosity, temperance, friendliness, etc., have been determined.

However, suddenly my mind is playing a bit naughty about this ‘mean’. By saying that virtue makes its possessor able to act in an excellent way (Hinman, 2008) then I am asking myself, if a thief performs excellently when stealing, and stealing a medium amount, can we call him/her a virtuous thief? Stealing or committing any depravity is deficient. Therefore there is no mean of deficiency, in the same way as there is no mean of excess (Crisp, 2004). Stealing a medium amount does not make it better than stealing a little or a lot.

Here is the role of the prudent person. Since a prudent person would not commit such depravity then the rational choice of those actions does not involve virtue. However, here is the problem for me to understand virtue ethics. If the prudent person is the standard for virtue, then who is the prudent one? Still, according to this, who can be called a virtuous person? Is it right to rely for justification on a human who is assumed to be imperfect? If I cannot find a prudent person then with whom should I compare my actions? How can I determine whether my reasoning for a rational choice is good or not? Is it courage when a soldier gives his life for the sake of his fellow soldier? Is it courage when a terrorist gives his life for the sake of his ideology? Such questions seem to be problematic in virtue ethics. These questions then bring me to start thinking about another question, which is how one should act.

**Utilitarian Ethics**

Sometimes I think about how exactly a good person will act in a given situation. When am I being called a good person based on my actions? What kind of action is called good? With these questions I turn my eyes to views of ethics that focus on how we should act, namely, ethics of action. One of these is known as Utilitarianism. Regarding those questions, Utilitarian ethics offers something interesting. In simple words, though it may not thoroughly explain the idea, it
can be said that every action that causes a positive impact is a good thing to do. The most basic concern of utilitarian ethical thought is individual welfare (William, 2006). In other words, the concern here is that our actions should bring about welfare. Initially Bentham (1879; Craig, 2005) interpreted welfare in the most natural way as the existence of pleasure and the lack of pain. Later, Mill (Brink, 2013) reformulated this as happiness, by Moore as ideal goods (such as freedom, knowledge, and justice), and as individual preferences by Arrow (Hinman, 2008). The word utility also is commonly used for these interpretations. The more utility is brought the better the state of affairs. Thus ethical value is located in the state of affairs (William, 2006; Hutchinson, 2001). A bad action may result in pain or negative consequence that causes a bad state of affairs. So, if an action results in a good state of affairs then it is a good action, since the main idea is producing the best achievable state of affairs. In this way Utilitarian ethics provides a criterion for the goodness of an action according to the consequence(s) or outcome(s) of the action (Hinman, 2008).

So, apparently utilitarian ethics directs us to search for anything that will provide the best overall possible utility, against negative consequences. In reality, the consequences of an action sometimes are not necessarily exclusively positive or negative. One action could have both consequences at the same time. For example eating junk food is not good for health, yet the taste is so tempting. Here the action of eating junk food has two controverted consequences. One is giving a good taste, which brings pleasure, and the other is a side effect that can harm our body. So, here we are supposed to calculate the difference between positive and negative consequences. Anything that eventually has utility greater than negative consequences is considered to be good, and the best is the one that provides the greatest utility. However, what actually does this ‘anything’ mean? Utilitarian ethics actually focuses on three different things, though not necessarily truly separated, that cause consequences, such as acts, rules and practices (Hinman, 2008).

Let us imagine an officer who is chasing a speeding car with speed far beyond the official limit. Yet after realizing that there is a pregnant lady in the passenger seat, the officer turns from chasing to guiding the car to the hospital. A
Utilitarian who focuses on acts would do as the officer did, since helping the driver will save the lady and the nearly born baby. If the officer just stops and fines the driver for the sake of the law he may feel satisfied for administering the law, yet there are more people being unsatisfied, even endangering the lady as a result of the delay. This type of utilitarian will definitely “perform the act that will produce the greatest overall amount of utility” (Hinman, 2008, p.149). However, this type of utilitarian will easily disobey some rule or moral value for the sake of the greatest overall utility. For the sake of political stability and avoiding conflicts within society, a government may punish a person who radically criticizes the current policy, thinking that sacrificing one person is better than sacrificing the whole society. However, it remains a sacrifice of a person and, moreover, it is possible that following the idea of the sacrificed person could transform the society into a better state. How precisely is our calculation predicting possible consequences? How far can we calculate consequences for the future?

The type of Utilitarian that focus on rules will choose to act based on the rule that will produce the greatest overall amount of utility (Hinman, 2008; Goodin, 1995). It is assumed that the accepted rules of society will provide guidance about how to gain the greatest utility, yet this type also is not without problem. Consider if the calculation of utility is being held in a certain society that consists of a majority and a minority of people. Is it not possible that for the greatest overall utility then the happiness of the majority will definitely be granted, when these two group have different preferences? Is it not possible that the minority will be oppressed while the majority will hold the rule tight?

The last type of utilitarian, that focus on practice, seems compromises the dilemma. For this type of Utilitarian any practice that produce the greatest amount of utility will be supported (Hinman, 2008). A practice may include rules that guide the act. So, with this type the action and the rule were placed in the equal position. The practice of rewarding students with high performances involves the act of giving the reward and the rules about giving the reward. In this case, the student with highest performance is expected to receive better rewards than student with less high performance. This consideration is not
based on the consequence of giving the reward but more likely because the student deserves such reward. This type of utilitarian allows the combination between Utilitarian and Kantian, the ethics of duty.

Kantian Ethics

Immanuel Kant suggested something different from Utilitarianism. If Utilitarianism justifies an action based on consequences, then Kantianism justifies an action based on something that precedes the action: the motive before the action. William (2006) said that, for a Kantian, moral consideration occurs ultimately in the agent’s will. Helping the other by looking for payment is different from reasoning that one has a duty to serve. Doing something from willingness is different from doing it due to a fear of consequence of when it is not done.

The core of Kantian ethics is laid on three pillars: the sake of duty, universalizability, and respect (Hinman, 2008). The sake of duty means that we need to act in a certain way since that is the right action. Returning a dropped wallet, which is full of money, to the owner even when you don’t have money is the right thing to do. Duty has an imperative characteristic that commands a person under the duty to act. The order from duty is unconditional. Thus, a morally worthy action does not depend on the consequence after the action, as it is for Utilitarianism. I cannot say that I shall carry out this duty, not the other one, because in the end this one will make me happy while the other one will not. It does not matter if we have pleasure or pain after carrying out the duty. We only need to carry out the duty. In order to act morally we need to act autonomously (William, 2006). Duty is the motive for our action. It is not a result of social consideration or pressure. However, some people misunderstood Kant’s ethics of duty as blind obedience to duty (Hinman, 2008). The second pillar, universalizability, stands as a counter to blind obedience.

Each person has a subjective rule in mind in the background of every action he/she takes. Thus an action will be accepted as morally right if others accept the subjective rule in a similar way. This is what is meant by universalizability.
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Such subjective rules are called ‘maxims’ (Hinman, 2008). As Kant (1999, p.164) said, “So act that the maxim of your will could always hold at the same time as a principle in a giving of universal law”. So it is not only an act based on what we believe to be our duty in certain circumstances, yet we need to consider whether the act will be accepted by the other when being in a similar circumstance. The similar circumstance here opens the possibility for exceptions in Kant’s view. It is not completely rigid.

Consider an example about lying. If lying is not morally accepted then nobody is supposed to lie. However, telling a lie could be accepted as morally right action when this lie can save an innocent life. Saving innocent life here is a circumstance. Then the universality of the lying action is that anybody under a similar circumstance could be permitted to lie. Thus, when we need to make a decision about an action based on Kant’s view, we need to consider whether the other will act in the same way under similar circumstances. So it can be said that in this view the morally acceptable action is determined through a set of principles that can be universalized.

The last pillar, respect, is more about action related to how we treat the other. Our relationship with the other should not merely be centred on our own goal. We need to respect others’ goal. There are some people who treat the other as a means to satisfy their own needs. This action may be considered unethical. Treating the other as merely a mean is ethically wrong. As asserted by Kant, “act in such a way that you always treat humanity, whether in your own person or in the person of any other, never simply as a means, but always at the same time as an end” (Hinman, 2008:179).

All three pillars of Kantian ethics focus on our action to carry out our duty, yet Kant seems to avoid the involvement of emotion in this action. It is reasoning that places priority in understanding our duty and considering the universality of an action. There is no place for feelings as motivation of an action. Thus, an action merely comes from the head not the heart. Emotion is seen as a force that can disrupt our commitment. It can unduly influence our view toward what is right. However, is emotion not part of being a human? Do compassion or
sympathy mean nothing? We may assume that our feelings could interrupt our view, but feeling toward the other also potentially strengthens our commitment for respecting humanity. It can be a basis for our action toward the other.

**Ethical influence from my religion**

Reflecting on these three concepts of ethics brings me to reflect on my own experience. It reminds me about what I have heard, seen and been involved in during my journey so far. Though I had never heard the word Utilitarian, and though I had never encountered Kant, Aristotle or other figures in ethics, I encountered their ideas through my experience. Starting from my childhood, I knew about pain and happiness. I have parents who become the first model for what kind of person I want to be. They introduced me to the world of character even without a complicated lecture. In my school period I had teachers who taught me about rights and obligations. I learned about rules. I had a community where I became a friend with values. I learned, and not only that, I grew, I lived with those different concepts through every moment of my life.

I realize that everything outside myself has contributed to who I am right now. There are many things that I learned from myself, and from my community. Indeed, I learned values from my social community where I grew up. One of the social communities that had a great influence on my growth was a religious community. Other than the concepts discussed above, I have been influenced as well by my religion. If Kant promoted universal law as the base for any action then in most religions there is a Divine law as a base for any action. In other words, any action should be inline with this Divine law. Most religions provide a number of rules or guides for living. As examples, the 10 commandments for Christians, the Shari’ah for Muslims, the Torah for Jews, 8 fold path for Buddhists, the Three Duties of Sikhism for Sikhs, etc. Many of the followers of these religions believe in their rules or guides as absolute and follow them as mandatory.

Apart from the Divine law of my religion, Catholicism, I also learned that humans are conferred by God with free will. It is a freedom that is rooted in
reason and will, as a power to do or not to do, based on my own responsibility (Catechism of The Catholic Church; Part3 Sec. 1 Ch.1 art.3, 1731). As I believe that by creating man in His image, God has willed that man remain "under the control of his own decisions," (Gaudium et Spes, 1965;17), then it is my choice whether to be good or evil. Freedom is always coloured by choice, and this is true as well for free will. By free will I have a choice between good and evil, and any choice I make is my responsibility. So, I am imputable for that choice. I am fully motivated from my free will within myself, and not from blind internal impulse or external pressure. I could choose good or evil in equal probability, thus I can make sin as well as good, though my church has provided a doctrine as a guide for choosing the good. That is the characteristic of my humanity. I will never mature if I am being steered all the time. It will not be me anymore if my brain is being washed by a doctrine. With free will I shape and reshape myself. That is how freedom becomes the force for me to grow and to be mature in truth and goodness.

In addition to free will, I also learned about virtue from my religion. Here we have two types of virtue, which are theological virtue: faith, hope and love/charity (Lindsey, 2010); and cardinal virtue: prudence, justice, fortitude and temperance (Donohue, 2013). A virtue here is defined as an habitual and firm disposition to do good and also to give the best of oneself (Catechism of The Catholic Church; Part3 Sec. 1 Ch.1 art.7, 1803). Thus a virtuous person inclines toward the good and chooses it in concrete actions. By faith I committed myself freely to God and fully submitted my self, my intellect and my will to God (Dei Verbum, 1965;5). With this faith I have a hope for the salvation, help and grace of God. And by having all of this I can share love/charity to the other for the love of God. The other cardinal virtues play a pivotal role in governing my action, order my passions and guide my conduct in accordance with reason and faith (Catechism of The Catholic Church; Part3 Sec. 1 Ch.1 art.7, 1805, 1834). It seems that here I have found extracts of other ethics concepts integrated in one place. Nonetheless this is the guidance I have from my religion, yet I cannot enforce it to the other. I can only reveal it through my performance while growing with it, so the other can see and understand it.
Ethics of Encounter

In the middle of my reflection on ethics, I feel like having a break and watching a movie. And I choose to watch a movie that I have liked most since I was a kid, which is a martial arts movie. This time I have a Chinese Kungfu movie titled “True Legend”, directed by Yuen Woo-ping. This movie is about a general who left his position behind and dedicated his life to mastering a martial art. However, revenge was colouring his life with hardness and bitterness that separated him from his family and he lost his wife. Yet, at the end, he mastered an ultimate style known as ‘drunken fist’ and was raised up from the very bottom of his life. However, rather than the long story of his life there is a line in this movie that moved me, which is:

…
Mind meets fist
Stop obsessing about form
Heart and fist are one
To lose is not to lose
To win is not to win
…

In this movie the drunken fist style was truly ‘out of the box’. The way of stepping looked random and arbitrary yet was efficient. It can be said that there is no form to it. Thus it can deceive the opponent since the direction and the source of attack are not easy to predict. And it is hard for the opponent to attack, since he always seems to move in an arbitrary way. When he leaves the standard form of other styles, he moves forward with flexibility and has more possibility for movements. This movie inspired me that form sometime restricts movement. The regulations, principles or requirements that come along with the form may become a source of rigidness. However, when the heart and fist become one, when the soul and body are integrated, then the form is not important anymore, since any movement will come with the heart, with the soul. The form will be loosened yet will not disappear. Here I start to think about different forms of ethics. When will this difference not be a problem anymore?
In the West, concern about ethics started in the era of Greek philosophy. Socrates’ famous question, ‘How one should live?’, could be seen as the starting point for this concern. The effort to answer this question by philosophers has resulted in different understandings of ethics, such as ethics of character and ethics of action. Facing this difference makes me feel like that inside me there is a barrier. It is a barrier that prevents me doing something, since one action can be accepted by one view while rejected by another. This pushes me to try to go out from the barrier. I try not to be bothered by the differences but without forgetting them. By keeping the differences in my mind and suppressing the demand to dominate by each, I start to seek the first reason for this difference.

When the disturbance of the difference is reduced, I find another view that focuses on relationship with the other. Then I realize that the difference starts from an eagerness to seek a guide for living. It is a guide to live with the other. As a human being we are related to the other. And there is ethical character in our relationships with the other as the most determinative feature of our existence with others in the world (Morgan, 2011). The awareness of the other, with the way that they present themselves, becomes the starting point for the consideration of ethics. The existence of the other is the condition of possibility for ethics (Chritchley, 1999). When I experience the existence of the other I do not create the other nor the idea about the other, yet I am being conscious of the presence of the other, from outside of me. Then any idea about the other should come originally from the other as an exterior independent source. The other itself fundamentally surpasses any idea I have about the other. Thus the other should not be reduced to what I can grasp or to the same as me. The other is different yet not less than me. Levinas said that ethics should be a place of a point of exteriority that cannot be reduced to the same as me (Critchley, 1999).

Initially for Levinas (1979, p.43), ethics is defined as “[a] calling into question of my spontaneity by the presence of the other’. It is a critique of our spontaneity to reduce the other to the same, as Western philosophy tends to do (Morgan, 2011). It might not be possible that we truly understand the other. Thus, in order to understand the other, sometimes we tend to reduce them, so that we can grasp them. The moment we reduce the other to the same, then the
difference between the other and us fades. This difference is the point of
quickness, the otherness, of the other. Then reducing this uniqueness means
reducing the essence of the other. Furthermore, through this uniqueness
actually we can understand ourselves better. By understanding the uniqueness
of the other we understand our own uniqueness.

Levinas is interested in how we relate face to face with the other, in a way that is
grounded in our mutual uniqueness (Morgan, 2011). In other words, the central
idea here is the importance of being related to the other with respect to the
otherness while avoiding reducing the other to the same (Dahlberg & Moss,
2007). The moment the other appears in front of us, they claim their existence
in this world. The other comes in front of me with demands and needs, and calls
me to respond to them. Then in my relationship with the other, I am being called
to acknowledge and accept the existence of the other and respond to the call. As
Morgan (2007, p.43) said, “I am imposed upon, called into question, beseeched,
and commanded, and thereby I am responsible”. Somehow in this way, I become
a moral agent before a cognitive one; I am responsible before I am an observer
or explainer or interpreter (Morgan, 2007). My singularity as a subject is
recognised by my spontaneity to respond the call of the other. I am unique
because there is no one who can respond in my place (Levinas, 1996). As
asserted by Anna Strhan (2012, p. 33), “I am ‘elected’ to my unique subjectivity
through the singular way in which I can respond”.

Here, ethics is not merely about cognitive matter or theory (Morgan, 2011).
Ethics is born when we are encountering or related to the other (Egea-Kuehne,
2008). As I am a particular person, then the appearance of the other before me
is a revelation of another particular person. This is the forgotten thing in our
ordinary life. It is not about the value but the presence of the other and my
responsibility toward this other. Moral consciousness is not merely about moral
commandment for doing the right thing, but it is the command that comes from
the other who calls me (Morgan, 2007). Moral consciousness does not end with
the experience of value, it is access to an exterior being (Chritchley, 1999).
Through moral consciousness I am responding to the other, welcoming the
other, instead of grasping and reducing the other. By welcoming the other it
means that in this relationship I respect radical otherness and singularity. According to the way we put the other prior to ourselves and being obligated in the relationship with the other, it can be said that moral agency arises when there are an obligating other and a responsible self with the presence of the priority of the other and the service of the self (Cohen, 2004).

Furthermore, for Levinas ethical work is not necessarily symmetry. It is a movement from myself towards the other, by putting the other prior to myself, and never returns to the same. As asserted by Critchley (1999:109), “ethical work must possess a movement, which exceeds the circle of the self and goes unto the other without ever turning back”. It is indeed a radical generosity. It is a generosity without mathematical calculation. However, this responsibility comes with the call of the other, which is not limited to one or some other, but all the encountered others. However, It is unavoidable in daily life that we need to negotiate our responsibilities, by giving to some and not to others, sharing more with some, while less with the other (Morgan, 2011).

**A THOUGHT TOWARD INTEGRATIVE ETHICS**

Earlier when I started to learn mathematics I saw, as did most others, that mathematics has an absolute truth. However, later I learned that $12 + 1$ is not always $13$, yet it could be $1$ as happens on the clock. That $x = 1$ is a point on the number line (one dimensional) while it is a line in a two-dimensional system or even a plane in a three-dimensional system. That the graph of $x^2 + y^2 = 1$ could be different depending on the space where it is defined. Then I came to realize that truth in mathematics is absolute in each system only, but it is not absolute in the whole system.

Absolute truth or rightness is problematic in reality. Some religious people may say that they have found the absolute truth within their religion while others have found it in a different way. However, there are many religions and if each claimed that the absolute truth belongs to a religion, then either there are so many truths in this reality or all of them are the same or none of them is true, which is problematic. In addition, the same claim may come from non-religious
people. Certainly I am not here to judge which one is true or otherwise. However, it is not impossible that conflict may arise from these differences. I have seen a lot of conflicts, either small or big, initiated by claims of absolute truth. It is ironic that truth becomes the reason for a disaster from conflict between those who claim to be the defenders of the truth.

The matter of right or wrong in real life, indeed, is not as simple as whether $1+1=2$. Let us play a bit with our imagination. Assume that there are demons and some good people who are able to defeat the demons. Somehow these two groups confront one another and one of the demons is cornered. Suddenly another demon tries to protect the cornered demon, though this effort fails to save that one. On another day the demon’s troop visits the humans to revenge one of their members and kills some humans. Then, moved by their brotherhood, those good people gather and on behalf of their deceased brother they take another fight with the demons. Then this circle goes on and on.

Sometimes I ask myself whether it is right to kill a demon when killing is seen as a wrong thing to do. However, as a mere human like others I may say that since it is a demon it is fine, saying that it is killing a human that is forbidden. Or some may give another excuse, such as it is right to kill the bad guy. Apparently sometimes we like to make an exception with certain conditions. If a human defends or revenges another, we call it brotherhood or loyalty to the other. However, if it is the demon that takes revenge then we call it hatred or rage. When it is a human who puts his or her life to protect another human we call it courage or heroic. On the contrary if demons do the same thing we pay no respect to that action, as though it is nothing since they are demons. Nothing good comes from demons. But it looks like this axiom strictly restricts our mind. If carrying out our duty well is a good thing to do and we highly respect good people for carrying out their duty to fight the demons, then why cannot we respect the demons for carrying out their duty perfectly in deceiving the human? It may seem weird when I am talking about respecting something that comes from a demon. So what if we change the demon’s place with another group of humans. Since they are just humans now, is it easy to say which is the good one?
People have different ways to respond to differences. For some people it is easy to call the opposite group the enemy and treat them as demons that have nothing good to offer. In fact, some people use the term demon or other terms, to put their opposition in a disadvantaged position or as an excuse to eliminate them, while other people can see the different sides, as in a sport-contest, where there is no evil or good side. There is only an attempt to demonstrate the excellences of each group, competing in a sportive way. From this neutral position there will be respect for all good things from each side as well as the weaknesses.

Sometimes it is easier for us to exclude any differences or opposition when protecting our own view or belief, by means of which we create an exclusive position. Being in the exclusive position we can protect our identity, belief or whatever the reason for that exclusivity. But within the exclusive position we can also learn well and strengthen our identity or belief, since we are focusing our position. We can see how we are different to the other. This exclusiveness may conserve the position as how we like to see it or as we believe it is supposed to be. Yet somehow this conservation could also put us in a conservative position, where we close ourselves to any influence from outside that potentially could change us. The issue is that changes are not always bad. Through change we could become better; like a caterpillar takes the change through metamorphosis to become a gorgeous butterfly. Changes could be a bridge for us to be closer to perfection. In this way exclusiveness could be an obstacle for us, since it excludes the nourishment and the opportunity for us to grow. It can put us in a dry state.

![Diagram of exclusive and inclusive]

**Figure 3.1. Exclusive and inclusive**
On the contrary, if we are brave enough to open our mind to see and except the differences, we may have the opportunity to grow into a better state of being. Instead of excluding all differences we may include them into our growing process. By including and being included into the differences we can learn and understand more. Knowing that snow is cold from hearing is different than experiencing it directly. By experiencing the difference directly we can avoid bias from poor interpretation. Thus we gain richer understanding through which respect will be grown, just like a turtle, which is brave enough to come out from its shell, experience and explore the outside world while growing in it.

Differences in ethics concepts show that there are a lot of ways to explain and approach ethics. This variety of concepts could be seen as well as a sign about how our views and understandings of ethics are limited. As we have found in history, other than followers every concept also comes with some critics. Therefore, perhaps we need many concepts to describe ethics and no fewer (William, 2006; Louden, 1992; Besser & Slote, 2015; Johnson, 1997). One concept exclusively may limit our understanding while integrating some concepts may extend us. Courage as a promoted characteristic in virtue ethics is also a displayed character by terrorists in their actions, and they are proud of this action. Duty or rules sometimes become an alibi for misconduct when it is blindly followed without conscience. Even exclusivity from some religions, which are presumed to teach peace, also happens sometimes to be a reason for conflicts. When virtue character stands alone we may have less guidance on how to act, while when merely duty leads the way we may act without conscience. And excessive fanaticism in one religion may loosen respect toward diversity. Do we not need courage, integrity and other character traits to convey our duty, to fill our actions with our beliefs, to search for happiness for ourselves and for the others?

That is why we need an integration of these concepts of ethics. This integration will be able to reduce the incompleteness of each when each of them stands alone. The consideration within this integration would cover the action and the person who acts, the principles and the person who implements them, then there is no doubt that an ethics of character must be complemented by an ethics
of action (Hinman, 2008). When we act compassionately toward other people, we must also be aware of their rights, take into account the consequences of our compassionate actions, and treat other persons as ends in themselves. That is how “ethics of action” complete “ethics of character”. Ethics of action is equally in need of an ethics of character for at least two reasons (Hinman, 2008). First, many people do right action merely because it should be done. They do it mechanically. We need a good character to get into the situation. A good character does a morally right thing consciously. A good character is not only being controlled by moral principles but chooses to act based on them. Second, there are several different moral traditions about how to act, and a good character can wisely balance the concerns from those traditions. Nevertheless, why do we need to cultivate such a character; why do we need to convey our duty, to follow the rule; why do we need to consider about the happy end? Is it merely for myself, for the other or for all? If I am alone in this world do I need to think about all of these things?

I consider courage because there is the other that could discourage as well as encourage me. I think about the rule and duty, because there is the other that exists besides me. I have concern about happiness or goodness since there is the other that affects and is affected by my existence. It is the presence of the other that demands me to consider these things. This demand subsists at the moment I exist along and am engaged with the other. By appearing in front of me the other comes with a need to share the world with me (Morgan, 2011). The presence of the other that is encountered by me summons me to respond (Levinas, 1962). It is my inescapable responsibility to provide a response. And those considerations, concerns or actions of mine are the way that I respond to the demand from the presence of the other.

The presence of the other is a requirement for the possibility of ethics, since ethics exists when I relate to the other. For Levinas, ethics is simply and entirely the event of this relation (Critchley, 1999). It is the event where I encounter the other. As I encounter the other I am called to do something toward this other. I could accept or reject. However, at the moment I have this call, consciously or not, I have received the existence of the other. And before I respond to the call
this other can also possibly do something regardless of my response, since this other is a being like me, yet different. That is how I as a self relate to the other self, which is different and can’t be reduced to the same as me. Ethics is about this whole relation not only about my response toward the other. It is about encountering and being encountered by the other, calling and being called, responding or being responded to. So ethics happen before we are consciously able to respond. Even the call is not about our consciousness or wilfulness, but it is instantaneously aroused in the moment we encounter the other. Thus, it can be said that ethics happens before our consciousness or tacit knowledge. Since ethics is not merely about a response then character, duty or principles only is not enough to understand it.

Because ethics is about the whole relationship event then it is necessary to reflect on the relationship. It is essential that ethical thought should stand up to reflection (William, 2006). Through reflection on the relationship other concepts of ethics will emerge. There will be consideration about how I should act, such as what is my duty as a part of a community, Kantian ethics; or what makes good for me and for the other, Utilitarian ethics. There would also possibly be a consideration about what kind of person I want to be, Virtue Character. Thus, reflection on the relationship provides an opportunity to integrate rather than conflict each concept. Through this reflection I have an opportunity to better understand the other, how the other is equal yet different than me. It is the opportunity that brings respect to the diversity.

If I now turn my sight to the person who is considering ethics and performs based on that consideration then, following Levinas, it means that the person is being radically generous. This is a generosity without mathematical calculation, an asymmetrical generosity, where the ethical work must be sent out to the other without being returned back (Critchley, 1999). This means that when I respond to my responsibility to the other I perform an ethical work without hoping for any compensation.

I realize, through my experience, that doing so is not without any problem. Sometimes my attempts to place the other prior to myself may harm myself or
have a negative impact on the other. However, there is no universal rule that can be used as a guide for any situation. An acceptable ethical decision applied in a certain situation may not be accepted in another situation. As Aristotle said, ethics is not capturable in a set of explicit principles (Morgan, 2011). Thus we need wisdom as a capacity to see the situation correctly, not only for applying the rule or conveying the duty. To bring an end to this reflection about ethics I want to tell a story, which was emailed to me by my friend.

_A young hermit is meditating under a tree next to a river when he is disturbed by an irregular splash sound from the river. Being curious because of the sound he opens his eyes and looks to the river to find out the source of that sound. He finds that the sound is coming from a crab struggling to reach the riverside in order to avoid being swept away by the river's flow. Being moved by compassion the young hermit extends his own hand to help the crab. Seeing that the hand of the hermit is within range, the crab instantly clamps the tip of hermit's finger so the young hermit can bring it up to the land. Though his finger is hurt, the young hermit feels satisfied after saving the crab. However, not too long after he tries to enter the silence of his meditation, he hears the splash again. He opens his eyes and finds that the same crab is in the water and is struggling to reach the riverside. Again he offers his hand to save the misery crab. This incident happens over and over until the hermit's finger is wounded badly. An old man approaches and asks him, “Why do you hurt yourself for that crab?” “I want to cultivate compassion in my heart, and I am happy even if it was only a crab. This wound is nothing.” After hearing the answer the old man takes a tree branch and lets the crab reach it so he can pull it out of water. Then he says, “It is a great thing to cultivate compassion, however it must be also accompanied by wisdom. You can use the tree branch instead of hurting yourself.”_

**SYNOPSIS**

The massive social network where I live is characterized by differences and similarities. This diversity stimulated my concern about how I should relate to the other. Thus I am called to reflect on my relationship with the other. Reflecting on differences and similarities helps me to better understand myself, as well as the other. And through philosophical reflection on the relationship with the other, I have learned different views of ethics. In this chapter I have revealed my reflections on these views and found the richness of an integrated
view of ethics instead of holding them separately. This integrated view of ethics calls for reflection on one's relationship with the other.

Concern for this relationship will open the opportunity for mathematics instruction to bring ethics into the classroom. Being related with the other is human nature - a nature that is unavoidable in the mathematics classroom. Having a concern for this relationship while teaching mathematics concepts will also cultivate a concern about ethics. Further discussion about this will be presented later in Chapter V.

In the next chapter, Chapter IV, I will discuss my reflections on Indonesia’s educational history from the pre-colonial period until the post Indonesian independence period in order to reveal a concern for ethics within the Indonesian education system, especially in the curriculum. I shall reflect on this history to try to reveal Indonesian education development and to find traces of concerns about ethics in Indonesian education. My reflection starts with a story of Ki Hadjar Dewantara, the father of Indonesian education, to try to uncover his vision and dream for Indonesia through education. My reflection continues on the educational history of Indonesia. Developing an image of Indonesian education in the past will enable me to understand better what is happening currently in our education system. My reflection closes with a discussion of what I have learned from history in relation to my inquiry into how mathematics education may contribute to the development of students’ ethical responsibility.
CHAPTER IV
LESSON LEARNED FROM INDONESIAN EDUCATIONAL HISTORY

INTRODUCTION

The rain was coming down hard. It was soaking the earth, washing away the sultry feeling from the tropical air. It was coming down to earth continuously from the sky above, just like a bridge that was connecting and balancing out the earth and the sky. I was sitting alone on the porch of my house during a short break in my hometown, enjoying the cool temperature brought by the heavy rain. Looking at my surroundings, I could see different houses of different sizes, styles, colours, roofs, and plants standing together side by side, as if they represent the diversity of the people who live there. I was wondering if these houses had a will and could move on their own, would they stand together like now or would they stand alone or in separate groups? Or maybe they would fight each other for a place to stand. I was just wondering. The swishing wind was blowing in my face. The sound from the rain tapping and patting on the roof was tinkling in my ears. A soothing sound was coming from the flowing water that was licking and lapping the edge of the road gutter. It brought coolness into my heart. What a harmonious orchestral masterpiece of nature it was. The rain fell long enough to cause me to drift off into a relaxed state with this coolness in my heart, until at one moment a soft rumbling sound was heard from the sky just as the rain abated. It was like a farewell saying: 'I'm leaving...'. Finally, the rain stopped falling and left me in a peaceful state of mind. I wanted to stay in this peaceful state forever. This, indeed, is my present dream, to live in diversity with peace and harmony.

In my present life I find myself surrounded by social diversity. Here in my hometown diversity typifies the way we live. I live here along with my neighbours from different races, religions, occupations, education and so on. Yet we still smile at and greet each other warmly. I remember the day before this rainy day, one of my neighbours, an old lady who was of a different race and religion from me, came to our house, talked with my mother and me and shared a problem she had, until she could no longer hold back her tears. We talked as if we were relatives and tried to support each other, by sharing and reflecting on our separate individual experiences. However, what I want to talk about here is not about the tears and the problem, but about our willingness to share and
support each other. The differences we had in our individual lives did not restrict us from sharing and supporting each other. However, life in a socially diverse context does not always unfold in this way. Conflict sometimes occurs in other parts of our country and even in other parts of my little town. I am now asking myself how I as a mathematics educator can contribute something constructive towards maintaining this peaceful and harmonious relationship. This thinking brings me to a reflection on the Indonesian national education system, especially mathematics education, to seek to find out whether it contains any consideration of this peaceful and harmonious relationship. Is there any concern about ethics in the Indonesian national education system? How does the Indonesian national education system call the teacher to have a concern for ethics?

In Chapter III, I presented my reflections on some major forms of ethics. There I discussed the emergence of the integrative ethics view, which may improve our understanding of ethics and widen our view, instead of remaining limited to a single view. In the present chapter I shall reflect on Indonesian educational history to try to understand more about the current Indonesian education system. This reflection starts with a story about a person who had great influence in Indonesian education history, in order for me to try to reveal his vision and dream for Indonesia through education. I shall also reflect on the educational history of Indonesia in order to reveal the dream of the Indonesian founders through education and to understand what is happening currently in our education system. All these factors are considered in my inquiry into how mathematics education in Indonesia is responding to the call to contribute to the development of ethical responsibility in students.

KI HADJAR DEWANTARA’S EDUCATIONAL VISION

While I am sitting on the porch this morning I can see many students walking to school. About fifty metres to the right of my house some public transport vehicles, that we call angkot, are honking their horns loudly. Students are getting down from the angkots one after another. They are jumping, stepping, running, talking to each other, shouting, and laughing. What a lively morning. From their white and blue uniforms I recognize that they
are junior high school students. Usually they carry big heavy bags on their backs and some books in their hands. Yet today I see that they only have a clipboard in their hands. They are not carrying their heavy bags today. Some of them are holding a pencil in their hand while others have put their pencils in their pockets. Then I realize that today is the first day of the national examination for junior high schools. It is an examination that will have a big influence on the next step in their formal education.

At this moment looking at those students for me is just like looking at the future of Indonesian education and society. Those students will be the ones to determine the state of our nation in the future. Considering this point of view causes me to ponder on some issues. These students are the image of our future. They are the fruit of all the efforts we have made to educate them. They are representatives of our dedicated path for reaching our dream for our nation. How close are these students coming to what we dream about? How well do we play our role on this shared path to reach our dream? Nevertheless, what really is the dream that we want to reach through education? This dream should be related to the goal of our nation. This is the goal that relates to the reason for the establishment of our country; the agreed reason for all who fought for the establishment and formation of this country we called Indonesia.

Indonesia is a heterogeneous country. Its principle ‘Bhineka Tunggal Ika’ (Unity in Diversity) states it clearly. Within the area of this country, from west to east and from north to south, there are various races with different cultures, customs, languages, religions and even physical characteristics, which indicate that we have different ancestors. Historically, before this country existed as a nation, this region was colonized by the Netherlands to exploit the richness of its natural resources. The Dutch used these differences present in the native population to easily colonize the region by using the old formula of “divide and rule”. Moved by this condition of exploitation, there were educated young people who believed that they needed to fight for freedom based on the national spirit. One of them was Ki Hadjar Dewantara. He and his friends agreed to fight for freedom together by eliminating the differences in people’s ethnicity, originality, region or religion (Samho, 2013). Ki Hadjar Dewantara’s way of fighting for freedom was not by holding a gun, but through education. Based on his lofty view and his influence in Indonesian education, he was then nominated as the ‘Father of Indonesian Education’. His birthday, 2nd of May, is set as Education Day in Indonesia. What was his vision of Indonesian education?
In the colonial period, education was an exclusive provision for Indonesian people. They who were able to have an education were the nobles or rich people only, while for commoners it was an unreachable goal, even just a distant dream. Actually even some nobles could not afford the education fees because of the economic state of the country at that time. Furthermore, education was designed for the needs of the colonizer economically and politically. Those natives who were educated were expected to work for the colonizer’s interests yet received less payment compared to Dutch employees (Samho, 2013). The sense of discrimination was very obvious during this period.

As a noble himself, Ki Hadjar Dewantara had the opportunity to be educated. He was a grandson of Sri Paku Alam III, the king from Yogyakarta. His real name was Raden Mas Soewardi Soerjaningrat. The title Raden Mas in front of his name shows his nobility. However, this nobility did not reduce his respect for all Indonesian people, including the common people. He even abandoned his noble title when he was 40 years old and then used a new name, Ki Hadjar Dewantara, in order to be closer to the people physically and mentally (Soeratman, 1986). As a noble who had prestige, he was particularly sensitive when someone looked down on him. However, this feeling was not only for himself, he felt the same for his people and his country. He could not stand the Dutch treatment that showed disdain for Indonesian people. He always stood against such attitudes from the Dutch through his activity in political organization and journalism. As a journalist he expressed his criticism through his writings. Indeed these writing were seen as offensive by the Dutch. One day Ki Hadjar Dewantara wrote an article as a critique against the Dutch policy of collecting money from the Indonesian people to celebrate the Dutch National Independence Day. In that article he criticized the Dutch for celebrating their own national independence day in a colonized country, as this seemed an insult to the colonized people (Soeratman, 1986). Moreover, as the colonized people were forced to fund this celebration, it would truly be exploitation. He was questioning the dignity, morality and honour of the Netherlands, as an independent country, when in the spirit of colonialism the Dutch celebrated their Independence Day in a way that highlighted the sufferings of the colonized
people (Samho, 2013). Because of this article he was exiled to Bangka Island in Sumatera and then deported to the Netherlands with two of his friends.

Ki Hadjar Dewantara was an education enthusiast (Samho, 2013) and being deported to the Netherlands was seen by him as a big opportunity for him to learn more. He used this opportunity to learn about the European educational system. He believed that education was a way to free Indonesia from colonization. Education for him was a way to free his people, since the people would be free if they mastered the knowledge necessary to support their aspirations to independence. Freedom for Ki Hadjar Dewantara was not only about being decolonized but it was also about living in awareness as an individual who is independent, having independence and fundamental rights that should be respected, while respecting the rights of others as well (Samho, 2013). So freedom was about being independent and critically aware of one’s own rights, while also respecting the rights of the other. It was about awareness in individual persons and the ability to control the self and one’s relation with the other’s freedom. In this way a person would be aware of his or her rights and obligations as a member of the society. And, for Ki Hadjar Dewantara, education was the main pillar to support the Indonesian people’s awareness of their rights and obligations as humans. It was a guide for being aware and responsible for the true role of the self in relation to the other. Education should be oriented towards fully humanizing the person in the sense that all human potentiality belongs to the person. It should bring the individual to become a mature and dignified person with respect and love spiritually and socially for other humans and also for nature as well (Samho, 2013).

In order to apply his idealism through education, he had his own conceptual foundation, principles and method of education. As I mentioned before, education during his era had been designed for the benefit of the colonizers. Education was characterized by rules, punishments and order (Samho, 2013), which put the children under strong pressure and constraints. For him these constraints were not good for students’ character development. Instead of pressuring and constraining students, Ki Hadjar Dewantara asserted that students should have as much opportunity as possible to explore their
potentials and to later express them creatively, independently and responsibly (Samho, 2013). According to this point of view it was clear that Ki Hadjar Dewantara saw the students as the subjects, instead of as the objects, of education. In his view the teacher has the role of a guardian, who tutors and nurses students in the process of their exploring and expressing their potential. To play the role of a guardian he promoted three principles for the teacher to apply in education.

The first principle was *ing ngarso sung tulodo*, which means that the teacher should become a model for the students to follow. The teacher should set a good example, through words and actions, to be seen as a model by the students. By seeing this example hopefully the students would imitate and follow the good example and start to enact it.

The second was *ing madyo mangun karso*, which means that while being in the midst of the students the teacher should encourage them to participate, to be more productive and creative. This second principle asserts that the teacher needs to be in close contact with the students. Lecturing in front of the students is not the only role of the teacher. By being amongst the students the teacher could understand them better while encouraging and inspiring them. In this way the influence of being a role model for the students would be amplified. I could imagine that if my idol, whom I adore so much, is close to me and is guiding me, it would be a most precious and influential moment for me. By merely imagining my idol, I could have the possibility of imitating the performance, the attitude or the style of that idol. Moreover when I was that close to the idol, the influence would be so much more intense.

The third principle was *tut wuri handayani*, which means that the teacher should support the students rather than drive them. Here the teacher would aim at providing scope for the students to show their true capabilities. The students would be experiencing a wonderful opportunity to be active learners. Indeed here the teacher would not be leaving the students to work alone. The teacher, as a nurturer, would need to provide proper support for the students to help them grow in the best way. By these three principles Ki Hadjar Dewantara
embraced the idea of constructivism where the teacher is expected to be a motivator and facilitator for the student in self-actively constructing their own knowledge.

The opportunity for learning while being exiled to the Netherlands during the period 1913-1919 shaped his views of education, although the method he later advocated reflected his own local culture. That is a wonderful thing I see in him. Learning far away from his hometown in a very different culture did not cause his own culture to fade from his mind. He did not become a Western-like person who had left his native culture behind. He used both cultures to shed light on each other. What he learned helped him to understand his own culture more deeply and his cultural background helped him to better understand what he was learning and experiencing in the foreign culture. In these ways both aspects shaped and moulded him in the development of his vision of education.

His method “ngemong”, “momong” and “among” (Samho, 2013), to achieve the three principles, showed how strongly he retained his culture within his educational practice. For him, through this method the teacher was not only responsible for passing on knowledge. The teacher’s role was also as a nurturer, one who was more or less like a parent who nurtures and fosters (ngemong and momong) the children. As a nurturer the teacher needs to be a role model, who presents and becomes an example (among) for the children to learn from. Through this kind of education he did not try to produce Westernized Indonesians but well educated ones who were nurtured in and by their own culture.

A PEEK AT INDONESIAN EDUCATIONAL HISTORY

Education in the Indonesian region started long before Indonesia, as a nation-state, existed. Indonesia has many ethnic groups since it was formed from many tribal kingdoms. Those kingdoms can be regarded as the ancestors of today’s Indonesians. There was a time when some of those kingdoms had great influence in the Southeast Asian region, such as Sriwijaya and Majapahit kingdoms (Clad, cs., 2011; Ricklefs, 1993). Sriwijaya in its era (7th century C.E.)
was a dominant trading power in the western Indonesian region (Sneddon, 2003). Many merchants from countries such as China, India and Persia came to its ports to trade. Sriwijaya was a prosperous and powerful kingdom and was recommended by a Chinese Buddhist monk, I-tsing, as a centre for studying Buddhism, as he had learned Sanskrit there for six months (Sneddon, 2003). Other than its influence in Buddhism, Sriwijaya had a big influence throughout the archipelago and thus was believed to have an important role in disseminating the Malay language as a trading language, which later evolved to become the Indonesian language (Sneddon, 2003). Majapahit, on the other hand, is well known amongst Indonesians for its effort to unite the whole archipelago. Majapahit expanded its border covering much of the territory of current Indonesia, including Malaya, Borneo, Timor, Cambodia, parts of the Philippines, and northern Australia (Clad, cs., 2011). The glory and achievement of Majapahit inspired those founders of our country in their task of defining our nation.

Thinking about so many different ethnic groups spread across a vast archipelago makes me wonder how such vast diversity of people and cultures can blend to become one nation. There must have been a reason for those different ethnic groups to overcome their intermittent ethnic strife (Clad, cs., 2011) and blend with others into one nation. Before Indonesia became a nation-state in 1945 the region was a colony. It was the experiences in this colonial era that became the common experience between those different ethnic groups (Anderson, 1991; Clad, cs., 2011). They shared the same struggle, suffering and bitterness throughout this era. These experiences drove them to strive for freedom. Another reason for those ethnic groups to blend into one nation was their use of a common language. Though each ethnic group had its own distinct language yet the Indonesian language, as one of many variants of the Malay language (Sneddon, 2003), had been used for centuries as a lingua franca in the archipelago (Ricklefs, 1993; Sneddon, 2003). Language is perhaps the most important element in integrating this multi-ethnic society to become one nation (Sneddon, 2003). In the early 1900s Indonesian scholars promoted Indonesian language as the language of unity through publicity and literature. In 1928, The
Second Youth Congress declared in their oath, called *Sumpah Pemuda* (The Oath Of The Youth), that Indonesian youth would uphold the Indonesian language as the language of unity (Sneddon, 2003).

In the colonial times the Dutch had exploited Indonesia. But it is also undeniable that they brought valuable change to the region. It can be said that by conquering and ruling the archipelago the Dutch created an environment where those tribal kingdoms, which had been related in culture and tradition for a long time, might unite in a spirit of nationalism and give birth to a new nation, that would be Indonesia (Ricklefs, 1993). The Dutch also brought the influence of modernity and Western education into the region. This education eventually created indigenous intellectuals who, later on, would lead the indigenous people to form their new free nation, Indonesia.

Initially, education was used to maintain the Dutch domination over indigenous people (Suradi, cs., 1986) while exploiting the natural resources of the region for the benefit of the colonial power. Those who could attend school were only the sons of the aristocratic class. This served to reduce the expenses for the Dutch administration by producing cheaper local workers. However, employing an indigenous 'elite' benefited the Dutch, not only economically but also strategically. Those indigenous elites who worked with the Dutch indeed received some benefits. Though it was not true in its entirety, but in many cases, those indigenous elites were subconsciously separated from their kinfolk. In order to maintain their benefits they likely prioritized the colonizer's interests rather than those of their own people. The social positions and benefits that were given by the Dutch blurred those local elites' visions about their responsibility as elites. Those, who by birth were bestowed with the authority to lead their own people, ironically needed approval from the colonizer for the exercise of this authority.

At the beginning of the 20th century, there was political change in the Netherlands. Humanitarian influences had political effects and gave birth to ethical policies. By shifting to such policies, the Dutch government’s concern for their colonized countries, such as the Indonesian region, also changed from
exploitation to welfare (Ricklefs, 1993). Through this policy the Dutch government came to believe that it was the right thing to do to pay for the resources they had earlier extracted from the colony in order to give some measure of justice to the colonized people. In this era, the colonial government focused on three principles: education, emigration and irrigation (Ricklefs, 1993) in order to improve indigenous welfare.

In the ethical policy era, there were two favoured approaches in education: the ‘elites’ and the ‘mass’ approaches. The elite approach was aimed at producing Westernized indigenous elites who would be grateful to and cooperative with the colonial power (Ricklefs, 1993). These elites were expected to take over the administrative duties of the nation, and later on to become examples that would inspire the indigenous people. On the other hand, the mass approach was aimed at the common people to help them achieve basic and practical skills in order for them to improve their standard of living (Ricklefs, 1993). The outcome was not as theoretically expected, since the humanitarian and economic interests pulled the government in opposite ways and indigenous welfare ended up subordinated to the need of the colonial power to achieve a balanced budget (Ricklefs, 1993). But this change, especially in education, gave an opportunity for many indigenous elites to be enlightened and to develop the spirit of nationalism, which later led to the independence of the region and the birth of a new nation.

In the subsequent developments, however, the kind of education that was provided by the Dutch encountered opposition from the indigenous people, especially the educated ones. The human products of education at that time would most likely become the employees or labourers of Dutch public or private companies. Besides that, the educational content that was taught to the students was far removed from Indonesia and its culture and centred, rather, on the Netherlands and its geography, language and culture (Suradi, cs., 1986). Those who opposed this kind of education desired a kind of education that would promote Indonesian language and culture. Therefore, in the 1920s some educated people took the initiative to establish public schools that fostered
Indonesian culture and language, especially the nationalist movement. Some of those schools, as explained by Suradi (1986) were:

1. *Taman Siswa*, was founded by Ki Hadjar Dewantara, who thought that the goal of education should be to train up independent children who had freedom of mind and action. He promoted five elements as the foundation of his educational vision: freedom, nature, culture, nationality and humanity;

2. *Serikat Islam*, which was more politically oriented, was founded by Tan Malaka who had three goals for education: to prepare the students with adequate knowledge to make a living, introduce the concept of the right to organisational life, and introduce the idea of taking responsibility for the suffering of ordinary people;

3. *Indonesische Nederland School (INS) Kayu Tanam*, was founded by Mohammad Syafei who thought that education should make humans more ethical, people who would be healthy and strong, able to think smartly and logically, personally resilient and persistent, and have a sense of nationality and humanity;

4. *Ksatrian Instituut*, was founded by Danudirdja Setiabudhi who wanted to cultivate dignity and confidence in school students as part of character education. His education was based on the nationalist spirit and aimed to produce people educated to think independently.

5. *Perguruan Rakyat*, was founded by nationalists, including Mr. Sunario and Dr. Muhammad Mazif, who envisaged an Indonesian nationalism that would unite the youth to cope with a bigger world as the foundation of their educational view.

All these educational figures considered that rote knowledge was not the only goal of education. Other elements were seen to be equally important, such as: the concepts in the students of freedom, responsibility, dignity, nationality and humanity. Humanity seems to have been a key focus in that era, which influenced the development of the view of education in Indonesia at that time. The concept of shared humanity placed Indonesia as an equal country in relation to other countries. In a similar way, it also put Indonesians on a par
with all other humans. Freedom and dignity implicitly assert the need for recognition of the inherent equality amongst people. If all people are equal then any Indonesian has the same dignity as other people in other parts of the world. For the same reason there is no place for colonization in the world. Later, this view would be stated in the preamble to the 1945 constitution of Indonesia. By rooting education in this ideology, those educational figures promoted the concept of the equal rights of all people, including the Indonesians. But the principle of equal rights was not the end; they also sought to promote a parallel sense of mutual obligation amongst people. That meant a responsibility of the one towards the other. Nationality covers one’s rights and responsibilities as a citizen of a nation. If all citizens have the same rights then any citizen has the right to enjoy a happy life regardless of one’s social or economic status. In the context of that era, ordinary people were most likely the ones who suffered most. Then it became a civic responsibility for the more affluent to help lift up the poor from their suffering. This was the spirit of nationalism, which was expected to unite the diversity of people in Indonesia. If the same ideology was used to apply to a broader community then it might promote the concept of the reciprocal rights and responsibilities of Indonesia towards all other countries in the world.

These early public schools played an important role in the nationalist movement working towards the independence of Indonesia. However, the colonial power was suspicious about influences arising from these public schools and tried to restrict the nationalist movement by announcing a ‘wild school ordinance’ in 1932 (Ricklefs, 1993). This ordinance required permission from the colonial authority for any private school to be established. This was intended to control the random development of private schools. But, it received very strong opposition from Indonesian organizations and educational figures, until it was suspended in 1933.

At the beginning of 1942 Japan entered the Indonesian region to seize the territory from the Dutch, after firstly winning the sympathy of many Indonesians by promising to liberate Indonesia from the colonizers (Ricklefs, 1993). Unfortunately it was an empty promise and simply a strategic means to
win public sympathy. After winning the fight against the Dutch, they showed their covert intention, which was to take control of the natural resources of Indonesia. These resources were economically essential for their war effort and their intention to create a 'Greater East Asia Co-Prosperity Sphere' (Ricklefs, 1993). This occupation brought to an end the three and half centuries of the Dutch era in Indonesia, but the end of the story of oppression of the Indonesian people had not yet been reached.

Japan, at that time, had a regional military campaign to win, so there was no time for them to deal with the local resistance. In order to minimize any possible opposition from the local people they would quickly respond to any local revolutionary movement and put an end to it in the quickest way possible, not excluding great cruelty when considered necessary. Their era of occupation lasted only three-and-half years in Indonesia, yet it was the most devastating and oppressive regime ever experienced by Indonesians (Ricklefs, 1993). However, there was much significant development in Indonesia in this period of time, including in education, even though the time period was very short compared to the period of domination by the previous regime.

Education was of great concern in this era, though kept under strong control by the Japanese. If in the previous era there had been different schools for European, Chinese and native children and different schools for elite and non-elite citizens, in the Japanese era there was no such discrimination in education. Education was made available for all people regardless of their social status and ancestry. Development of the Indonesian language was very significant too, since Indonesian language was made compulsory in schools alongside the Japanese language. All textbooks were translated into the Indonesian language. The Dutch language, which had been treated as an exclusive language for the Dutch and the local elites only, was banned. Furthermore, in 1943 an institution called *Komisi Bahasa Indonesia* (Indonesian Language Commission) was created (Suradi, cs., 1986) in order to further develop the Indonesian language. This concern to promote the use of the Indonesian language also stimulated the development of Indonesian literature. A lot of literature was produced in this
era, mostly around the themes of nationalism, although still under the strict
control of the Japanese administration.

In 1945, the Japanese lost the regional war and Indonesian activists used the
opportunity to proclaim Indonesian independence. A preparation committee,
called Panitia Persiapan Kemerdekaan Indonesia – PPKI (Committee of
Indonesian Independence Preparation), was created in order to prepare for
Independence Day. Here, I highlight some of their thoughts related to education
which I have extracted from a longer list written by Suradi, cs. (1986):

1. the need for the regulation of national education
2. the need for the government to nurture education for all the people
3. the need for a national education system to be based on religion and
culture, in order to develop ethics and humanity in school curricula that
aimed to support the provision of safety and happiness for all the people.
4. school subject matter should involve general knowledge, ethical
concerns, working spirit, kinship, patriotism and heroism.

From these thoughts I can see that they were thinking about a country that
would accept responsibility for the education of its citizens and would envision
an ideal for students and citizens to aim for. They put their hope in this wish for
effective education. Independence was indeed the first step toward realising
this wish, but there was still a long way to go. Economic and political stability
were the first challenges to meet. Moreover, they still needed to fight against the
Dutch and their allies as the Dutch intended to return and take over the country
once again. This time it was not a fight for independence but to defend
independence, which had been attained and to prevent it being stolen back from
the Indonesian people. This fight continued until 1950, which resulted in on-
going instability that held Indonesia back from speedily implementing its
development plan, including in the area of education.

Nevertheless, the government consistently attempted to create the legal basis
for national education as suggested by PPKI. In 1948, another committee was
created to formulate a National Education Act, and it succeeded in producing a
draft of the Act (Suradi, cs., 1986). Later, in 1950, after some revisions, this draft
was formally approved. The draft became the first Indonesian educational law known as 'Act Number 4, year 1950', which provided the foundation for Indonesia education. According to this Act, Indonesian education was to be based on the Pancasila (five principles of Indonesian national ideology: (i) Believe in The one and only God; (ii) Just and civilised humanity; (iii) The unity of Indonesia; (iv) Democracy led by the wisdom of deliberations among representatives; (v) Social justice for the whole of the people of Indonesia) and on the Indonesian constitution and culture, with the goal of fostering the development of the Indonesian citizen as one formed as a democratic and ethical person who would share responsibility for the people and the country's prosperity.

The basis and goals set for Indonesian education in this Act established its characteristics as national and democratic. The national characteristic of education was unique to Indonesia, based on the Pancasila, the Constitution, and Indonesian culture. The general memorandum provided with the Act explained that the national characteristic was not intended to reflect the disparagement of other cultures, rather, it was intended to be a shield against the potential of cultural bondage.

Historically, Indonesia had been conquered and subjected to colonial dominance for more than three centuries. In this period, it was natural for Indonesians both to feel inferior to and be treated by the conquerors as inferior. The period was long enough to instil the concept of inferiority into Indonesians, both mentally and culturally. Three centuries, indeed, involved the passage of many generations. In other words, there were many generations that were born and raised in the colonial era. Many spent their whole life with an inferior status without seeing any possibility of overcoming the problem. As a result, there would have been many Indonesians who came to accept as natural the feeling and condition of inferiority. Hence, there was a potential risk of inferiority becoming a national characteristic, as a legacy passed on from one generation to the next. The passive acceptance of this characteristic was likely to leave Indonesia in a culturally weak situation.
The liberal political system adopted at that time of independence acted like fuel being poured on fire. The system provided enough freedom for citizens to look at the values inherent in other cultures and utilize these as appropriate to create new, characteristically Indonesian, ones. The tendency to feel inferior made the Indonesian people see everything from outside as superior. This attitude let other cultures easily penetrate Indonesia and put Indonesian culture in a threatened position. Education became an arena for disagreements amongst politicians and those who had been sent overseas to study. Multiple political parties competed with each other to each implant their view of education and in order to strengthen their influence. Those who had studied overseas brought back differing views, and all of these views were considered good since they came from outside. The education field was polarized into some different orientations springing from overseas influences, which had the effect of diminishing the sense of national identity of Indonesian education (Suradi, cs., 1986). Pancasila, the Constitution and local culture as the foundations of the nation were not utilized as filters to favour or to block the influences from outside.

Act Number 4, Year 1950 was an attempt to re-emphasize the position of Pancasila, the Constitution, and national culture as the foundations of Indonesian education. Actually the concept of national culture might have been debatable at that time since there were various largely separate cultures existing in Indonesia because it was in fact home to so many ethnicities. Although this Act did not give a definition of national culture, yet, the 1945 Constitution of Indonesia had talked about it earlier. The explanatory memorandum accompanying Article 32 advised that national culture was the culture that emerged from the cultures of all Indonesian people. Therefore, all ancient and original cultures from the whole region were considered as parts of the national culture. The explanation also emphasized that the development of the national culture should involve the fostering of the concepts of interpersonal courtesy and civility in the nation and of the concept of national unity. By this means, Indonesia did not totally close itself to ideas from outside the country. Instead, it considered that those influences should be seen as
potential enrichments of the national culture as long as they contributed to improving the core concepts of courtesy, civility and the unity of Indonesia. Such cultural influences, indeed, might help to elevate the sense of national dignity in the Indonesian people. In this case, Pancasila and the Constitution should play a role as filters of outside influences, in both their good and bad aspects.

The democratic characteristic, advocated by the Act, promoted diversity as a key consideration. This democratic characteristic provided equal opportunity for every citizen to be involved in education, regardless of ethnic, religious, social or economic status. The Act advised that education would be considered democratic when the children took the initiative to act according to their own freewill. So, the citizen who acted like a robot and only did what she or he was ordered to do, was not the goal of democratic education. Democracy would occur when initiative, freedom and freewill are practised by citizens. Without these elements the citizens would be considered to be essentially powerless, and this would contradict the ideal of democracy, which emphasizes the autonomy of each and every citizen. Hence, through this Act, Indonesia emphasized that education is a key way to empowering children in their acquisition of the concepts and ideas of democracy.

This Act was legitimized in the era of the United States of Indonesia, which was based on the Constitution of the Republic of United States of Indonesia. Thus, it was to be expected that this Act would need to be reconsidered when Indonesia replaced that governmental system with the Unitary Republic of Indonesia, that is, a Republic which was no longer a federation. In this regard, the government passed Act Number 12, Year 1954, which kept the Act Number 4, Year 1950 in force. Even though there was a possibility for improvement to this Act, because of the consideration of the need for stability in the nation, it continued to be applied until a new law was approved in 1989.

Act Number 2, Year 1989 introduced the concept of a national education system. Education was defined as a conscious effort to prepare students through guidance, teaching and/or training activities for their role in the future. The
foundations of Indonesian education remained the same as in the previous Act. The goal was to educate the Indonesian people in as rounded a way as possible, that is, to become persons who would be faithful to and have holy fear of Almighty God, and would be ethical, knowledgeable and skilful, healthy both physically and spiritually, and of solid personality, independent thinkers yet feeling responsible to the people and the nation.

The term ‘system’ that was introduced in this Act represented a total, holistic and integrated concept of education. According to the explanatory memorandum accompanying this Act, the term ‘total’ meant that education was to be open to all citizens and applied in all parts of the country. This was based on the right of access of Indonesian citizens to education and on the national goal to educate all citizens, which was established by the 1945 Constitution. The term ‘holistic’ meant that the education system covered all educational levels and types. In other words, any level or type of education was to be an integral part of the same system. The term ‘integrated’ meant that education and all other national development programmes were connected to each other within the framework of the one nation. Hence, education was not to stand alone in the effort to develop the nation. By integrating all the national development programmes, the achievement of national goals was expected to take place in a more effective and efficient way. The national education system was seen both as an important tool and as a goal in the endeavour to achieve the ideal of freedom and the goal of Indonesian nationhood. Therefore, the national education system was defined in this Act as the holistic and integrated union of all educational units and activities, which were linked to each other in the attempt to achieve the national education goals.

Unlike the previous Act, this Act also specifically addressed the curriculum. Curriculum was defined as a set of plans and regulations about the contents and materials of lessons and about the methods to be followed to guide the performance of teaching and learning activities. So, curriculum was seen as content or subject matter (Schubert, 1986). Actually, before this Act different curricula had been part of Indonesian education, as illustrated in figure 4.1.
Throughout our history we had experienced frequent educational policy changes including curriculum changes, some of which had occurred within relatively short periods of time. So far I have experienced five different curricula from those curricula showed in figure 4.1, which are those of 1984, 1994, 1997, 2004 and 2006. A unique approach that I recall from Curriculum 1984 was ‘Student Active Learning’. At that time I was in primary school. In years one and two I remember how students’ desks were ordered in rows and columns. But in year three we were put into small groups, and so our desks were arranged in groups based on the class groups. There were no more rows and columns. Frequently the teacher would ask us to do tasks in our groups, though it was not rare also to have our teacher lecturing us from in front of the class.

I started to be aware of the curriculum change that occurred in 1994 when I went to high school. I was aware of the change not because of an extensive understanding about curricula but by the arrival of a lot of new books in our library. I was assigned as librarian who was responsible for managing the textbooks. At that time we needed to remove a lot of old books in order to have more space for the new books. Fortunately we, the students of that school, did not need to buy any books since the school provided them for us. I dread to imagine how much money my parents would have needed to spend to buy new books.
books for me if I had been in another school that made students pay for the books.

In 1997, our school did not buy the new textbooks even though the curriculum had been recently changed, because basically the structure of the older curriculum was similar to the new one. The curriculum designers just reduced some contents from the older curriculum in order to reduce the load on the curriculum, since it was considered to be too heavy and demanding. In other words, our older books had more contents compared to the new ones. In our school’s case, the new curriculum reduced the students’ and the teachers’ burden and the related expenses, which would have been incurred by the school if the new books had been purchased.

In 2004, I experienced the next curriculum change as a teacher. I remember at that time, there were many teachers who were confused by the change. However, many were only concerned about the extra administrative tasks, which needed to be undertaken by the teacher, related to the implementation of the new curriculum. They did not consider the meaning behind the name of the new curriculum, that is, ‘Competence-Based Curriculum’. They missed noticing how the soul of the curriculum had been switched from content-based to outcome-based.

It did not take long after Curriculum 2004 was introduced for yet another curriculum to be established. This new curriculum, which came out in 2006, was known as *Kurikulum Tingkat Satuan Pendidikan – KTSP* (School Based Curriculum). Like the name says, this curriculum allowed each school to manage its own curriculum as long as it satisfied the minimum standards provided in *KTSP*. This curriculum was intended to represent the message of decentralisation policy in education. It was emphasized by Indonesia’s national education system Act Number 20, devised in year 2003, that replaced Act Number 2 of 1989. Paragraph 2 of Article 36 of this Act of 2003 asserted that curriculum in all levels and types of education was to be developed by applying the local diversification principle in accordance with the differing circumstances of the educational establishments, local resources, and the capabilities of the
students. However, most schools and teachers were used to the centralized direction of education where every policy, curriculum and technical guidance was passed down by central authority to the local authority. So, many schools and teachers had difficulty and encountered confusion when they were given authority to manage their own curriculum. It seemed that the influence of a centralized direction over a long period of time had reduced the creativity and sense of independence of those schools and teachers. Nonetheless, there were also many schools that used this opportunity to bring about their own distinctiveness.

At each change of curriculum a new one might claim to be an improvement over the previous one. This claim to improve could be based on a variety of considerations. Possible considerations might be: development of science and technology, society’s demands, alignment between goals, content, facilities, resources, students’ development, practicability, and political considerations. Nonetheless, in my opinion curriculum change should be given appropriate consideration and be implemented properly with real respect for its spirit and aims, otherwise the change would just mean another new book for the teachers and students, or additional expenses for parents, or additional administrative burdens for the teachers. Frequent changes in curriculum might serve to indicate how actively the education department was performing in order to improve the education system of Indonesia. Curriculum changes have tended to coincide with government cabinet changes. In one way, it seems that every cabinet has a good intention to contribute to educational improvement. But in another way, it might be a waste of time, effort and money if the proposed change was mostly a showcasing event, where change in authority automatically means change in policy, without any assured relationship to the actual needs of the school communities.

Politics may be one of the ways to codify and express a particular view and achieve a particular goal. But, whose view and goal should be served? If politics serves only one particular group’s interest, then does it not mean that one group rules others when they are in power? When the time comes, then another group will take over the authority and start ruling based on its particular interest. In
Indonesia’s case, where diversity is a central characteristic, it may become a competition or war between interests that leads to fighting for the ruling position. Is this any different from the time years ago when one kingdom fought with another for power over the other? Should I see this situation of changes of government as a new type of colonialism that occurs internally to one country and is implemented by one’s fellow citizens? If this is true then what is the real meaning of a nation and nationality?

War usually ends with a winner and a loser along with concomitant destruction. In the liberal system era in Indonesia, endless debate between people of different views and attached to different parties led to a deadlock where no policy or improvement could be made. It was the worst situation possible for a nation when the government could not govern anymore. Is it impossible to avoid political warring and shifts from serving particular individual or group interests to serving the nation’s interest and to focussing on governing better rather than simply wielding power over the other? Is it possible to have a political environment that is imbued with responsibility toward one’s fellow citizens in the one country and more broadly toward other peoples in this world, that is, a politics with an ethical spirit? Indonesia has passed through centuries of hardship to define itself as a nation. For me, this ethical endeavour would include the show of respect for those who shed their blood and sacrificed their lives for the sake of founding Indonesia. It is the responsibility of all citizens to conduct themselves always with an eye to the needs of all others. And for me, I am prompted to try always to rethink carefully my role and style as an educator.

MY RESPONSE TO OUR HISTORY

What has happened in the past plays an important role on any further developmental path. It lays the foundation for the current state of affairs. Looking back to the past may help me to understand the current state better. However, too much focus on the past may deviate me from my focus on the present and the future. The glory and achievement of the kingdom of Sriwijaya
and Majapahit are worthy of praise and respect from us of the present generation. But, in my opinion, their glory in the past does not necessarily reflect Indonesia’s current condition. Even though there may some individuals or groups who excel in their fields with particular exceptional achievements, yet their achievements cannot be seen as indicators of Indonesian glory, since they cannot necessarily represent the vast majority of citizens of the country. They are just exceptional persons or groups amongst other citizens. Their existence may point out the gaps in development and achievement between our people.

I have had the opportunity to witness the educational conditions in different places in my country as both a student and a professional. From what I have witnessed I can see that there are differences in educational advancement levels. It seems that the influence of centralized policy that occurred earlier in our country remains today. Though we have implemented the decentralized policy for some time, it seems that a gap still exists; in some cases the gap is even wider due to the different states of readiness of the institutions in those places. Those who were well prepared have had the benefit of a more advanced starting point when compared with other institutions.

By looking back to our past I have learned that the problems we currently have in our country are not new. These problems include overpopulation, unbalanced education and economic levels, corruption, and maladministration, which divert welfare provisions from the common people to particular persons or groups. These problems have been present since the old days. This circumstance makes me wonder what it was that kept us from changing our ways after dealing with similar problems over a very long period of time? In order to satisfy my curiosity, I have narrowed my focus from the nation to a single person, that is, myself. I have asked myself, what it could be that is holding me back from changing my understanding when rationally I regard myself as needing to be open to change. From this reflection, I came up with some possibilities.

One possibility might be that in spite of my awareness that people need to keep their minds open to change, on this issue I am not readily able to see the
necessity for me to change. My inability to see the necessity for change might be coming from my lack of knowledge, which prevents me from perceiving the true nature and extent of the problems and the need to change. It might also be coming from my having become accustomed to the one way of understanding issues, so as no longer to be aware of the multiple aspects of the problems. Rather, I may have come to accept my own way of conceptualisation as not needing revision. In such a case I am effectively under the influence of a hegemony that has fixed and continues to dominate my way of thinking.

Another possibility is that I might see the problem and then feel the urge to change, but I am not capable of making any change. In other words, I know about the problem and want to change my way of understanding it, but I cannot. This might be because of some limitation in my personal competences or resources available to me. Particular change sometimes demands certain competences or resources, without which the change cannot occur. Hence, limitations in my competences or resources may be preventing me from changing. The capability of changing might also be influenced by some sort of oppression coming from another party. Existing oppression would usually impose certain limitations upon me, which would restrict the actions that I could take in achieving change in my views.

The last possibility I can think of is that I may be aware of the problem and capable of making changes but in the end I do not make any change. In this case, I know the problem and have a capability to change but still I do not change. This may be the result of my resistance to change or just a matter of choice. There are many researches and textbooks that discuss resistance to change. Dent and Goldberg (1999) provided a table, as shown in figure 4.2, that describes the causes and strategies that may be used to overcome resistance to change, based on the views expressed by various authors of textbooks.

If these possibilities are applied analogically to the Indonesian case then there may be three reasons that can explain why Indonesia does not readily change: (i) lack of awareness; (ii) limitations arising from competencies or resources or from oppression; (iii) resistance to change. In my opinion, for any of these reasons.
reasons education plays an important role in order to change Indonesia to a better state.

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Adopted from Dent and Goldberg (1999)

**Figure 4.2. Causes and strategies to overcome resistance to change**

If education is going to be used to bring change to Indonesia then the influence of the critical view paradigm is needed to strongly characterise education for this purpose. The critical view seeks to empower people to be aware of the circumstances impinging upon the issue that they are presently considering. The value of a critical view of education is described thus by Taylor and Medina (2013, p.6): "... [it] enables the fish to perceive the pollution in the water in which they live, to find its source, and to identify its harmful effect on their being in water". Instead of being driven without thinking by particular socio-political forces, Indonesian people may be empowered by education to raise their awareness of such socio-political issues and move towards acquiring greater ability to overcome their existing limitations and resistances.
Some examples from the past may show how education was used in Indonesian history. The Dutch used education to introduce a new spirit to the young elite generation (Ricklefs, 1993). The introduction of this new spirit resulted in the unwillingness of the young ones to occupy the same traditional jobs and social roles as their parents but, instead, to wish to have the choice to enter other professions. The consequence was that at the end of the 19th century, high administrative positions were filled by persons coming from lower social status, as posts were no longer given only to those of aristocratic backgrounds. This, in turn, led to a decline in the prestige and authority of the aristocracy (Ricklefs, 1993). This example illustrates how education has been used to change important aspects of the national culture and social system. The example clearly shows the latent power possessed by education to change both social attitudes and social outcomes.

Education may also be used to advance the political interests of a particular party, as seen throughout Indonesian history, from the colonial to the post-colonial era. Politics can be seen as “the realm in which resources are allocated, public order maintained and disputes about how these activities should occur are resolved” (Tronto in Dahlberg & Moss, 2005, p.122). However, in practice, politics is more complicated than this definition suggests, since any of the words in this definition may have debatable meanings. Resources can be anything practically related to the effort of achieving the aim of a particular political interest. Public order is also debateable since we may have various views about when we can say that the public is in order. The most troublesome issue for me is to decide how things should ideally be resolved. Practical methods for resolving such problems may differ from time to time, from one party to another party. It is not rare that different views of this methodology at times create conflict. In Indonesian history education has been used as a resource to achieve political goals, in the cases of both the colonizer and the Indonesian administrations. Frequent changes in educational policies in line with the changes of who is in government may indicate the reasons underlying such changes.
The integrated characteristic of Indonesia’s national education system advises that education is connected with other national programmes. This advice emphasizes that education and other programmes should not stand-alone separately, but be integrated to serve a fundamental goal, that is, Indonesia’s national goal, which is based on 1945 Constitution and Pancasila. The preamble to the 1945 Constitution describes Indonesia’s national goal as:

“...untuk membentuk suatu pemerintah negara Indonesia yang melindungi segenap bangsa Indonesia dan seluruh tumpah darah Indonesia dan untuk memajukan kesejahteraan umum, mencerdaskan kehidupan bangsa, dan ikut melaksanakan ketertiban dunia yang berdasarkan kemerdekaan, perdamaian abadi dan keadilan sosial...”

(...to form a government of the state of Indonesia which shall protect all the people of Indonesia and their entire native land; to improve the public welfare; to advance the intellectual life of the people; and to contribute to the establishment of a world order based on freedom, abiding peace and social justice...)

In my opinion, changes may be acceptable as long as they serve this national goal well, considering that there are many possible ways to achieve a goal. Wind forces from different directions may sway a tree, yet as long as the tree is rooted to the earth firmly it will stay the same tree, no matter how much it is swayed. However, problems may occur when the change serves only particular political interests. In such a case the change may only benefit a particular party while neglecting others. In order to avoid this problem, politics needs to be constrained by ethical responsibility (Dahlberg & Moss, 2007; Levinas & Kearney, 1986). When politics is constrained by ethical responsibility toward other persons, then the policy decided on, including in the education area, will more likely serve public interests instead of those of a particular party. This is also suggested by the Indonesian ideology of Pancasila, which advises that we need to prioritize public interests over factional or individual interests in national life.

My question now is, with these issues in mind, what kind of education should I seek to provide for my students? What kind of pedagogy should I use as an approach in order to sow the seeds of ethical responsibility in our education
system? How can I make progress along the path of education when changes and conflicts of interests act as impediments to progress?

SYNOPSIS

A product may lose most of its value when it is seen merely as a product without considering the background factors that have led to the existence of the product. The state of education in Indonesia, and Indonesia itself, are products of history. Hence, I wanted to gain more understanding about Indonesian education by reflecting on Indonesian history. Learning from Indonesian education history has raised my awareness of the reasons that have brought about the present state of education in my country. At the same time, this learning has prompted me to take action to seek to make Indonesian education better. Those actions will be my way to show respect to those who fought for the establishment of my country. They fought to establish our freedom, which was not only about driving the colonizer from our country but also about our capacity to bestir ourselves so we might freely decide what our actions ought to be. Such freedom will be more possible if we have greater knowledge. With knowledge we may be more able to see the big picture that links our acts and our goals together in such a way that we may realise our aspirations through planned practical actions. However, conceptual knowledge itself is not enough. We need ethical responsibility to accompany the knowledge, so we may choose the best way to see more clearly the big picture, which includes ourselves, as individuals, in relation to others.

As an educator my professional actions will be, indeed, centred in the educational area. My actions then will be about helping my students to gain knowledge while also helping them to become more ethically responsible. By these kinds of actions I shall try to do justice to what I have learned in this journey of study and reflection. The best I can give to my students from what I have learned in this journey is none other than the inspiration for them to become more aware and critical enough to seek to understand their circumstances, which may lead them towards a capacity to choose transformative steps towards a better self and a better society. In the end, this
will not be down to my actions alone as it will only be possible if my students and I take the appropriate actions together. In regard to this condition, we will need mutual understanding, which may be achieved if we start to listen to each other, which is not something that we always do well. Historically speaking, language played an important role in uniting different ethnicities into one nation, Indonesia. Language has helped the Indonesians to share their feelings and their thinking. In so doing they more readily move towards becoming a nation of shared ideas and shared friendships. Thus, they have had the possibility of understanding each other better. Learning from history, then, I need to seek to learn from my students and listen to and try to speak my students’ ‘language’. In this way I may learn from and show my students how mutual understanding may be fostered. By my practical example I hope that they will also learn how to listen more effectively to the other in order to be better able to understand the other.

The trend of change will most likely continue due to varying influences coming from politics or from other interests. Hence, in order to avoid confusion from the trend of changes consideration of a more fundamental goal is important. In the Indonesian case, this fundamental goal is Indonesia's national goal, which is based on the 1945 Constitution and Pancasila. Any policy, including those of educational policies, needs to serve this goal well. In order to implement my ideology about ethics, I will need persistence in pursuing the development of ethical responsibility in our education system based on that goal. Without persistence I might be washed away by the flow of customary, established practices and end up serving these, instead of the desired national goals. But with persistence, I might be able to move forward toward that national goal. By careful reflection, I might be able to learn and adapt to any pressures for change by maintaining my focus on the essential goods of the national education system and on its core values. In this I would hope to perceive the potential positive values in the proposed change without loss of attention to the core values. In fact, the ability to learn and to adapt are important not only for me but for all, including my students. The inevitability of the effects that social changes have on everyone emphasizes the importance of valid pedagogy, since true pedagogy
is not about simply passing on information but is also about developing the students’ ability to learn (Castoriadis, 1997; Todd, 2003). However, how can my students learn about the ethical relationship between the self and the other through mathematics? What kind of approach or pedagogy can be used in mathematics education to develop the ability to listen more effectively to the other? These questions will be discussed in next chapter.
CHAPTER V
CONTEMPLATING ON MY FUTURE PROFESSIONAL PRACTICE

INTRODUCTION

Powerful words, such as ethics, paradigm, methodology, curriculum, have been discussed in previous chapters. Even though those terms float in conceptual space, they encourage me to believe that there must be ways for mathematics education to play a role in cultivating ethical responsibility. So I need a way to be able to apply the idea in a mathematics classroom. In order to find the way, I have reflected again on my recent and past experiences, including mentoring a colleague.

In this chapter I shall reveal my reflections on my experiences and consider what I have learned recently about recognising the opportunity for including ethics in mathematics education. This opportunity comes from two sides, namely, mathematics characteristics and the pedagogy of mathematics education. Regarding pedagogy, I shall share what I have recently learned about the pedagogy of listening and transformative learning and also what I have learned about Pembelajaran Matematika Realistik Indonesia (PMRI – Realistic Mathematics Education of Indonesia). Having such knowledge about these issues and different views on ethics urges me to reflect critically on my professional practice. How did I conduct my practice and how shall I conduct it in the future?

AN OPPORTUNITY FOR ETHICS FROM MATHEMATICS CHARACTERISTICS

In my first period of teaching mathematics, I had a goal to make all of my students to be excellent in math. I wanted them to master mathematics well. If a scale from 1 to 10 could express this mastery, I wanted them to have at least 8. But then I realised that it is not necessary for each student to be excellent in math since each student has his/her own talent. Moreover, they have many other subjects to learn as well. It would be a burden for some students to have 7
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or even 6 in math on that 1 to 10 scale, while they also have to think the same way about other subjects. It was my selfishness to put math as a priority for them, without thinking that other teachers may see the same way. In the end, the students may have been stressed enough to have success in just one subject. Henceforth I started to rethink what my goal is in teaching mathematics and what the benefit is for my students to learn mathematics.

While I was searching the answer for this question, I experienced some occasions when someone said to me, “From the way you think you must be a mathematician” or “No wonder! You are a mathematician”, though I am not a real mathematician, yet I am only a mathematics teacher. What was interesting to me on this occasion was that they could see something related to mathematics in myself, which I may not consciously show. It seems that they could recognise a characteristic or disposition in myself that is related to or affected by mathematics. Then I realised that everything I had learned has contributed to the process of shaping myself. The more I learned, the more intensely I have been shaped by what I have learned. As an illustration of what I mean here, let us think about sports. People who like doing sport will have a healthy, fit and commonly good shaped body. However, there will be a difference in physical shape between the one who does cycling and the one who does swimming a lot, since each of these sports requires different muscles and different movements. It similarly happens with the subjects we have learned, since we think a lot in a certain way according to our preserved subject while learning that subject. This joke may give an image of what I am trying to say.

An interviewer asks the same question, “What do two plus two equal?” to three candidates, which are a mathematician, an accountant and an economist. The mathematician says, “It is precisely four”. While the accountant says, “on average four, give or take ten percent”. And the economist, instead of answering directly, he closes the door and the window shade then secretly whispers to the interviewer, “what do you want it equal to”. (Freely rewritten from http://www3.nd.edu/~jstiver/jokes.htm)

Indeed, this is merely a joke, yet it gives an image on how a subject could affect a person’s way of thinking or responding. For me, a way of thinking or responding is important for students in learning mathematics. This idea inspired me that
my teaching goal should not only aim to make or help my students to be smart or achieve high marks in mathematics, rather, it should assist them to shape their way of thinking. In other words, it should help them to personalize the mathematics way of thinking into their personal way of thinking. On this point, I would like to raise the existence of values as a mathematics’ characteristic.

There is little doubt that some people think that there is nothing to do with values in mathematics. I have encountered people from various fields of expertise, such as engineers, scientists and mathematics educators, who are stupefied when I mention that I am studying about the integration of ethics and mathematics instruction. This response makes sense since many people believe that mathematics is a value-free subject, a myth that has been exploded in some decades (Bishop, 2008). However, in spite of this myth, the fact that some people can recognise or even differentiate what someone learns from his/her argument or way of thinking shows that the subject I learn has affected me. How can mathematics influence my way of thinking or responding? Here is where the value of mathematics exists.

One afternoon, when I attended a Bataknesse gathering in a park, I had a conversation with a member of this group, he is an Australian who had married a Bataknesse lady. “How do you teach ethics through mathematics?” he asked. I replied, “I am not teaching ethics, I am teaching mathematics. But I hope that while learning mathematics the students can cultivate ethical responsibility”. “But what is the relation between mathematics and ethics?” he asked again. “First, it comes from the characteristics of mathematics. There are values behind the characteristics. And the second is the way we teach so these hidden values are uncovered and the students have an opportunity to internalise those values. If they are not uncovered they will remain hidden, and mathematics will still be seen as value free and unrelated to ethics”, I replied succinctly. “What are those values”, he kept asking, maybe interested in the topic that we are discussing or still unable to accept the existence of values in mathematics. His question reminded me of my late beloved lecturer, Prof. Raden Soedjadi, may he rest in peace. It was he who first taught me about values in mathematics. He and his colleague once showed explicitly some values that are inherent in
mathematics topics, such as the universe, convention, contradiction, transformation and analogy (Swadener & Soedjadi, 1988). So, I tried to answer his question while remembering what I have learned in the past, and especially recently.

“Let’s take one characteristic of mathematics, such as anti-contradiction”, I started to explain to him. “In mathematics contradiction is a taboo. If we find a contradiction, that means there is something wrong. Since mathematics is a deductive system, then the latest mathematics statement should not contradict the previous statement. In other words, if the previous statement is accepted as true then the latest must be wrong when a contradiction exists”, I continued my explanation. Actually, by saying this I remember the implication formula in logic, $P \rightarrow Q$, I had learned before. In this formula, $P$ is called a condition and $Q$ the conclusion. The value of this statement will be false if and only if the statement $P$ is true and the statement $Q$ is wrong. As an example I may say, “Australian citizens can speak English” or I can translate this statement into $P \rightarrow Q$ formula as “If A is an Australian citizen then A can speak English”, for A is a person. This statement will be wrong if there is an Australian citizen, say Rudy, who cannot speak English. So, in this case, I can say, Rudy is an Australian citizen (which meets the condition), but Rudy cannot speak English (which is against the conclusion). What is interesting here is that when the condition $P$ is false then no matter what the value of conclusion $Q$ is, the statement $P \rightarrow Q$ will always be true. For example, Ucok is an Indonesian student (does not meet the condition), then Ucok may or may not speak English. This example shows the critical point why in mathematics we need to be very careful about contradiction. The value of “$A$ and $\sim A$” is false since $\sim A$ and $A$ are contradictive. Now since “$A$ and $\sim A$” is false then the statement “$A$ and $\sim A \rightarrow B$” will always be true for any B. This will cause a disaster in the system where that statement belongs. What could be the value here? If two contradictive things exist in a system, then any conclusion based on those contradictive things will be true. In other words, when we accept two contradictive things then we may accept anything as true. If doing a good thing and doing a ‘not good’ thing are accepted then anything we do will be well accepted too.
“What if the previous statement is the wrong one?” he asked me again, bringing me back to the topic that we are discussing. “That is a good question”, I said. “Your question raises another value in mathematics. In mathematics truth depends on the universe embraced by the system. For example $11 + 2 = 13$ is true if we are talking about the whole number system. However, if we change the universe from the wholes number into, say, our watch system then it will be different $11 + 2 = 1$. Another example from geometry, since you are an urban planner I assume that you are familiar with geometry. In Euclidean geometry, the sum of interior angles of the triangle is $180^0$ but in Non-Euclidean geometry it could be less or greater than $180^0$, I continue my explanation.

The universe, in mathematical terms, is a domain for everything we consider in a particular condition (Swadener & Soejadi, 1988). In my teaching practice earlier, I always use the universe concept to introduce diversity to my students, to demonstrate that truth can vary within diversity. What is accepted as true in one system can be accepted otherwise in other systems. Thus, we need to be careful not to mix up the systems, since this could create a contradiction. Let us think for a moment whether Euclidian followers can or cannot justify that non-Euclidian followers are wrong for accepting that the sum of interior angles of a triangle is not $180^0$, or vice versa, by placing the justification based on the assumption they have in the system they believe in. In reality, there are regulations applied to govern our conduct. However, diversity is characterised by different rules in agreement with different groups within the diversity. Sometimes conflict happens when a particular group neglects the border and applies a regulation that originates from that particular group to justify another group that holds a different rule, whereas respecting the difference would help different groups to exist together even when the border is still there. Here we can make use of the value of mathematics to raise respect for difference. If people who learn mathematics recognize each truth from a different mathematical system then by internalising the value and using analogical thinking, they may understand and respect differences in real life.

“You are really an academic, aren’t you?” he said. “What do you mean by that?” I replied curiously. “You talked about the big theory, but how can you apply it?”
he explained while waving his hands to gesture a big thing. I was laughing when I saw the way he spoke and gestured. Then I said, “If that is what you mean, then the application will be related to the pedagogy side. Where we can choose a way to approach mathematics, such that students can also experience the values. As I said before, those values from mathematics characteristics will remain hidden if we do not touch them and bring them to the surface”.

**AN OPPORTUNITY FOR ETHICS FROM THE PEDAGOGICAL SIDE**

The earlier question about how I can apply the idea of ethics in classroom practice concerns different views of various paradigms. A point of view determines what and how we can see, and it influences further actions taken based on the image we hold. Thus, different views from different paradigms are expected to influence classroom instructional practice differently. An Aristotelian would try to cultivate certain characteristics through instructional practice in the classroom; a Utilitarian will approach the issue from well-accepted actions; a Kantian would provide a list of principles that are seen as applicable universally; a Postmodernist would embrace differences while being critical of them.

This does not necessarily mean that the new paradigm should replace the old one, even if the new paradigm arises from an evaluation of the previous one. For me, the latest paradigm does not necessarily mean the best one. I see each paradigm as a different point of view, each of which has its own strength and weakness. As a metaphor let us consider our eyes. If we close our eyes one after another we find that the image we have from our left eye is a bit different compared to the right eye, especially according to distance. Assuming that both eyes are healthy, can we say that the image we see from the left eye is better compared to the one we have from the right eye? Here I may say that my point of view is the doorway for me to understand the world out there but also also a barrier for what and how I can understand since it determines what I can and can not see. However, when we combine those images from the left and right eyes, we have another image with greater depth information, or what is called a 3D image. In this way, the left eye does not necessarily become the right one, yet
together both contribute to a better view. At some point, however, having the ability to see a 3D image gives us a lot of benefit, but at another point, it is better to view from one eye only. Say, for example, a hunter prefers to aim at the target through one eye. Now the question is how brave and critical are we to build a bridge that connects the differences without reducing them to the same or to leave them alone and choose appropriately.

In Chapter I, I started this philosophical reflection from a cultural diversity background and embraced a multi-paradigm standpoint. Levinas’ and others’ views about ethics brought me to integrative ethics. Being situated on this foundation now requires me not to exclude difference, rather to embrace diversity. Since each person is unique and brings their uniqueness along then whenever encountering the other, I, like it or not, encounter the alterity of the other. This alterity always characterises the moment of encountering (Dahlberg, Moss, & Pence, 2000). The more we encounter others in their alterity, the more we understand them. So I need to put into my consideration the alterity that is brought into the classroom by the students. Therefore, instead of providing and teaching the students a list of values from my ethical view, I prefer to help them to understand their own values while respecting others’ value. In order to understand their values, the student will need an experience of where their values are situated. Saying this, I need to provide such experiences that help the students become aware of their own values as well as each other’s values.

The challenge is how can I help my students to become aware of each other’s values? Since what I have in my mind about the other is never equal to the true other, then to be aware of the other I need to pay attention to the otherness of the other. As I shall never be able to grasp the other entirely, then I have to pay attention continuously. Hence, my obligation is to engage in ‘an infinite attention’ (Blanchot, 1988; Reading, 1996) toward the other. If I want my students to learn about how to know and respect the other through my role as a mathematics teacher, then my mathematics class should be characterised by this nonreciprocal, infinite attention toward the other. In order to have this characteristic each person in the classroom needs to develop an awareness of the other. For this purpose, each person needs to change from self-centered to
non-self centred. One needs to listen to the other instead of focusing on one's own mind. When I say each person, I mean anyone who is involved in the mathematics class, especially myself as the teacher. As a teacher, I have to be a good example for the students about how to listen to the other. Listening is not only about hearing a voice; rather, it is also about the meaning behind the voice and about the thought that constructs the meaning. Eventually, it is about the person whom the thought is unique to.

Consequently, in classroom practice I, as a teacher, and the students as well need to consider the uniqueness of each person. The instructional process should allow each individual to show his/her true self. So each individual in the classroom can encounter others in their alterity. As Levinas said, we discover the others only when we encounter them particularly in their own face and that the gaze of the other demands us not to reduce them to the same (Dahlberg, et al., 2000). Thus, a teacher needs to avoid all practices that reduce all persons to the same. It is our responsibility to not treat the others as the same as us or based on some generalised character, but recognise them as unique and unexchangeable (Bauman, 1993). We need to maintain the relationship with this true other, not an assumed other, since by doing otherwise the student’s true self will never appear, but the image of the student that is created by the teacher based on what can be grasped by the teacher or what the teacher wants them to be. By saying so, this classroom is not a place of universality anymore, since in front of me there is the other that is impossible for me to fully grasp. It is good for me to understand how people may be similar to one another. But knowing similarity amongst humans does not guarantee that I know exactly who a particular person before me is because each individual is unique. Thus, the particularity that comes from uniqueness needs to be recognised.

If particularity needs to be acknowledged then respecting difference should characterise the classroom. Classroom activities and the environment should provide an experience of the existence of difference, so students and teacher may learn to respect difference. The word ‘respecting’ demands us not to grasp the other. In line with Levinas’ view, there must be a shift in approaching others, moving from sameness to heterogeneity, from grasping to respecting (Dahlberg,
Moss & Pence, 2000). Respect may come from my willingness to understand not only how the other is similar to me but also how the other is different. It comes from how I approach the other from the otherness of the other, not from what I can grasp from the other, since what I can grasp from the other is less than the true other. I need to hold myself from grasping the other.

In order to understand the true other, I should not start from what I have in mind about the other but from how the others represent themselves. I need to pay attention to what they show about their selves. I need to listen to others’ voices. I need to be mindful of the existence of the other before me. In classroom practice then the instructional process by design should allow each person, teacher or student, to learn how to understand the other. There must be a moment to encounter the other, a moment to interact and to communicate with the other, so each person learns how to listen to each other’s voice and experience difference. As a teacher, I should put the student at the starting point, not myself. I need to put them at the centre of the learning process, prior to myself, while avoiding reducing the student to a state based on my assumptions, instead trying to understand their actual state. I should approach the student from their actual development by listening to their voice. So there should be a place for students to express their voices. The student would need to have an opportunity to listen to fellow students, in order to learn how they may be similar or different to each other, and learn to respect the other’s voice. At this point dialogue, where all listen to each other from each position and experience in the process of encountering (Dahlberg, et al., 2000), is necessary. Through dialogue, we are brought into a relationship with the other, where we can listen and be listened to by the other. It is a relationship where we are learning how to be mindful of our responsibility not to grasp the other, rather to become able to respond to the alterity of the other with respect. In dialogue, we are listening to the other first without asking to be listened to, though eventually both sides are listening and being listened to by the other, since each side does the same. In other words, by learning to listen first in dialogue, we learn to put the other prior to ourselves without asking the other to do the same. We are learning the asymmetrical relationship, coloured by the alterity of
the other and filled with our responsibility not to grasp the other, which makes the encounter become a moral event (Bauman: 1993). Dialogue situated in awareness of similarity and difference will help us to experience deeply the moment of encountering the other.

Regarding these thoughts about pedagogy, I now consider some approaches that align with them: pedagogy of listening, transformative learning and PMRI (Pembelajaran Matematika Realistik Indonesia - Realistic Mathematics Education of Indonesia). I consider them because there are characteristics that belong to each of them that meet such thoughts about ethical responsibility. There might be other approaches that suit these thoughts that are not covered here. So I encourage us to keep exploring those that might be suitable for our own situation.

**Pedagogy of Listening**

*Today is the first day of implementation in the classroom. As informed by the teacher earlier, there is a flag ceremony today. As usual, this ceremony will take quite a long time and consume a certain amount of the first lesson. And eventually, it ends at 08.05. After the ceremony, the teacher asks the students to clean the room while waiting for the other students who are still in the yard because of a disciplinary matter. However, after the students finish cleaning the room, the other students are still in the yard. Then I suggest to the teacher to make an activity with the students in the classroom while waiting, but the teacher prefers to start the class with all students. Eventually, we only have 15 minutes left to start this very first lesson. It is too short. However, this condition raises a question in my mind about how the situation will be later. The lesson prepared for today is constructing the concept of place value. So the lesson is started by showing four types of strings of beads, namely structured in 10, 5, 2 and no structure (random). The goal of showing these strings of beads is giving an opportunity to the students to see the advantage of ‘the structure of ten’. Students are very excited when they see the strings of beads. The teacher hangs the strings on the whiteboard separately. Then the teacher asks some students to count how many beads are on each string. In the beginning, the students are waiting their turn patiently but as time passes by students who are still sitting at their desks ask to have their turn. Considering the time limit and students’ enthusiasm the teacher lets them come forward. So there are 60 students in front of the class. They cram in front of the class to count the nearest beads. The teacher observes the way students count and tells me, "Apparentl**
way without being taught”. So I use this opportunity to encourage the teacher to start listening to the students’ thoughts, and find out what they have known already, what strategy they use. There are not many things we can do today because the bell will be ringing in no time. However, students’ enthusiasm and happiness give us a positive feeling.

(Observation 23rd July 2012)

The note above shows that the teacher, who participated in this study, starts to realise students’ competence when she stops telling and starts listening to the students. When we hold ourselves back and start to listen to the students, we shall see how competent they are.

Listening is not about our ear only but using all our senses. On another occasion in my fieldwork, I have a conversation with the teacher after she finished marking students’ first paperwork. She was complaining that the students still did not understand since there are only a few of them that answer correctly. When I was looking at how she marked students’ work, I can see that she only checked the final answer. Then I asked her to think about what the students understand by analysing their work. She was stunned since she has never thought about it. Then we start to discuss each student’s work, to find how the student thinks through the pattern shown in his/her work. By doing so, we gather a lot more information about the student’s developmental state compared to the marking based on the final answer only. It is not only more information but also a different conclusion that the student who gets 20 marks out of 100 is not that bad. This student just missed a little thing and with a little help will get on the right path. So we got not only more information and a different conclusion but also a plan to fix the student’s problem. By listening to the student’s thoughts, we can choose proper action according to their condition. How much worse it might get if we neglect the student’s thoughts. The teacher’s disappointment may raise distrust and anxiety and take wrong action based on a different conclusion that may stop the student from developing further.

**Ballad of Bob the Driver**

One warm sunny day  
Bob drives half sleepy
Feels tired from night shifty
Approaching the junction slowly

Look to the right
Look to the left
Logic says it is safe
For him to continue to drive

But big officer stands firm
Blocking Bob from continuing straight
Confused about his aim
Bob moves to the roadside

Stop sign is the reason
Paying fine and demerit points is the consequence
Rule is an absolute position
Logic has no chance to commence

Why does the rule exist?
Is it a goal?
Is it a means?
There are lessons to learn...

Bob drives with caution
Having experience makes him aware
Slowly approaching the junction
Move... there is no officer...!!?

I wrote the poem above as an example of how a person may learn a different message when there is no understanding. In that poem both parties, Bob the driver and the officer, do not try to listen to each other's thought. Unsatisfied with the situation and not able to explain his thought misleads Bob to a different message. Such a thing may also happen to my students. The benefit that is gained from listening to the students is not only for them but also for myself. By listening to the students, I learn and improve myself. This short quote from my observation in the classroom may become a suitable example for what I am trying to say.

While the teacher helps some students there is one student, say Grey, who starts to disturb his fellow students who are close to him. I approach him and have this conversation,

Me : “Are you finished?”
Grey : “Yes, I am, Sir.”
Me : “May I see?”
Grey : *(Show his book)*
Me : “Great. So if I may ask, why don’t you pay attention to your teacher?”
Grey : “I know it already, Sir. The problem is too easy. I’m getting bored.”
Me : “Then you can help your friends who haven’t understood yet so that they can understand it as well. If you disturb them they will not understand it, will they..”
Grey : “Yes, Sir.”
Me : “So, instead of disturbing them, please help your friends, would you?”
Grey : “Yes, Sir...”

To be honest, I did not like it when I saw him disturbing his friends, the first time. But after I found that he had done the task well, I learned that I need to think carefully about the maths problem provided for the students. I need to consider their zone of proximal development (Vygotsky, 1978) to provide a proper task, which is not too easy and not too difficult for them. Sometimes I judge my students based on my prejudice. By doing so, I grasp them from my limited point of view, which in the end masks their actual selves. I fail to recognise their real potential or maybe their actual state, which prevents them and also myself from improving. By listening to the students, I suspend my judgement and prejudice (Rinaldi, 2004). It lets me recognise them and also myself. It provides me a moment to reflect on my initial view and action, the judgement and the prejudice, makes it possible to revise and improve them. Thus, I can improve myself while helping the students to improve themselves.

**Transformative Education**

At the beginning of my learning experience in mathematics education, I heard about a series of stimulus–response strategies plus reinforcement that can help someone to learn, as suggested by great psychologists such as Pavlov, Thorndike or Skinner in their conditioning learning theory (McSweeney & Murphy, 2014). In this way, I, as a teacher, needed to manage actively by giving a proper stimulus and increasing the frequency of the expected responses while decreasing the negative responses through reinforcement. By doing this series of stimulus-response strategies consistently, I expected my student would recognise and memorise the proper and improper responses, related to the knowledge being learned. Through this controlled condition I wanted my
students to learn the knowledge that I offered to them. In other words, it is me who determined what they needed to learn and how they were supposed to learn. I am transmitting the knowledge to students, and they learn by memorization and rote recall (Taylor, 2014).

Further on, I learned another view that regards students’ constructive mind (Bruner, 1961; Piaget, 1977; Taylor, 2014; Vygotsky, 1978). This view asserts that students need to be actively making meaning in order to construct their own knowledge by reflecting on their experiences. Regarding this view, the student is the main actor in constructing knowledge. In this way, the teacher needs to facilitate the student with the proper learning environment in order to be able to construct such knowledge. Being fascinated by the view of the student's role as the main actor, not the passive receiver of ready-made knowledge, I tried to find out more about meaning making.

In my search I found two dimensions of meaning making, which are 'meaning scheme' and 'meaning perspective' (Mezirow, 1990). Meaning scheme is an habitual expectation as an implicit rule used for interpreting, while meaning perspective refers to the structure where assimilation and transformation of new and old experiences happen through the process of interpretation (Mezirow, 1990). The scheme of meaning is enriched and revised continuously by a process of interpretation of new experience. Since experiences can be gained from different situations, environments or society, then we could not expect that each person interprets in the same way because the interpretation process depends on those differences. This reasoning explains how our meaning perspectives may be different and distorted as well, resulting in our limitedness in making sense of our experience of the world (Mezirow, 1991; Taylor, 2013). In this way, learning itself is a transformation process. It is a transformation process of meaning scheme and perspective as a result of reflection on new experiences. According to Mezirow (1994, pp.222-223), “learning is defined as the social process of construing and appropriating a new or revised interpretation of the meaning of one’s experience as a guide to action".
The focus on transformation, while based on assumptions of a constructivist perspective (Mezirow, 1994), gives birth to transformative learning. Transformative learning plays a role in preparing citizens as critical self-reflective thinkers with the capability of contesting taken for granted social norms and making ethical judgments that lie at the heart of the process of democracy (Taylor, 2013). Transformative learning is learning that transforms problematic frames of reference, sets of fixed assumptions and expectations to make them more inclusive, discriminating, open, reflective, and emotionally able to change (Mezirow, 2003).

In order to achieve a transformative intention, learning that involves merely how to do or perform something is not sufficient. This type of learning is also known as instrumental learning, which is about controlling and manipulating the environment, with an emphasis on improving predictions and performance (Mezirow, 2003). In addition to basic competencies of doing or performing, we also need to understand others' meaning, which can be achieved by 'communicative learning' (Mezirow, 1994). Since this meaning is constructed through interpretation of experiences then commonly it is related to values, beliefs, presumptions, norms, intentions or feelings, which are attached to those experiences. And naturally each person may express those attachments differently. Here we start to be aware of the presence of the other. This awareness serves as the basis where the ethical aspect of transformative learning is situated. Thus in order to understand meaning we need to uncover those things related to meaning. The effort of understanding is the gate to reflection and critical thinking that leads to revision or transformation of one's meaning scheme and perspective.

Since we learn through reflecting on our experience, then it is important to provide for the student the experience of being understood – being listened to. By doing so, the student learns how to understand from their experience. In this way, it is not only the student who needs to understand or who needs to transform, but also the teacher. Thus, it can be said that both student and teacher are transformed together into a better state through transformative learning.
Chapter V Contemplating on My Future Professional Practice

An opportunity from PMRI

When I was feeling over stressed and was running out of ideas about what to write, I liked to spend some time watching video clips from various auditions available on the Internet. I did this too when I was trying to formulate this section. Usually, I chose a funny audition so I could laugh and get relaxed a bit. But this time, I chose “The Best Auditions” as the keyword to find them. It seemed my choice was turning out well for me, as I felt inspired by the performers I viewed on the video clips. They were incredible and unique. Watching the amazing performances moved me. Each had talent, but I am sure that they needed to polish that talent well to come to achieve this level of quality performance. I believe that they would have tried the best to reach this level.

After viewing “The Best Auditions” I asked myself, what was the best thing I had ever done in my life? What was my highest achievement so far? What had I done so far to improve myself? To some extent, I felt sorry for my past, since I realised that I should have done better. However, since I could not change the past, I started to ask what would be the best I could do in the future. What should I do to bring myself up to a higher level? This question about my future pushes me to think about my current self and makes me aware of what I am doing right now. Currently, I am a doctoral student, who wants to achieve the best in my study so as to contribute to improving the education services in my professional area within society. Though my study might not be an award-winning one, I nevertheless want to make the best of it, to improve my professional working environment and myself.

In this study, I have a concern for ethics. I ask myself regularly, how can my concern for ethics help to improve society and myself? As I have discussed in Chapter II, ethics is about our responses to the existence of others, as when a person is called to be ethically responsible. My country, Indonesia, is characterised by plurality. Hence, I need to try to be aware of others in my society who may be different from me. I need to be mindful of the differences. I believe that when ethical responsibility governs how we act in society, then individual differences will not be such a major problem. They may even become
a value that characterises tolerance in our community. These differences between people then may provide a greater opportunity to the society to grow and improve. So, how must I play my role to pursue this dream?

If I am keen to improve society, then I need more people with the same goals. Alone, I am limited in what I can do to create a better society. Thus, I need to share my views with others in order to get more people involved in improving our community and ourselves. In this study, I am focusing particularly on my role inside the classroom as a mathematics educator.

Before I started this study, I was fortunate to discover an approach to mathematics education that transformed my view of the nature and purpose of mathematics education. Realistic Mathematics Education (RME) was developed and introduced by the Freudenthal Institute in the Netherlands. In 2000, a team from the Netherlands came to Indonesia, and *Pembelajaran Matematika Realistik Indonesia* (PMRI) was developed as an Indonesian version of RME (de Haan, 2010).

PMRI and RME share key components. PMRI is not exactly the same as RME, since there are cultural differences in education between the Netherlands and Indonesia (de Haan, 2010). The underlying principle is strongly influenced by Hans Freudenthal’s view of mathematics. According to Freudenthal (1991), mathematics is a human activity. Thus, mathematics must be connected to the ‘real world’. So there are two important views from Freudenthal (1991), namely: mathematics as a human activity and mathematics must be connected to the real world.

As a human activity, mathematical concepts should be reinvented by students while they are learning in the classroom. In this way, the students can experience by themselves how mathematics was invented. For mathematics to be connected with the real world, it must be close to students’ lived experiences, relevant to their daily lives and available in the community where they live. However, it should be emphasised that the word ‘realistic’ is not only about the relationship with the real world, but is also related to situations or events that are real in students’ minds or is something that they can imagine (Gravemeijer,
Chapter V Contemplating on My Future Professional Practice

1994). This view asserts that ontologically PMRI views reality as not only out there but also internalised.

Through reflection on my experiences during this study, in particular on the period I spent in the classroom with students and a teacher using this approach, I have found strategies or opportunities of incorporating ethical considerations within PMRI. These strategies include: realistic problem, open problem, interactivity and reflection.

1. **Realistic Problems**

   Next topic is subtraction. Teacher shows this problem on the board.

   ![Chocolate Shop](image)

   **Figure 5.1. Realistic Problem 1**

   The teacher tells the students that the parent of the girl in the picture, Gisel, gives her the responsibility to mind their chocolate shop. Before continuing to the problem, the teacher uses the opportunity coming from the keyword ‘responsibility’ to talk with students more about responsibility. The teacher asks, “What will happen if Gisel does not enact her responsibility well?” Some students give different responses such as the shop will experience some loss; they will go bankrupt; those (Gisel’s parent) who gave her the responsibility will get angry. Having these responses, the teacher continues, “Now, tell me about yourself, what is your role at home?” And some students respond eagerly almost at the same time. I cannot tell who says what, yet I can pick some different responses, such as: as a daughter; helping mum to sweep the floor; mopping; cleaning up the lavatory; feeding chickens (pets).

   “How about your responsibility at school?” the teacher continues. Again, they respond in a similar way: studying; doing homework; seeking for knowledge; cleaning the classroom according to the schedule; listening to the teachers. “And what might happen if you do not enact your
responsibility well?” asks the teacher again. “Being scolded by the parent,” says one student. “Getting punished,” says another one. “What kind of punishment it could be?” asks the teacher curiously. “Lifting one leg and two hands; getting hit; being slapped on the cheek,” respond the students one after another. The last two responses move me a bit, although I know that kind of practice is still happening in our society. There are about seven students who admit having such treatment at home when the teacher tries to confirm further with the students. “Unfortunate kids,” I say in my mind.

“So, why do you think we need to enact our responsibility?” the teacher continues with another question, without giving any further comment to the physical harassment. “To avoid punishment,” says one student. “To make our parents proud,” says another one. “How about in school?” says the teacher. “To avoid teacher’s punishment,” one of the students responds. “Ok, there might be some reasons why we need to enact our responsibilities as you have mentioned. Another reason might be that it might give you or your family some benefit if you enact your responsibility well. Now let us continue with the problem here,” says the teacher to conclude the discussion on responsibility and to continue with the mathematics problem.

Then the teacher starts to explain the problem. Gisel’s family sells a lot of variations of chocolates. One variation of those chocolates is put in such a container as shown in the picture. Each box contains 100 pieces of chocolate, and each paper bag contains ten pieces of chocolate. The initial amount of that variation of chocolate that day is shown in the picture. Then some buyers buy some chocolates as shown in the table. The questions are how many chocolates are sold and how many are left?

(Observation note, 22nd August 2012)

Based on Freudenthal’s view that mathematics must be connected to the real world, PMRI asserts the importance of realistic problems in the mathematics classroom. The word realistic may be interpreted as, but not limited to, contextual problems, since the meaning of ‘real’ in PMRI is broader than contextual problems. A problem is considered to be a realistic problem as long as the students can imagine that problem. It may be set as a story that is related to their everyday experiences. Stories have potential to trigger our feelings and imagination. The closer a story is to our lived experiences the more realistic are our feelings and imagination. This characteristic can be used to trigger our consideration about ethical responsibility.

The observation note above is an example of a realistic problem used in this study. Figure 5.1 shows Gisel, a shopkeeper girl, who is asked by her parents
to mind their chocolate shop. This problem is related to mathematical concepts such as place value, addition and subtraction, which are covered in the contextual story. At first glance, this problem has nothing to do with ethics. However, through the story about Gisel, the teacher connected the problem with ethical concerns, which arose in discussion with the students. The teacher asked the students what might happen if Gisel did not take her responsibility seriously. This question played a significant role, as it opened the opportunity for students to consider ethical issues. Responses provided by students to this question allowed us to focus on students’ personal experiences in order to generate a strong impression about ethical responsibility. In order to achieve this, the teacher asked the students, “What is your responsibility at home? Why do you need to enact your responsibility?” By posing this question, the teacher encouraged students to reflect on their experiences and think about their own responsibility. We need to remember that these questions do not seek a best or correct answer but are intended to provide an opportunity for students to think about their ethical responsibility.

![Figure 5.2](image)

*Rudi’s father is a good chocolate maker. Apart from that, he also cares about the environment. He prefers to use paper bags instead of plastic to pack his chocolates. Each 10 chocolates are put inside a paper bag, and each 10 paper bags are put into a cardboard box. Rudi helps his father to pack the chocolates. Would you help Rudi pack the chocolates?*

**Figure 5.2. Realistic Problem 2**

Figure 5.2 shows a second realistic problem used in this study. Key points that I considered when developing these realistic problems are:
a. Use students’ everyday reality to make the problem real and imaginable for them.

b. Use ethics related keywords (e.g., responsibility, good, help) to stimulate or initiate a discussion on ethical issues.

c. Use a social issue to prompt students to consider ethics. This may be stated clearly in the problem or told by the teacher when delivering the story. It is important to make the ethical issue fit naturally with the problem, not just an added extra.

d. Use a recognisable story character to help students to relate to the character and assist them to cultivate meaning. As an example, students recognised Gisel (from problem 1) as a good girl. Then when the teacher asked them about the characteristics of a good girl, they were readily able to offer suggestions such as willing to help, honest, responsible, and respectful of elders. Other characteristics are likely to follow as the discussion proceeds.

2. Open Problem

In this lesson, we are using a string of beads again. The teacher hangs a string of beads on the white board. At the beginning of the lesson, the teacher asks students to determine how many beads there are. Some students, including Maria, a smart student who actively participates in every lesson, come forward to explain their strategy to determine the amount of beads. Different strategies are jump counting by ten, adding 10 ten times, counting the white and red beads alternately to get 50 + 50, using the symbols of 10x10 and 50x2.

The lesson continued with hanging a number card on the string of beads. Students raise their hand asking for permission to hang the number card. Students seem enthusiastic. In addition to hanging the card, as a variation students are invited to guess the number on a closed card. The student who comes forward is asked to explain how they can determine the number of the card with a certain position. Some students are still counting one by one, while others are counting forward or using the structure of ten. This opportunity is used by the teacher to focus on the structure of ten, by asking which strategy is the easiest or fastest. By this question, students start to use the structure of ten so they can determine faster the card position or the unknown number. This process helps to determine the effectiveness and efficiency of the strategy.
After playing with the cards and strings of beads the teacher gives them a sheet with a picture of the string of beads and empty card numbers on it. The teacher asks students in pairs (with desk mate) to play a guessing number game. The rule is one student pulls a line from an empty card to the string of beads to determine its position on the string of beads. Then the other student has to determine the number related to the card’s position. Both of the students switch roles alternately. Students are enjoying the game while interacting with partner filling the empty cards. The teacher walks around the class observing how students play and at the same time smiles while looking at students’ behaviour and giving help to some students. Some smart students finish the game earlier, and then I whisper to the teacher to ask them to draw their own extra empty card for an additional exercise. When the bell rings students ask if they can keep the sheet for themselves. Considering this condition, I decide to let them keep it and the students are happy with this decision. I’m happy looking at their cheerful expression.

(Observation note, 1st August 2012)

An open problem approach challenges students to find different answers or strategies and opens up an opportunity for the students to experience varying responses to a given situation. In the observation note above, instead of telling the students the strategy to determine the number on the string of beads, the teacher encouraged them to explore and use their own strategy. And after comparing different strategies they could come up with a preferred one, by considering its efficiency and effectiveness. By using this kind of problem, the students have a real opportunity to choose their own way to solve the problem. In line with this characteristic, students are also asked to develop and use their own model to solve the problem. This situation is consistent with Bishop’s assertion (2008) on the role of choices, and of choosing for the students. By exposing the students to different answers, each of which is true, they learn to open their eyes to the possibility of finding different solutions to a problem. This condition is an opportunity to learn that there are truths other than the one they already know. It is also an opportunity to encourage students to think critically in diverse circumstances, to check truth or value from different viewpoints, and to reflect critically on their individual points of view. In my experience, I have more motivation to think critically about my own views when I am exposed to other views different from mine. Being exposed to the
perspectives of others can stimulate us to think critically about our own existing set of views.

3. **Interactivity**

As usual, the lesson is started by doing routine exercises. The exercises, this time, is about addition using chocolate packaging context. The problems are presented in a table, which provides some information about the amount of paper bags, which each of them filled with ten chocolates, and pieces of chocolates that are still outside of the packaging. This time, the amount of the pieces of chocolate, which are still outside of the packaging, are more than ten. This idea came from the teacher to confirm students’ understanding about tens and units because she was afraid that in the previous lesson the students were only combining number from hundreds, tens and units without constructing adequate understanding about place value. In order to avoid a disturbance in hundreds, tens and units concept, the teacher tells the students the situation of the problem, that is Daniel and Gisel (the characters from the previous lesson) have not finished their tasks to put the chocolates into the paper bags.

After the teacher receives all students’ work and looks at them, she finds that some students have answered incorrectly. So, the teacher tells me that she wants to learn more about students’ thinking and asks me if it is alright to deviate from our initial plan a bit by discussing the students’ work. I say to her that it is a good idea, and then we decide to ask some students to represent their work in front of the class and have a discussion with other students. For me, the teacher’s willingness to find out and listen to students’ thoughts is a good development. It is also good feedback for the students to have a discussion about their work right after they finish it.

The first student comes forward, let us call him Samuel. Samuel explains that he adds the numbers from each column together to get the final result.

\[
7 + 24 = 31; \quad 6 + 23 = 29; \quad \text{and} \quad 31 + 29 = 60
\]

<table>
<thead>
<tr>
<th>Amount of chocolate</th>
<th>Amount of chocolate</th>
<th>Total amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>24</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>29</td>
<td>0</td>
<td>60</td>
</tr>
</tbody>
</table>

From his explanation, I can see that he has no problem in addition, and from the way he puts 6 and 0 on the right side columns of the table, I can tell that he understand about place value. However, he was careless and made a mistake in interpreting the number of paper bags of Daniel and Gisel and ended up adding the number with the amount of pieces of chocolates outside the packaging. After he explained his work in front of the class, the teacher asks other students to give their comments. At this moment, many enthusiastic students raise their hands. The teacher asks one girl, say Maria, to express her opinion. But instead of expressing her
opinion in words, Maria comes forward and starts to write the correct answer on the blackboard. Realising what she intends to do, the teacher stops Maria before she continues any further, and asks Maria to express her comment or question about Samuel’s work in words. Maria stops and looks a bit confused, and then she points to the column, which has the wrong answer, without saying any word. The teacher, then, approaches Maria and asks her privately what she means by pointing at that column. After Maria explains to the teacher what she has in her mind, the teacher asks Maria to repeat to the other students what she has explained. Then Maria says, “Why do you add these two numbers together? This number (pointing at 7) means that there are 7 bags of chocolate. There are ten chocolates inside each bag. So, there are supposed to be 70 chocolates from this column.” Listening to Maria’s explanation, Samuel realises his mistake, yet he excuses himself by saying that mistakenly he wrote it that way. The teacher uses this excuse to talk about honesty. “It is good to be honest especially when we make a mistake because by honestly accepting our mistake we have an opportunity to fix it. Thus, after fixing our mistake, we improve ourselves. If we deny our mistakes we will never have the chance to improve ourselves, rather keep making the mistake over and over again.” Says the teacher. “So, Samuel did you mistakenly write it that way, or you did it wrong?” she continues. “Sorry, Mam, I did it wrong.” Says Samuel. “Good boy, I know that you are smart and that you know how to do it correctly now. So, do it carefully next time to avoid such a mistake, ok”, responds the teacher.

Afterwards, the teacher asks the next student to come forward, let us call her Theresia, to present her work.

<table>
<thead>
<tr>
<th></th>
<th>Daniel</th>
<th></th>
<th>Gisel</th>
<th></th>
<th>Total amount</th>
<th>Amount of chocolate</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>24</td>
<td>724</td>
<td>6</td>
<td>23</td>
<td>623</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>177</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

In my view, her work is a bit weird. I cannot guess how she was thinking. From the table, I can see that she just combines the numbers to determine the amount of chocolate that Daniel and Gisel have. However at the end, She gets the answer correct for the total amount of that Daniel and Gisel have together. These two answers have no connection at all. So, I am looking forward to listening to her explanation. Unfortunately, he does not say anything in front of the class. Thus, the teacher asks another student, say Nova, who has a similar answer to help Theresia. Nova starts to explain her work but does not explain how she got the total amount. Surprisingly, after Nova explains her work, Theresia asks for another opportunity to explain her work. As soon as Theresia finishes her explanation, some students raise their hands already to give comments. A student, say Rola, asks about how Theresia and Nova get the total since in her opinion the sum of Daniel’s and Gisel’s chocolates that they present on the table is not equal to the total they provide. Having Theresia and Nova stay silent, the teacher asks Rola to show how she would add those numbers on the blackboard. After Rola shows how she would add the numbers, the teacher
asks Theresia and Nova again how they got their answer. But they still stay silent. I can see a sign of tension in their expression. The teacher then continues by saying, “Do not be afraid, and just reveal what you have in your mind whatever it is. I repeat, I am saying this not only for Theresia and Nova but also for all of you. Just tell me honestly what you have in your mind, so if there is a problem I would be able to help you. You do not need to worry if you are making a mistake. We are learning now, and it is common to make some mistakes when we are learning. So, could you please explain to us how you got that total?” With a soft voice that I can barely hear from where I am standing, Theresia answers the teacher, “I did not do it; I got the answer from my friend’s work, Mam.” Then the mystery is now revealed to me. It makes sense now why there is no connection between the numbers on their answers in the table. “Thank you for your honesty, please go back to your desks,” says the teacher. “This is a lesson for all of you. By cheating, you may get the answer correct, but you do not get the knowledge, which is more important than the correct answer. Another reason why cheating is not right is that when you get a correct answer from cheating, you are covering your weakness, consequently I, your teacher, cannot help you to improve any further. Hence, you will keep your weakness forever. On the contrary, if you honestly show your weakness when we are learning, then I would be able to help you to overcome it. So you may improve and become better and better.

(Observation note, 5th September 2012)

The observation note above shows an example of interaction from my fieldwork. Although it was not as perfect as I expected, there were some positive points I could learn from that class. Maria in that note was a smart girl. However, the note showed that she had a problem to express her thought into words. This issue was not a surprising fact for me considering our culture with large power distance (see Chapter I). In the name of social hierarchy, commonly kids barely have an opportunity to express their thoughts. They usually are required to keep silent and listen to their parent or teacher. This condition, in my opinion, is not good for the development of students’ communicative competence, which is an essential competency in their future life. And I was happy that she got an opportunity to learn how to express her thoughts in this lesson. Interaction in this lesson opened a possibility for students to be listened to. Interaction in this lesson also provided a significant opportunity for the teacher to communicate her ethical message. I could see how the teacher tried to respect the students and encourage them to express honestly their minds and their selves. Theresia and others were not only interacting with the teacher and other
students but also interacting with their selves, which allowed them to realise their mistakes and to be honest about it.

Interactivity is another characteristic of PMRI/RME (Gravemeijer, 1994), which may play a significant role in the effort to raise ethical concerns in the mathematics classroom. Our awareness of others is raised when we encounter the other. Thus, in the classroom, we need to plan to increase opportunities for students to encounter others. Verbal interaction or dialogic engagement is one possible way to do this. Through such interaction students can experience the different viewpoints of others; it is an opportunity to encounter the true other. The more the students interact with each other, the more they are exposed to the ideas of the other and the greater the opportunity they have to develop ethical responsibility through awareness of the individuality of others.

Encountering the other not only opens the opportunity to encounter the self, but it also opens the opportunity to interact with one’s self through the mechanism of self-reflection. My awareness of others and how I might be similar or different to them might help me become more aware of myself. Eventually, interactions with others that provide this opportunity may help us to understand better ourselves and others, which may improve our ability to respond to the other more ethically. Through such interactions students have opportunities to encounter the other, to listen to the other’s thoughts and be listened to, to feel the difference and be part of it, and learn how to respect the other. The interaction that is built up between students and their environment will create a more democratic atmosphere. Thus, students will get to accept and appreciate other people’s opinions as well as learn to defend their views with proper arguments. In this way, they will learn to maintain their conviction about their free choice by appreciating others.

4. Reflection

In this lesson, we want to focus on the students’ competencies individually. We are considering this matter based on the evaluation of students’ work in the previous lesson. In the previous lesson students claimed that they understood the topic that they were learning, which is the number line.
However, when they were asked to do some exercises, only a quarter of the students could answer correctly while the rest seemed confused or did not understand yet. Considering this situation, I wanted to know the condition of each individual.

From the ethical side, this opportunity, which arises from students’ evaluation, is used to reflect on honesty. But we do not have an intention to emphasise that being honest is an obligation and the only right thing to do. In order to do that, the teacher starts with a question, “What are the possible consequences if a student is not honest?” Some responses from the students are: being sent to hell; getting punished; self-harming. From those responses the teacher summarises that there will be some negative effects that harms oneself if someone is dishonest. Then the teacher continues, “A similar issue also happens in the classroom. If a student dishonestly says that he/she understands the topic already, then the teacher will continue with the next topic while the dishonest student still does not understand the topic. If that student honestly acknowledges that he/she does not understand the topic, then the teacher will find an appropriate way to help him/her to understand the topic. Which one do you prefer, being honest or dishonest?” Then together the students respond, “Being honest, Mam.” Having such a response, the teacher says, “That is good. So, let us continue our lesson, and I want you to be honest whether you understand the lesson or not.” Through this reflection, the teacher intends to emphasise that the students always have the option to choose, whether to be honest or not. Each choice has a consequence and the person who makes the choice is responsible for the consequence.

The challenge of our desire to know each individual competency comes from the large amount of 61 students in the classroom. Having this challenge we have prepared a tool for the students, that is, laminated papers with markers to write on it. The students were expected to write down their work on the laminated paper and then to lift it up so the teacher can see it at the set time. This tool is intended to record student’s individual work and to be used repeatedly. By using this tool, the teacher can inspect students’ work while avoiding noise.

Since there are two students at each desk, then as the first step, the teacher differentiates the problem given to the student on the left and the one on the right. After sometime, the students seem to work independently, and then the teacher gives them the same problem. This time I can see that the students still work independently even if they are having the same problem.

The first problem is to complete the number line where there are two consecutive numbers. The difference between the two consecutive numbers is expected to be used to determine the next or previous numbers. To promote students’ strategies, the teacher asks some students who can answer correctly to explain their strategies before continuing to the next problem. This approach seems work well since more students can answer correctly, up to the moment when there are only two or three students who
still get it wrong. A similar approach is repeated for different difficulty levels. And for each difficulty level the teacher asks the students to acknowledge honestly or to ask about what they do not understand. In response to this request, some students raise their hand and ask questions. I am happy to see how they overcome their embarrassed feeling.

The next variation of the problem shows a number line with one unknown number between two known numbers. Some students can answer this type of problem instantly, but more students cannot answer it. From the discussion, they can conclude a possible strategy, that is, determining half of the difference of known numbers. In this case, some students use a ‘counting forward’ strategy while others use subtraction.

When the teacher gives another variation of the problem, which is two unknown numbers between two known numbers, there are only two or three students who can continue. The problem for them is determining one-third of the difference. It seems that they are not ready yet to construct the concept or to solve the problem related to one-third or division by three.

This individual approach appears to be important to complement the group approach we used so far. When they are interacting in groups, it is hard to watch personal development, and some students may hide what they do not understand. With this approach, we can see individual competency without consuming much time while avoiding noise.

(Observation note, 12th September 2012)

We learn many things from our experiences. Experience is a key element in our learning. However, sometimes, we do not provide ourselves with enough time to reflect on our experiences, and this may reduce our opportunity to gain something positive from them. Hiebert (in Nelissen, 1999, p.14) stated, “reflection or metacognition can be defined as the conscious consideration of one’s experiences, often in the interests of establishing relationships between ideas or actions. It involves thinking back on one’s experiences and taking the experiences as objects of thought”. Based on this quote, reflection is something that is done consciously by someone. Nobody can reflect on something unconsciously. Reflection is held when someone considers his or her experience related to an effort to identify or build relationships between ideas and actions in the experience. In the PMRI approach, a reflection step is designed for the students to think back on what they have learned. It is an opportunity for students to absorb and internalise what they have constructed recently in the class. This step also can be used for ethical
considerations. This opportunity will be the best moment for students to reflect on any values they have learned, and to internalise them. This step may amplify what they have just learned. In the lesson presented by the observation note above, the lesson was started with a reflection on honesty, and it was connected with students' work in the previous lesson. The message about honesty that they got from the reflection at the beginning of the lesson was carried out through the whole process of the lesson, to let the students experience in action what they have thought and talked about in relation to the need and benefits of honesty. The learning environment that leads the students to an honest practice and the words from the teacher keep reminding them about being honest. By trying to act honestly the students get the benefit of gaining the competencies expected from the lesson. In this way, what they experience will be the actual evidence for their discussion, which may strengthen the ethical message.

SYNOPSIS

In this chapter, I have discussed more about how ethics might be raised in the mathematics class. In short, the opportunities come from the characteristics of mathematics and the pedagogy that is used in the class. On the pedagogical issue, I have discussed three different approaches that might be used to raise ethical responsibility in the mathematics class. They are pedagogy of listening, transformative education and PMRI (Pembelajaran Matematika Realistik Indonesia/Realistic Mathematics Education). I also have discussed some strategies related to the characteristics of PMRI that can be used to incorporate ethical considerations within PMRI. These strategies include: realistic problem, open problem, interactivity and reflection.

In the next chapter, I apply these classroom pedagogical strategies to an individual context. I will discuss my experience of helping a particular child to learn mathematics. It will be more about how I tried to look from the child’s point of view in implementing the pedagogies I have discussed in this chapter. My attempt as a teacher to look from the child's viewpoint eventually helped the student and myself to improve ourselves.
CHAPTER VI
LOOKING FROM THE STUDENT’S POINT OF VIEW

INTRODUCTION

In the previous chapter I have discussed the opportunity for integrating ethics into mathematics education. This opportunity comes from the characteristics of mathematics and from the pedagogy used in mathematics education. The present chapter portrays the story of my experience of developing a transformative teaching practice. I argue that switching my point of view to my students’ meaning perspectives: (i) shows respect for their well-being as learners; (ii) helps me to take proper action in response to the difference between my teaching plan and the actual conditions regarding students’ learning trajectories; (iii) avoids unnecessary conflict while practising transformative teaching-learning; and (iv) ethically this experience provides a good opportunity for both me and my students to appreciate the importance of listening and dialogic engagement, which may help to generate respect and empathy for the other. In the end, the effort of understanding my students’ points of view helps me to facilitate the process of transformation in their making meaning, and also helps to transform me into a better teacher. This chapter has been modified from an earlier version as a paper that was presented at the third Exploring Leadership and Learning Theories in Asia (ELLTA) international conference at Penang in 2014.

A STORY ABOUT MY HOME TUTORING STUDENTS

I very much enjoy reading stories of all kinds, especially when they are written in a certain way that touches my feelings and triggers my imagination, yet are not short in meaning. That is why I like to read Anthony de Mello’s books. He does not only collect and tell stories, he also offers the reader the stimulus of a deep contemplation of the story, just like the story below, which is short, simple yet meaningful and inspires an opportunity for deep contemplation on a human issue.
A man began to give large doses of cod-liver oil to his Doberman because he had been told that the stuff was good for dogs. Each day he would hold the head of the protesting dog between his knees force its jaws open and pour the liquid down its throat. One day the dog broke loose and spilt the oil on the floor. Then, to the man's great surprise, it returned to lick the spoon. That is when he discovered that what the dog had been fighting was not the oil but his method of administering it. (De Mello, 2012)

For me as an educator, the message of this story is clearly delivered. Sometimes in my teaching practice I have found that the method I had chosen did not always work as expected. Things that I thought would happen, when planning my programme, did not always occur as I had envisaged. Responses that I expected from the students were not forthcoming. Reflecting on these situations raised a question in my mind, 'Had I missed something in putting the theory into practice?'. Until the moment when I stepped outside myself, to go ‘outside the box’ and take a different view, I had not realised that all of the unexpected events were unexpected by me because of the set of my carefully planned expectations; these held sway over my conceptualization. However, before me were students who had their own ways of thinking, expectations and ways of responding. So why was I adhering to my own mental set instead of trying to integrate it with my attempt to discern the students’ points of view?

In our reality, we have our own story largely created through our experiences. Having a little time to reflect on these experiences gives us an opportunity to gain a precious lesson from them. This chapter tells about my experience with two primary students. Though I do not referred to myself as a writer at the same level of a de Mello, yet I try to reflect on and give meaning to my experiences so that I can seek to learn more from these experiences.

I had two home tutoring students. They were brother and sister. The oldest one was in year three and her younger brother was in year one in a private primary school. Let us call the oldest one ‘Butet’ and the youngest one ‘Ucok’. These names respectively are the common traditional names used for girls and boys in the Bataknesse tribe, which happens to be mine. Having them as students was a precious experience for me. I could say that I learned a great deal from them, rather than simply teaching them, because I chose not to teach them in a
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didactic manner, rather to help them learn and build understanding of concepts at their own pace. I believe that every child has potential to construct knowledge in a meaningful way with good guidance from the teacher. The word 'meaningful' here indicates that students should construct their knowledge based on their previous knowledge or experience (Ausubel, 2000), while 'guidance' means any support from the teacher in helping the students to reinvent the concept for themselves. The term 'reinvent' is used to emphasise that the students do not invent absolutely a new concept since some 'expert' had previously invented it. In this way I want to help my students to reflect on their experiences, making interpretations for themselves that are central to the process of any making meaning (Mezirow, 1994).

Even though these two students were brother and sister, yet they were different in many aspects of their attitudes and behaviours. The older sister, Butet, had a big ambition to be or to perform at her best, which was a good quality in her. However, to some extent this ambition became a disadvantage, since sometimes it exerted pressure on her that was more than she could handle and affected negatively her performance, while her young brother, Ucok, was a smart boy; he could understand concepts quickly, recognize patterns easily, and was more independent as a learner than his sister. Yet Ucok was also a bit of a rebel. His ego dominated, sometimes he refused to do an exercise just by saying, “I don't want to do it”, without any reason or argument. When this happened, there was a need for considerable negotiation with him. Sometime this attitude also influenced Butet. At times she imitated Ucok by saying the same thing, that she did not want to do it. Finding that the situation was progressing in this way, I realised that I needed to figure out how to manage this kind of situation to prevent this developing negatively. Facing the question of 'how' always brings me to the question of 'why', since I need to seek an understanding before being able to solve the problem.

Being in a situation where my student refused to do an exercise, indeed raised questions. Why was this child refusing to do such an exercise? Was it merely because the student was a bad boy (or girl), or was there some hidden problem? How should I have responded to this refusal? When I saw this situation from
just my perspective, I would grumble to myself, 'what a rebel kid'. However, this way of viewing indeed did not help me much in my teaching. It did not provide me with a positive alternative approach. It rather cultivated a negative response in me that slowly but surely affected my relation with the student in a negative way. Concerning this possibility, I realised that my own view should not be the sole controlling factor in my efforts to understand and to determine my response to the situation. I realised that I needed to open my mind, my view, to cross the boundary of my limits to obtain a better view and understanding. I felt an urge to transform myself. This urge then raised other questions. Was there any interpretation or perception in Ucok’s mind that needed to be revised? Was it possible to help Ucok achieve some kind of transformational change? What was the ethical aspect of this transformative process? How did I also need to transform myself to develop a better teaching practice?

I found that there are always challenging questions to be answered when it comes to reflecting on my experience. However, this short chapter cannot address all of them. Thus, I am focusing the chapter on reflecting on my experience in order to answer the question, 'why is trying to understand the students’ views and integrate their views with my point of view a must for practising transformative learning? (see Chapter V for transformative learning)'.

**THE TEACHER’S POINT OF VIEW VERSUS THE STUDENT’S POINT OF VIEW**

One day I asked the young boy, Ucok, to count by fours. At the beginning he moved fast, counting from one number to the next number, up to 28 where he started to have trouble. I saw that he was using his fingers, and was taking time to come up with the next number. Suddenly Butet said, “It’s easy, 36, why are you so slow?” I asked Butet to get on with her own work and let Ucok continue counting in his own time. At that moment I also wondered why this smart boy had a problem with this ‘easy’ task. Less than one minute later I remembered an experience I had when I was in year 2, when I was sent by my teacher to stand outside of the class until I could recite the two-times multiplication table. This memory was awakened in me and I recalled being in trouble when I was in the same situation as he then found himself. The knowledge and the competences
that I have right now were not acquired instantly in the blink of an eye. There was a process to construct them. So why should I expect this boy then to find it easy to master the four-times table? At this moment I was aware of the different states of development of Ucok and myself.

For me counting by 4 is not a problem at all. I can also count backward or forward from any number. However, I am not the actor here, it is the boy. What really matters is what he perceives not what I perceive. It does not matter whether it is easy for me or not, the matter is how it is for him. The only question for me is how to help him to make meaning of the task.

Seeing that this kind of task is not a problem for me makes me realize that merely my point of view should not be enough to answer that last question. I need to understand Ucok’s point of view. At least I need to recollect my feeling and perceptions when I was struggling with the same problem. I need to be in his position to experience the feeling, the struggle, and the confusion, to understand the problem better and then be able to find the proper way to solve the problem. Finding the way that suits him is the real issue for me.

![Figure 6.1](image)

**Figure 6.1.** (a) actor's view; (b) observer's view

Children do see things differently from adults. Graivemeijer (2004), using Bill Watterson's (1996) comic cartoon as shown in figure 6.1, illustrated simply yet clearly the difference between a child's point of view (as an actor) and the point of view of another acting as an observer. The cartoon shows the richness of the child's imagination. Unfortunately as this imagination happened in a child's mind, it is hard to tell exactly what happened. However, we may predict what is going on by observing possible indications or phenomena in the actions,
attitudes and any non-verbal language shown by the child. Some questions may help us to verify our prediction. That was how I found the real reason for Ucok, when he said, 'I don’t want to do this'.

Aware of his refusal, I carefully ask him whether he wants to do certain tasks and make a deal with me to be followed up later. In Chapter V, I demonstrated that there are values in mathematics that are integrated within the mathematics' system itself. Thus, when students learn mathematics in the proper way they will learn about this intrinsic value as well. One of these values is consistency, which means that contradiction is not acceptable in the mathematics deductive system (Swadener & Soedjadi, 1988). When a statement is acceptable as a true one, then later statements should be in line with this statement. If the later statement contradicts the previous one, then it is enough to say that the later statement is wrong. Making a deal with the boy is one approach that, by design, is intended to give him the opportunity to learn about consistency. This approach allows him to understand, accept and value the necessity of keeping his word. It is a moment for him to learn how to value his own word, how to make a commitment and carry it through and, in so doing, make an important step forward in his ethical development. The deal-making approach is also designed to find a way round his attitude of refusal, since the deal is made based on the willingness of the boy to do the agreed task. However, eventually it is not enough to avoid his refusing.

One day, we agree that he will complete five problems about division (by grouping objects), and I let him choose the dividend (numerator) while I determine the divisor (denominator). In an instant he mentions five numbers: 14, 24, 34, 44, 54. These numbers show that he is aware of a pattern, however, he is not aware of the consequence of choosing a large number for this problem, that is, it will make the problem more difficult to him. He will need to draw some simple objects (e.g., stars, circle) as many as the dividend, and then start grouping them according to the divisor. This means that the bigger the number the more objects he needs to draw and the more tasks for him to do. Aware of this consequence, I ask him to make sure that he wants to use these large numbers. Facing his wish to continue using the large number and being curious
about his possible responses later, I continue and decide on the appropriate
divisors, and as expected, when he begins working on the third problem he says,
'I don't want to do it'.

At that moment honestly I feel both happy and cautious. I am feeling happy
because I have found the reason for his attitude of refusal. This is that when the
calculation problem involves a larger number than he can readily cope with, he
closes down, digs in his heels and refuses to go on. However, I am cautious
about the need to preserve the consistency value message. This message is that
when two persons enter voluntarily into an agreement, it is the better, more
human thing, to seek to honour that agreement. Thus, I choose to offer my
assistance and use a method to show him that the problem is not as hard as it
seems. I cannot imagine how worse my relationship would become with the boy
if I still keep seeing him as a rebel. For me, I might fail as a teacher and would
lose the opportunity to help my student transform into a better one. For him,
even worse, he might start to hate mathematics and the rebel attitude might
become worse. However, I tell myself, 'Now I know what to do'.

WHY THE NEED TO SWITCH ONE’S POINT OF VIEW?

Why do I need to see issues also from the student's point of view? Is not it a
shameful thing to do? I am an adult and I have travelled a long way in my
education and lived experience to have achieved my present way of thinking.
Why should I go back to the student's position that I have left behind a long time
ago? Sometimes some teachers, at least me, may have these questions. To some
extent these questions are reasonable as an appreciation of the effort and
achievement we have invested in gaining our experience. However, it is worth
trying to see into another person's point of view in order to develop and enrich
our set of points of view.

While thinking about this perspective, I read an article from Nardini and his
colleagues (2010) that discuss the difference between how adults’ and
children's eyes see the world. In their research it was found that adults have the
ability more readily to integrate information gathered from different senses,
while children depending on their age may tend to keep information from different sources separate. However, the adults’ ability to integrate the sensory information pays the price of losing access to individual sensory estimates, since these are integrated, while children keep stereo and texture information separate (Nardini, cs., 2010). Though this is literally about sensory information yet by thinking analogically I was inspired by this article to extend their concept to other aspects of learning mathematics.

All I have in making meaning are pieces of information that I have gathered through my senses. So meaning depends on the quality and quantity of this information. The integration of those pieces of information develops my understanding, and results in meaning. Somehow, when I am integrating the pieces of information and making meaning, there is a probability that I have only looked into general things, which makes possible the loss of detail of each piece of information; details that give character and richness to each piece of information.

Students’ responses and the way they respond are another important source of information for a teacher when conducting a lesson: how they smile when they are happy at being successful, how they nod their heads when they agree or understand, how they have an empty look in their eyes when they are confused, how they end up being rebels and producing many other responses may help to indicate how they are approaching and understanding the problem. However, students’ points of view, what they are thinking when or before they smile, nodding, having an empty look, being rebels, etc., are the details that usually are not thought about. Having this detail about the students’ attitudinal situation integrated with other information will help us as teacher to have a better understanding in order to be able to try to help the student in the transformation process and, most of all, our selves, as teachers. Some reasons for the importance of understanding students’ point of view will be proposed next.
Chapter VI Looking from The Student’s Point of View

Respect of students’ existence

There is another story from Antony de Mello (2012) about a family that was having dinner at a restaurant.

_The family settled down for dinner at the restaurant. The waitress first took the order of the adults, then, turned to the seven-year-old. “What will you have?” she asked._

_The boy looked around the table timidly and said, “I would like to have a hot dog.” Before the waitress could write down the order the mother interrupted. “No hot dogs,” she said. “Get him a steak with mashed potatoes and carrots.” The waitress ignored her, “Do you want ketchup or mustard on your hot dog?” she asked the boy._

_“Ketchup.” “Coming up in a minute,” said the waitress as she started for the kitchen._

_There was a stunned silence when she left. Finally the boy looked at everyone present and said. “Know what? She thinks I’m real!”_

Being ignored, for me, is one of the harshest things I can experience from another person. Being ignored, makes me feel worthless. My thoughts and my feelings are not counted, my existence is not acknowledged. Everything about me is not important. That is how being ignored may wound a person very deeply. I know some people around me who, became bad persons due to being ignored by their family and community. The seven-year-old boy in the story above feels very happy from the acknowledgement given him by the waitress. When I was reading this story the first time I wondered just how much he had been ignored previously.

When I look back to my teaching experience I feel regret that there were so many times that I ignored some of my students. Commonly, students in a classroom in my country are mixed together, low ability and high ability, and the gap between the students could be very large. Furthermore some years earlier, when I was a teacher, it was common to find 40 to 60 students in one class. It was hard for a teacher, at least for me, to teach in such a big class with such large variation in ability. The education system suggested that the teaching process would be called a success if 70% of the students passed the examination and achieved at least 60 out of 100 in the marking system. This condition became a good excuse for me to leave some of my students (30%) behind and keep going with the rest (70%). When I think now about that I wonder what
happened in the minds of the 30% of the students when they were being ignored.

Students are not things or objects or means, rather students are rational beings, persons, a fact, which by its nature marks them out as ends in themselves, and as worthy of respect (Mary, 1996). Thus, it is our moral obligation to respect students as human beings – persons. We should express our respect of the students as ends in themselves. Respecting students as ends, means that this respect comes not from their achievement or our sympathy, interest, nor any condition we expect from them, but rather, it comes from their worth by virtue of their human nature from which they possess the value of dignity (Wood, 1999). This is an absolute and incomparable value, a worth for which nothing else can be substituted as its equivalent (Mary & Gregor, 1996).

Putting an effort into looking at issues from the students' points of view means that we also accord positive value to students' point of view, which leads to the acknowledgement of their value as persons who own their views. This acknowledgement by the teacher is necessary not only for smart students but for any of them as an access for them to experience esteem and acknowledgement from the teacher.

**The teacher's role in the hypothetical learning trajectory**

The reason for teachers' failure commonly is the failure to understand the gap between students' actual and potential ability, known as the zone of proximal development (Chaiklin, 2003; Vygotsky, 1978). When the teacher does not know a student's actual ability the teacher may fail to figure out where is the proper point to start, while the failure to understand a student's potential may result in the failure to determine the necessary activity for the student as a next step.

In the case of my little student, Ucok, I failed to determine his actual and potential ability by providing a problem that was so hard as to lie outside of his zone of proximal development. This failure then comes as the cost of Ucok's
refusal to try to solve the problem. If this refusal happens continuously then it will negatively affect Ucok's development in mathematics and also may have damaging effects on his personality. His reluctance in mathematics may have even worse effects if he is unwilling to attempt mathematics problems which are a bit harder but which are still within his potential ability. This situation may indeed block his development, or perhaps lead him to dislike mathematics. And, for his personality, he may become the ultimate rebel who is self-centred enough to think that he can refuse to do anything he does not want to do.

Mathematics teachers are supposed to have a wider and deeper understanding of mathematics than non-mathematics teachers. I need to have the ‘big picture’ of mathematics that allows me to see many possible paths for students to learn mathematics concepts. When designing an instructional activity, I am choosing a certain path after considering the learning goal, possible activities, and the active process of making meaning by my students. This path can be seen as a hypothetical learning trajectory for the students (Simon, 1995), since it is one of several possible paths chosen by the teacher through consideration of all hypotheses or assumptions about students. However, mastering all mathematics concepts is not enough for choosing the proper path since there are so many possibilities for students to have their own paths. This raises an urge for me to see issues from the students’ points of view. Gravemeijer (2004:8) asserts that, “to be able to plan instructional activities that may foster certain student inventions, the teacher has to take an actor’s point of view, and to try to anticipate what students might do”. Having the big picture while trying to discern the students’ points of view will help me to design the instructional activities that adhere closer to the proper path for students’ learning trajectories. It is like offering students a menu and letting them choose from it. The closer this hypothetical learning trajectory is to students’ real trajectories the better.
Avoiding conflict while giving a proper response

The best reason for having a teaching plan is to provide an effective learning experience for the students. Since I am planning with considerations in mind, which are based on my assumptions, there is a possibility that in actuality things could turn out differently. Thus, as a teacher I need to be aware of the difference between the hypothetical learning trajectory and the actual one being implemented. Therefore, I also need to be prepared to try to make myself aware of such potential differences and be better prepared to respond effectively.

There was a day when I found that Ucok was able to add but still was slow, especially when adding numbers together ends with a sum greater than ten (e.g. 18 + 5, 27 + 8), since he was using the counting strategy when adding. Realising this I wanted to bring him to the next level of competence in addition. In my mind the next step of the trajectory was ‘splitting-up strategy’. I hoped that later, if I gave him an addition problem, for example 15 + 8, he would easily split up 8 into 5+3 and then easily find the result 23.

\[
15 + 8 = 15 + (5 + 3) \\
= (15 + 5) + 3 \\
= 20 + 3 = 23
\]

However, after doing some exercises with splitting-up numbers and mastering that ability, Ucok still could not apply it to the addition problem as I had hoped. Instead he split-up the number randomly rather than making tens.

\[
18 + 5 = \ldots
\]

\[
15 + 8 = 20 + 3 = 23
\]

Finding this I had a conversation with him.

\[
Me : Why do you split-up the number that way? \\
Ucok : Because you ask me to split it up, so I did it. \\
Me : Yes I did, but you need to turn the first number into tens. \\
Ucok : Why do I need to do this? I know the answer.
\]
In response to this question I held myself back and reflected on what had just happened. For me, Ucok’s last statement indicated that he was aware of what he already knew. But, it also indicated that he was not aware of other strategies and that he was not aware that he could grow to become better. The moment I held myself back from answering Ucok’s question was when I respected his thought. This respect also pushed me to critically reflect on my practice. It moved me to find a better way to help Ucok grow. This critical reflection helped me to realise things that I had missed in my teaching practice.

Suddenly I realised something. “What have I done?”, I asked myself. Instead of helping him to make meaning, I had pushed him into my strategy. I had told him the strategy rather than helped him to construct it. It was my strategy, not his. I also realised that there was ‘a jump’ in the learning trajectory. I had missed something, which is the bridge that connects addition and splitting-up numbers, the reason for using the splitting-up strategy.

A question from a student such as, “Why should I do this”, should always be considered by the teacher while planning and implementing an instructional activity. This question requires the teacher to find an answer through critical thinking in the planning process. Having an answer to his/her question will help the student achieve a better understanding of an activity. Ucok was right when he asked why he needed to do the calculation that way. There needed to be a compelling reason for him to step outside of his comfort zone, to abandon his resistance to change and willingly take the next step. Considering all of these things, I asked him to find the answer in his own way. After he gave the answer, I asked him,

   Me : Are you sure that is the correct answer?
   Ucok : Yes.
   Me : Tell me, how you did it.
   Ucok : I counted it, 19, 20, 21, 22, 23. See it’s 23.
   Me : How about 27 + 9?
   Ucok : (counting with his finger) 36.
   Me : That’s good. Do you want to be able to add quickly?
   Ucok : how?...
   Me : Before I tell you, you tell me what is the result of 10 + 8?
   Ucok : 18.
   Me : 20 + 7
Ucok: (quicker) 27
Me: 40 + 5
Ucok: (straight away) 45
Me: Do you find it is easy to add something on to tens?
Ucok: Yes.
Me: Now, Let’s see if you can answer as quickly as before. How about 18 + 7?
Ucok: (counting in silence) 25.
Me: Let’s count it again.
Ucok: 19, 20, ..
Me: Stop right there. How many more to go?
Ucok: Hmm.. 5
Me: That’s it. What is 20 + 5.
Ucok: 25. Hey that’s kind of a trick...

When Ucok said, "..that’s kind of a trick.." he realised something new that he was not aware of before. He was aware of a new strategy. Coming to this awareness enabled him to understand my point in bringing the new strategy. This awareness raised his willingness to step forward in his learning trajectory. It opened his eyes to the existence of another strategy that he had not known. Awareness of other knowledge beyond the limits of his existing knowledge was a condition that motivated him to learn more. This awareness opened the opportunity for him to grow.

The next step became a lot easier since he had already grasped the idea. Furthermore, after connecting the friends of ten idea and the splitting-up idea, he could do addition over ten without counting any more. I was able to revise my hypothetical learning trajectory when I realised Ucok’s point of view. By looking from his point of view, I realised the limit of my hypothetical learning trajectory and was able to find an alternative way that better suited him. In the end, I can say that it helped not only the student to learn the subject, but also helped me to transform myself into a better teacher by making the effort to understand Ucok’s point of view. If I had stayed with my point of view, I would have failed to recognize the limit of my plan, which would have been a weakness on my part. Thus, rather than reflecting on the weakness of my plan it is likely that I would have started to blame Ucok’s weakness. That would have resulted in triggering stress within each of us, leading to another conflict. His resistance would likely
have grown stronger, as there would have been no way for him to move forward beyond his current stage of development.

THE ETHICAL ASPECT OF TRANSFORMATIVE LEARNING

When I reflect on my earlier practice as a teacher, I realize that I had frequently imposed my understanding on my students without any consideration about what they understood. Under the influence of a large power distance society I frequently thought that as a teacher I had the authority to tell them what to do. And regarding this authority I believed that my students had an obligation to do what I told them. Now I ask myself whether it is ethical to impose my understanding, belief, or judgment on the other. In this section, I argue that the ethics of transformative learning calls me to adopt my student’s point of view.

My attempt to apply transformative learning in my practice required me, under the influence of a pedagogy of listening, to look from the student’s point of view. With constructivism as the basis of transformative learning, students should be situated at the centre of the teaching-learning activity. They must be seen as individuals in the learning process. This condition raised my awareness about differences between my students and me. In the story above I started to be aware of these differences when I recalled my experience as a student. This was when I put myself in Ucok’s position. Putting myself in Ucok’s position did not only raise my awareness but also allowed me to respect Ucok. Putting myself in his position reminded myself about my feeling, my eagerness to learn new things, my anxiety when facing difficulties, my happiness with each success. All of these emotions raised my empathy toward Ucok, which eventually allowed me to see him from a respectful point of view. In the story above, out of respect I held myself back to reflect on my teaching practice in order to find a better way to teach Ucok. Respectfulness drove me to seeing Ucok’s response from a different angle rather then keeping a negative assumption about him. Awareness of differences and respect toward an individual required me to think critically in my reflection to find a better way to guide Ucok in his learning process. Raising these three key elements – awareness, respect and critical
thinking – in my teaching practice pushed me to put Ucok and myself inclusively into my consideration. I needed to consider Ucok’s state of development, emotions, point of view and learning trajectory. I also needed to consider my past experience as a student, my knowledge as well as my emotions, my responsibility and my expectation. I needed to critically include all differences in order to find a better way to guide Ucok’s development. In this way I may say that I applied integrative ethics in my attempt to apply transformative learning in my teaching practice.

Earlier I argued for respect for students as persons as an acknowledgment of their ethical/moral existence. Before me my students are persons with their own uniqueness. This uniqueness shows that they are different from each other and from me, yet not lesser than the other or me. Thus, I need to respond to their presence with respect, accepting them as they are, without reducing them to the same (Dahlberg & Moss, 2007) or to less than me. This respect will be the gateway to achieving a more effective, positive ethical relationship between my students and me. Ucok’s denial came from his unawareness of his potential development. His satisfaction with his current ability and his unawareness of potential higher abilities prevented him from putting more effort into his learning process. However, when he became aware that there was another higher competence that he may learn, his denial collapsed and was replaced by willingness to spend extra effort on his learning process. This awareness enabled him to take a further step in his learning trajectory. This awareness also refined our relationship of mutual respect.

At the centre of learning, what I understand is not the main concern, rather it is what the students’ understand. It might be easier for me to tell them the ‘correct’ mathematical procedures for solving the problems. However, I do not want to make them simply into storage deposits of mathematical concepts and procedures. Nor do I want them to do blindly everything that I tell them. Instead I want them to make the effort to understand deeply the meaning of their experiences (Mezirow, 1997) and autonomously act based on that understanding. Thus, I want to provide opportunities for them to experience the process of making meaning and reflecting on that process so they can construct
connections between concepts in order to enrich and cultivate their knowledge system. By means of this approach I hope that they may come to see the big picture of mathematics concepts rather than simply memorizing lists of relatively meaningless concepts.

Transformative learning encourages the development of autonomous thinking (Mezirow, 2007). Thus, it needs learning circumstances that support autonomous learning such as reflective and experiential methods, through which students gain experience and reflect on that experience in order to make meaning of it. Furthermore, this reflective and experiential approach supported by positive interaction between teacher and students may facilitate the students’ ethical development (Duer, 2003). Their experience and reflection being aided by the teacher in constructing connections between concepts may act as a basis for them later to be able to see their interdependence and connection in social life that gives rise to a sense of social responsibility.

**A LESSON TO LEARN**

My concern to help students to transform into better learners while making meaning, urges me to transform myself, by looking both from my students’ and my own points of view. Transformative learning is based on constructivism. It puts students at the centre of the learning process. Thus, the teacher’s main interest should be focused on the students as persons. Since the idea of transformation is changing persons for the better, I need to understand the starting point, the goal to reach, and ways to reach the goal. In other words, I need to try to understand (i) students’ actual and potential abilities, (ii) the expected goal to be reached for the student to be transformed, (iii) planning the learning trajectory that allows the students to reach the goal, and (iv) to implement the plan for real transformative action.

From my perspective, having another view truly enriches my understanding, since it adds another dimension, which would otherwise be obstructed by the limitedness of my view. In this way I may also transform myself into a better teacher. Integrating the students’ point of view into my own widens my vision,
helps me to understand students’ actual and potential ability, and assists me to plan learning trajectories for them. It also helps me while implementing the plan by providing me with the necessary information on students’ actual conditions that enables me to make a proper response, perhaps also involving the revision of my plan. Understanding students’ actual propensities, while I am in action in a teaching activity, helps me to understand the origins of students’ responses or attitudes, which in the end helps me to avoid unnecessary conflict between them and me.

From my students’ perspective, having their point of view counted means being acknowledged, being respected. This is likely to create a positive learning environment that enhances the relationship between student and teacher. Having a positive learning environment and having a proper response from the teacher helps students to reduce their stress and resistance to change, and thus opens the gate for them to achieve transformation. In this way, they may be willing follow the path of transformation in making meaning.

From an ethical perspective, transformative learning puts students at the centre of teaching-learning activities, since it is based on a constructivist perspective. I need to give priority to their status as learners in our pedagogical relationship. It is what they understand that matters most rather than what I understand. Regarding this matter, I need to understand what they understand and how they have understood it, their view, and issues from their point of view. In addition, transformative learning involves development of autonomous thinking through reflective and experiential activities. Through these methods students have experiences and make meaning of these experiences by reflecting on them. This method will help them to autonomously make meaning of their social experience as well. In this way they may learn about their relationship to other people and develop their ethical responsibility.

Looking from other’s view
Shows me the others and myself as well
Being understood allows me to learn how to understand
Deeper understanding being brought by a wider view
While acknowledgement and respect come along as well
Making transformation as a place for respect to stand
SYNOPSIS

This chapter has revealed my experiences in bringing pedagogic and ethical theory into my own practice with individuals. The story presented in this chapter shows the connection between a pedagogy of listening, transformative learning and the ethical standpoint of integrative ethics. My willingness to look from the student’s point of view is based on a pedagogy of listening, and a need to listen to my students. Having the student’s point of view integrated with mine helps me to get a broader and more effective view of the learning process. This broader view enriches my understanding and helps my students and me in the process of transformative learning. The understanding and transformative learning process becomes part of the social experience of the student, an experience that provides the basis of a relationship with the other. This experience might also become the basis of ethical concern. In the end, it is not only the student who is transformed in this process but myself as a teacher and as a person.

This chapter may serve as an example of the implication of theories that have been discussed in earlier chapters. By having such an example I think it is time to sum up the whole journey of this study in the following chapter. Thus, the next chapter will serve as the final chapter, where the main ideas and findings in this study will be presented.
CHAPTER VII
UPON ARRIVAL AT THE TURNING POINT

When responsibility raises a demand
The first child is too busy with tasks and commitments
The second one is playing with competence boundaries
The third is squeezed by obligations
The fourth does not know what to do, while
The fifth cannot do anything.
The former becomes an excuse for the later
Pseudo escape was made for the responsibility left behind
When other responsibilities become excuses
At that moment the responsibility fades away
Excuse cultivates obstacles
Passion creates a way

INTRODUCTION

At last, I am now working on the final chapter of my thesis. The poem above represents what I believe passion offers in life’s tasks. Responding to the call of my responsibility is complex, and the complexity makes it easy for me to have an excuse to do nothing. But once I make an excuse then it may give rise to yet other excuses to make their way to the surface of my mind. In the end, I could be turned off track away from my responsibilities. Hence, I need passion to stay on the right track and create an alternative way when obstacles occur.

In this last chapter, I want to share my summary of what I have learned through this study, by the light of a little candle. I call it light since it illuminates my view of my professional task. While the small dimension of the candle represents my dawning awareness of the limitations of this study, I realise that this study may be far from perfect and undoubtedly cannot cover everything within my area of interest. It is just a ray of light that may need to join with light from other researchers to illuminate more brightly to cover and reveal greater understanding across a wider area.
THE LIGHT OF A LITTLE CANDLE

Amid the effort to finish this thesis, I had to take a short break to visit my mother, who was sick at that time. In this short break, I learned something precious. I was reminded that responsibility is not necessarily simple to face. I saw how a conflict between responsibilities happens when each of the responsibilities we have seeks precedence over the other. Each responsibility asks to be prioritised. As a son I have a responsibility towards my parents, siblings and relatives; as an employee I have a responsibility in my job to my employer, colleagues and stakeholders; as a citizen, I have a responsibility towards the society in which I live. As a matter of fact I have multiple identities, I am a son, whilst at the same time I am an employee, a student and a citizen. The same applies to any individual who has multiple responsibilities, none of which can be ignored. Hence, conflict may happen when different persons have varying responsibilities, and each responsibility demands to be prioritised. In this case, which one should be prioritised? History has provided us with some views and several general principles or rules in answering this question about priorities. But in my opinion, the existence of these different principles shows that there is no simple answer to this question, nor can a general rule be applied to all situations. We always need to consider the particularity of the situation in which the judgments were made or practices were followed. But instead of determining the pre-existing criteria of good or bad practices, we might be better to think about the qualitative worth of our working practices (Schwandt, 1996), while considering all available views as guidance for our choices. We need to know about the established guidance for us to be able to make more informed decisions.

In this research, I grew in the process of cultivating my knowledge and understanding. I am learning and am also transformed by doing the research. The research method that I chose for the study helps me to transform myself just by doing it. As a person, I come with my own ideology, values and
social/historical background (see Chapter I). Being influenced by the interpretive and critical paradigms (see Chapter II), I need to consider my social and historical position as vital elements in doing my study (Carter, Lapum, Lavallee & Martin, 2014). I also need to consider making sure that the ideology and values that I hold enter intrinsically and inseparably into the methods, interpretations and epistemology of my research (Carspecken, 1996). This position of mine indicates that important factors are likely to be found in my own life story. So, I need to try to uncover them. One way to do this is by narrating my life story since, in order to narrate my story, I need to try to recall the feelings, emotions, background and every meaningful event related to my life story. Through narrative, I can seek to elicit and recount my life story, my experiences, in their complexity and richness (Webster & Mertova, 2007). This is the reason for me to choose ‘critical narrative inquiry' as the main method of my study (see Chapter II). The process of my learning and transformation through this method could be represented pictorially by Escher’s ‘drawing hands'.

![Drawing hands, by M.C. Escher](http://www.mcescher.com/gallery/most-popular/drawing-hands/)

**Figure 7.1. Drawing hands, by M.C. Escher**

I always love to see Escher's extraordinary work. Though I am not an art interpreter, I have my personal interpretation. In this picture, I see two hands and each hand draws the other hand. Both hands have a two-dimensional aspect and a detailed three-dimensional one. For me, those hands represent myself in
my study. One hand represents myself as I understand myself and the other is myself as I can recount in my narrative story through the process of narrative inquiry. The more detailed the story about myself I tell in my narrative, the better the picture of myself I can portray. For me, this is the meaning of the two- and three-dimensional aspects. In this picture, I see that in its three-dimensional state the hand has an ability to draw the other hand. This means that I can only tell my story well if I understand myself well. The story itself helps me to understand more about myself by providing an opportunity for me to reflect on the events of my story, which are what eventually reshape me as a person. The more detailed the story I construct about myself not only makes the story more authentic but also better shapes my understanding about myself. Furthermore, when my understanding of myself increases, then I can better tell the story about myself. This process continuously occurs in the process of critical narrative inquiry within an autoethnographic methodology. In other words, I shape and reshape myself into a better person just by doing such research. That is a benefit of using critical narrative inquiry. It is a way to represent and also is a method to study experience (Connelly & Clandinin, 1990). With this method, I have a big opportunity to reflect on my experiences and myself as a person. It is in this reflexivity where the gate to transformation exists since I have opportunities to question myself and understand myself. Reflexivity reminds me to engage with the moment in line with my consciousness of my cultural, linguistic, political and ideological origins, and with the participants in my study (Cumming-Potvin, 2013; Patton, 2002; Schwandt, 1997). Indeed, I need to be careful about the risk of becoming too narcissistic because of an excess of reflexivity (Patai, 1994). But, as described by Davies et al. (2004) that the reflexive process is elusive, exhausting and disruptive, but necessary to create meaning.

**TRANSFORMED IN THE WAYS OF KNOWING**

I consider that I have transformed myself professionally and personally in ‘the ways of knowing’ as described by Taylor (2014), which include: cultural-self-knowing, relational knowing, critical knowing, visionary and ethical knowing,
knowing in action. I found, indeed, that my transformation is proceeding in line with these ways. Being immersed in this research has prompted me to have deep reflections, through which I have learned that each individual receives, understands and responds to a particular experience in a unique way. I believe that personal background has an influence on the way we think and act since we learn from our experiences, and we grow with values acquired within those experiences.

Cultural-self-knowing

I am Bataknesse, an ex-seminarian of the Catholic faith, and a mathematics teacher, as I have revealed in the first chapter of this thesis. As Bataknesse blood flows in my veins, I have Bataknesse characteristics in my physical appearance and behaviours. However, among Bataknesse people, I am also one of those few who went to a seminary, a school for candidates for the Catholic priesthood and graduated from there though I did not continue with my initial project. Being an ex-seminarian makes me a rather different person from other Bataknesse who have not attended a seminary, and from other seminarians who are not Bataknesse. Furthermore, I was also enroled in mathematics education at university and became a mathematics teacher in junior and senior high school in my hometown, and ended up becoming a lecturer in the Science and Mathematics faculty in Universitas Negeri Medan, which later gave me an opportunity to do the research in my current Ph.D. programme. I do not see myself as just Bataknesse anymore. I am not just a Catholic nor just a mathematics teacher. These backgrounds and all the associated experiences that I have had make me known to myself, hopefully in a humble way, as a unique individual amongst humanity. With this kind of background, I might think and respond differently from someone else whose background is different from mine. In this state I realise more about myself, which situates me in the first part of ‘ways of knowing’, that is cultural-self knowing (Taylor, 2014). I understand my background of culture and beliefs that have influenced my values, ideals, emotionality and spirituality, which are reflected in my attitudes choices and practices.
Relational knowing

By realising my uniqueness in relation to the individuality of all others, I can turn my sight from myself in my process of reflection and start to acknowledge that the others are as unique as I am. Thus, I have come to realise that uniqueness makes me, at once, different from and similar to the other. It is true that the uniqueness makes me feel special. However, just like myself, everybody else grows to be a unique person, which then turns everybody into a special person. Then uniqueness is a common and natural thing shared by every individual in the reciprocal relationships of their society. If I demand special treatment from others based on my uniqueness, then the others have the right to do the same. The demands from the other ask me to respond accordingly based on the unique nature of each other person, which becomes the origin of my responsibility towards the other. In other words, my awareness of my relational uniqueness is the origin of my responsibility to the other. If I want to respond to the unique other, then, accordingly, I need to give careful attention to the other. I need to empathically and compassionately try to learn about and connect with the other. My attempts to relate to the other allow me to be open to difference, which has the effect of situating me in the second ‘way of knowing’, that is, relational knowing (Taylor, 2014).

Critical knowing

The third ‘way of knowing’ is critical knowing (Taylor, 2014). It is when I start to understand how the culture, beliefs and ideology govern our way of life and the way we relate to each other in our society and to nature. Being aware of my background and its influences on my views, I learn more and refine my knowledge about my society and myself by trying to look back at my background and draw a connection between it and the way I am right now. “Are we not Bataknesses?”, this expression is frequently used in our society for seeking to explain why a person is acting in a particular way. As a Bataknesse I inherit the culture and values from my tribe, while at the same time, I am also responsible for upholding its honour. From my point of view, upholding my tribe’s honour will preserve my honour as well. If I uphold the tribe’s honour it
means that I have to carry its culture and values as guidance for my life-practices. The hope of bringing honour to the tribe will lead me towards honourable practices, which eventually may make me become an honourable person. This is how Bataknesse is not only a tribe for me but also an inherent personal characteristic.

In the process of upholding my tribe’s honour, I learn more about the values inherited through generations in my tribe. Batakinese daily life is coloured by a unique social interaction system known as Dalihan na tolu, that is a traditional social interrelationship between three main parties, Hula-hula – Dongan tubu – Boru, as explained in Chapter I. Living in such a social interaction system allows me to have a concern about rights, responsibility, cooperation, democracy, respect and equity (Sinaga, 2007). As one’s position (Hula-hula, Dongan tubu, or Boru) in this system is not fixed, then one may shift from one position to another according to the occasion. This allows a person to learn and act accordingly based on his/her position in a given social context. On one occasion a person may be respected as a Hula-hula, while on other occasions the same person may need to serve as Boru (see more explanation about this social interaction system in Chapter I). This is also confirmed by a saying in Bataknesse language "Martampuk do bulung, marbona do sangkalan; Marnata do suhut marnampuna do ugasan". Freely interpreted this saying means that we need to consider our position and attitude differentially on every occasion (see Chapter II). By thinking analogically related to my ethical view toward differences, this cultural value teaches me to think critically about my and others’ varying positions from the different group viewpoints.

On the other hand, I am also influenced greatly by my background beliefs. As a Catholic, I learned about the importance of obedience to God, whom I do not see but in whom I believe. I have been taught to do God’s commands and avoid things that are prohibited. From what I have learned in my beliefs, there are two main commandments, known to us as the law of love, on which all other laws and the prophets hang. They are: to love my God with all I might and to love my neighbour as myself (The Bible, Matt 22:37-39). Even if the first is considered as the greatest law, for me the latter is not less important. How can I love God,
whom I do not see, when I cannot love my neighbour whom I see before me (The Bible, 1 John 4:20)? For me, loving the other (my neighbour), is also a reflection of my love of my God since, according to my religion, humans are created in the image of God. This second commandment has also become a foundation for St. Thomas Aquinas’ work in Summa Theologica (II-II, q.27, art.2), which asserts the need to consider the other as one with myself. If I do not want to hurt myself and prefer to treat myself well, then I should treat the other well too. This is the Christian morality of one’s relationship with the other. When I respond to the call of the other, I need to respond as if I am responding to myself since I am one with the other. If I want to be considered as a good Catholic then I need to obey this law of love. In other words, my obedience toward this commandment may then be used to evaluate myself as a Catholic.

The word ‘obedience’ actually comes from the Latin term *obedire*, which is derived from *ob* and *audire* (Partridge, 2006), respectively meaning ‘toward’ and ‘to listen’ or ‘to hear’. For me, it means that to be able to obey I need to listen first. There lies another important teaching from my religion about conscience since in the depth of my conscience I may listen to the voice of God, which calls me to obey (*Gaudium et Spes*, 1965, paragraph 16). Hence, in my struggle of finding and listening to God I need to seek continuously to listen to my conscience, since there God’s voice exists. It is this voice that calls me to love good and avoid evil; a law that provides me with guidance toward Christian morality. Nevertheless, other than this conscience God also bestows me with free will. This free will gives me the choice of whether to listen to or ignore the voice of my conscience, by which I shall be later judged accordingly (*Gaudium et Spes*, 1965 paragraph 16). By understanding this much, I may realise why I treasure the power of listening and value the freedom of making choices.

Other than my culture and my beliefs, my growing has also been influenced by the ideas coming from mathematics. The values that are inherent in mathematics topics, such as universe, convention, contradiction, transformation and analogy (Swadener & Soedjadi, 1988), have played an important role in shaping me as I am right now. I have loved learning mathematics since I came to know it in primary school. Each mathematics problem keeps my mind busy
thinking. Satisfaction from solving the problems one after another makes the feeling even deeper. However, it was the analytical mathematics subject, such as but not limited to real analysis and structure algebra, that opened my eyes to the beauty of mathematics. It was in this kind of subject that I started to understand the values inherent in mathematics, which made me admire mathematics even more. From this point onward I tried to incorporate mathematics values into myself. I started to reflect on the role of context in any discussion (related to the concept of ‘universe’ in mathematics), consistency (anti-contradiction) in my actions, the importance of convention in any conduct, and other values that can be derived from mathematics and are applicable in real life (see Chapter V).

Until now, my attempt at personalising mathematics values continues. As the attempt is on-going, it affects myself as a person and also affects the way I do my job as a mathematics teacher. It influences my way of teaching. I always think that examples or actions are better than words in terms of teaching. In teaching, words that are accompanied by actions would communicate more information, especially information that is related to values. Thus, I believe that personalising values from mathematics will help me in better teaching mathematics. The word ‘better’ actually emphasises my dream that through my teaching my students may learn more than just mathematics concepts, that they also may be introduced to and may learn to cultivate the values within themselves.

**Visionary and ethical knowing**

The fourth way of knowing is visionary and ethical knowing, which unfolds when I start creating my vision of a better world (Taylor, 2014). I have a teasing question tickling in my mind: how can I share my vision with the other? If the other and I are unique in our own ways, then, should the other become like me, able to see as I do and have the same ethical view as I have? Do I need to teach the other how to be Bataknesse? Do I have to convert the other to my religion? Should I force the other to learn all the mathematics rules? Must I erase differences to create similarity just like what happened throughout history and
is happening today in some parts of the world? Being a member of a particular tribe is not a choice someone can make. Embracing a particular religion can be regarded as ideally needing a personal decision. As for mathematics, it is a compulsory subject in school, although not always a favourite one. I ask myself again, what is it that actually makes me have my current vision? Is it being Bataknesse or a Catholic or a mathematics teacher? I realise that it is none of those but what I have experienced has allowed me to acquire and to retain such a vision. Bataknesse, Catholic, and mathematics are just titles that represent the life experiences that lie behind them, which are more important than the title. I may say it is those life experiences that make the title, not vice versa. I am not Bataknesse if I do not live a Bataknesse life and carry on the culture and values. In a similar way, I am not Catholic if I do not follow the Catholic way of life. Without experiences in each way of life those titles are just empty names. In this case, it is possible to share the same vision with the other by the practical sharing of life experiences. I need to share what I have learned from being Bataknesse, Catholic and a mathematics teacher in relation to my study on ethics. Thus, the other does not need to be a Bataknesse and apply the Dalihan Na Tolu scheme in their life, but only needs to have an opportunity to have experiences where the views and values of the Bataknesse people's way of life are manifested. I do not need to convert the other to follow the way of obedience of the Catholic culture, but just to let them learn about the value of obedience through listening. I do not need to make the other's life harder by making them choose mathematics as their main subject to learn. But I just need to help them to understand the values that lie behind mathematics.

**Knowing in action**

Coming to realise this vision so far brings me to another question. How can I put my ideas into action? Now, I am thinking about what I can do within my capacity to make a difference in order to help the world become a better place, which is the fifth way of knowing: knowing in action (Taylor, 2014). In the sense of responsibility as response-ability (see Chapter I), the source of my responsibility is the existence of the other. I am, therefore, called to recognise my responsibility by the appearance of the other before me. Hence, I
understand my responsibility more clearly when I am in a relationship with the other. In this relationship, I experience the call and the urge to respond to the call of the other as a being.

In consequence of this thought, I realise that the relationship between persons is the basis for concern about the presence of ethical considerations in every classroom. If I have a concern for integrating ethics into the mathematics classroom, then I need to take active steps to bring the concern about personal relationships into the classroom. By starting with relationships, I shall be able to bring the call for ethics, inherent in the call for responsibility, into the classroom. Now I have a call to turn my reflection into action, to make use of the light from the little candle, and join the light of my candle to that of others in order to enlighten our society.

As part of the action in the mathematics classroom, I see an opportunity that comes from the PMRI characteristics (see Chapter V). PMRI encourages students to reinvent mathematics concepts through experiences in the classroom. This way, students are allowed to make meaning of their experiences, not only to learn by memorising ready-made mathematics concepts. In the process of reinventing mathematics concepts, students are provided with realistic and open problems. Realistic problems, which are related to students' everyday experiences, may trigger students' feelings and imaginations that make the problem more meaningful for them. Furthermore, this kind of problem opens the opportunity to bring into the classroom ethics-related problems encountered in daily experiences. Open problems can encourage students to find various possibilities creatively. They also may open students' eyes to differences, which assert the need to think critically in diverse circumstances, to check truth or value from different viewpoints, and to reflect critically on their individual points of view. These differences may become a good basis for ethical considerations in the mathematics classroom.

PMRI is also characterised by interactivity and reflection. By interactivity, students would be situated by design in a social environment where they may cultivate social relationships with their friends. This characteristic opens an
opportunity for the student to understand others' views, meanings and feelings, and create a chance for communication with the other. Reflection in PMRI design allows students to absorb and internalise what they have constructed recently in the mathematics class. This step also can be used for ethical considerations. This reflection will be the best moment for students to reflect on any values they have learned and to internalise them. This step may amplify what they have just learned.

**AN EMERGENT ‘INTEGRATIVE ETHICAL PERSPECTIVE’**

My interest in ethics, which came from my dream of a harmonious life in diversity, brought me into an autoethnographic study covered by multi-paradigmatic influence. The attempt to understand a culture through my experience in this kind of research requires me to reflect critically on my past and present social life. In the process of critical reflection, I need to question and re-question my standpoint on the dynamic and fluid social life. The openness from a multi-paradigmatic view, the process of re-questioning my standpoint in critical reflection, and the dynamic and fluid character of social life, all together provide the opportunity for the emergence of an ethical view called ‘integrative ethics’, which I proposed in Chapter III. This ethical view asserts inclusivity, which amalgamates different points of view. Integrative ethics respects differences, which means being open to the different views of others in a critical yet respectful way. The term ‘different view’ implicitly requires an awareness of one’s position and how it may differ from or be similar to others’ positions. Without this specific awareness, it is impossible to recognise the differences or the similarity between views. Hence, integrative ethics suggests the importance of awareness. In other words, if I am embracing an integrative ethics view then I should seek to consider the awareness of others, as well as my own. My interactive presence amongst the participants should help them to raise their awareness, and help me to raise my awareness of my position, as well as theirs. This interpersonal awareness acts as an ‘observer point’, that is a zero point to base an observation, for me and for the participants, in observing our
surroundings and the people within them. Our shared awareness can further enable us to arrive at joint decisions and joint understandings.

Even though awareness is a necessary condition for integrative ethics, it alone is not enough to achieve the desired inclusive characteristic. My awareness about my position and how it is different to others’ may be a good reason for me to exclude the others, either their views or individuals, which could eventually separate myself from others into an exclusive position. Therefore, to avoid this deviation from inclusivity, awareness must be infused with respect. I choose the term ‘infused’ because respect itself is an intrinsic feature of awareness. Respect is an acknowledgement. By respecting, I acknowledge the existence of differences between others and me. Respect is also a response that shows my openness to the presence of such individual differences. By respecting I am not only aware but also prevent myself from excluding any view just because it differs from my view.

Figure 7.2. Integrative Ethics is based on Awareness, Respect and Critical thinking

Furthermore, in order to grow in the inclusive state, I need to think critically about the differences in people of which I am aware. My further response regarding these differences should come from further critical thinking. Critical thinking will be my vehicle to learn and grow in my perception of differences. Thinking critically also should raise my awareness of and respect for individual differences in people. By thinking critically about my view and the views of others, I should become more aware of my position. Thinking critically also should bring me to a greater understanding not only of my individual position but also about the positions of others. This understanding should help me to
respect the views of the other consciously and of the other as a person. So, all these three factors – awareness, respect and critical thinking – can reciprocally strengthen each other.

CRITICAL INCLUSIVITY – THE QUALITY STANDARD FROM INTEGRATIVE ETHICS

The emergence of an integrative ethics in this study raises still further questions in my mind. If I were going to apply this emergent ethical view into a study, how would this view on ethics influence my way of studying? How should this kind of ethical view guide my research? When can I say that I have applied this ethical view in carrying out a research study? As part of the emergent process (see Chapter II), these questions bring me to a consideration of generating a quality standard for the conduct of research, related in particular to evaluating the presence of integrated ethics as a practical guiding principle. This standard, I hope, would be one of my contributions to the study of ethics and to the research fields that complement the integrative ethics view.

Integrative ethics has emerged in this study based on my recognition of ethics as being about how I respond to the other and how I relate to the other. Then, based on the same foundation, the quality standard that may be promoted from this view concerns how I, as a researcher and moreover as a person, should relate to the participants in a particular study. Since I need to respect the others’ positions inclusively then in such research I need not impose my view on the others, rather, I need to respect theirs. Having set such a base, some may ask what if I believe that there is something wrong in the other’s view, should I leave the person still having such a wrong view? Should I contradict myself by respecting a view that goes against mine? Here, I need to be aware that what I believe is not necessarily what the other believes. I may need to hold myself back to give myself time to think critically. What if it is my view that is not the correct one? Questioning myself here does not necessary mean doubting myself. This questioning of myself may act as a stimulus for a better self-understanding, which might help me to reshape my concepts in a more effective manner. There
is also the possibility that in the end I may find that what we have under consideration here is not about absolute right or wrong, but also involves consideration of the different views people tend to have taken in a different context.

Up to this point, I have been discussing the possible benefits of taking on the interpretive ethics position for myself, so now a resultant issue is what is my contribution to the others whom I may encounter? Thinking ethically for me means thinking about my responsibility to others. How should I respond to others in a way that may also benefit the others? If I am aware that people hold different views, then I should help the other, the participant in any such study, to be aware of our respective differences as well. As I mentioned earlier, awareness will be the first step toward respect and critical thinking. Awareness will encourage the participant to take the next step toward critical thinking and respect for the views of the others. Deliberately focussing on the need to respect and think critically should help to empower the participant to select freely how best to respond. In the study, where I apply integrative ethics, saying that the participants have freedom to choose how to respond is not enough. I need to empower and encourage the participants to choose freely.

The same method may be applied when in a study I am introducing a new approach. One may ask, "Is it not obvious that I need to tell the participants all about the new approach and that they have nothing to do but to follow my instruction since they do not know anything about this new approach?" When I consider the inclusive characteristic of the integrative ethics view, even though I am introducing a new approach, I cannot force the participant to use it in the same way as I would use it. Instead, the participants should have freedom to choose their way of using it. I should help the participant to be more aware and encourage them to think critically so mutual respect may be achieved. Then they should be able to choose consciously. Encouraging the participants so they may be aware, think critically, and respect differences while also empowering them to choose consciously, is I consider my ethical responsibility. It is not my place alone to seek change in the participants. Changing is their choice; my role
is to empower and encourage them to develop the capacities to make a positive choice.

THE ENDING AND THE BEGINNING

I consider that I have grown as a person in this research through employing the process of actively cultivating my knowledge and understanding. There are two main factors that have allowed me to transform myself through my study. First, respect and openness to differences have allowed me to enrich myself intellectually when I have had access to a vast range of theories. Second, the methodology that I engaged in during this study has provided a tremendous opportunity for me to improve myself academically and professionally. Having access to a vast range of research paradigms and worldviews of ethics has opened my eyes wider, which has helped me to see more and understand my conceptual standpoint better, while at the same time relating to the views of others. My broadened vision, along with critical reflexivity suggested by the critical narrative inquiry method that I chose for my study, has encouraged me to respect differences and to attempt to learn positive values instead of merely asserting what \textit{a priori} right or wrong was. This attempt has brought me to an understanding of the multi-paradigmatic view, which eventually resulted in the emergence of (i) an integrative ethics view and (ii) critical inclusivity as an appropriate quality standard.

After ‘drowning’ in a long deep analytical reflection I felt like having a cup of tea with some friends. So, I took steps to a small shop with my friends. While we were enjoying some warm tea on that cold winter morning, one of my friends asked me,

"So, how do you feel after getting close to finishing your Ph.D. programme? Do you feel great?"

Trying to answer this question, I lowered my eyes as if I wanted to find the answer to his question deep down in my heart.

"It is great, yet it is nothing at the same time", I said.
"What do you mean? Is there any greater thing than having your Ph.D.?", my friend replied after hearing my answer.

This time, I looked him in the eye, but rather focusing on his eyes I looked through and far beyond them as if at that time I was looking out to my future.

"It is definitely a great achievement after spending so much effort to reach this point. But, consider when you had just graduated from your undergraduate programme. Did you feel great?", I said.

"Yes, at that time I felt so great", he answered promptly.

"Then, do you think the way you feel now is greater than how you felt at that time?", I continued.

"I think I now understand what you mean", he responded again.

"If I stopped right at getting my Ph.D., then that Ph.D. would mean nothing. It would be not more than a certificate on a sheet of paper. It would be meaningful only if I intended to bring what I had learned in this long period of study into my practical actions. Only that way then would I grow even more", I added.

When I have invested so much effort in this study, I honestly wish that my writing might inspire those who would read it. But, it is not something that I can decide. Just like playing table tennis, when I serve the ball, according to my plan, I can control the speed, rotation and direction of the ball. But, as soon as I have hit the ball, then whether or not it will go as I wish is beyond my control. I cannot control the effect of the wind, which may differ in its direction. I also cannot control how my opponent will respond. So, about my thesis, I will have to leave it to my readers as how they will respond. I have talked the talk through my writing. What is left for me now is to try to walk the talk. This thesis is not, I hope, the end of my journey on the way of knowing, being and valuing. There will be still in the future a lot more to explore and to experience, which will provide me with another opportunity to continue growing.
APPENDICES
Appendices

Appendix I: Ethics Approval

Memorandum

To  Mangaratua Simanjorang, SMEC
From  Pauline Howat, Administrator, Human Research Ethics
       Science and Mathematics Education Centre
Subject  Protocol Approval SMEC-17-12
Date  28 March 2012
Copy  Bill Atweh, SMEC

Thank you for your "Form C Application for Approval of Research with Low Risk (Ethical Requirements)" for the project titled "Development of mathematics instruction approach within PMRI (Pembelajaran Matematika Realistik Indonesia) which focus on students' ethical responsibility". On behalf of the Human Research Ethics Committee, I am authorised to inform you that the project is approved.

Approval of this project is for a period of twelve months 28th March 2012 to 27th March 2013.

The approval number for your project is SMEC-17-12. Please quote this number in any future correspondence. If at any time during the twelve months changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately.

[Signature]

PAULINE HOWAT
Administrator
Human Research Ethics
Science and Mathematics Education Centre

Please Note: The following standard statement must be included in the information sheet to participants:
This study has been approved under Curtin University’s process for lower-risk Studies (Approval Number SMEC-17-12). This process complies with the National Statement on Ethical Conduct in Human Research (Chapter 5.1.7 and Chapters 5.1.18-5.1.21).
For further information on this study contact the researchers named above or the Curtin University Human Research Ethics Committee, c/o Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrrec@curtin.edu.au.
Appendices

Appendix II: Information Letter for Participants (Parents)

Curtin University
School of Science and Mathematics Education Centre

Participant Information Sheet

My name is Mangaratu Simanjorang. I am currently completing a piece of research for my Doctoral of PhD Program at Curtin University of Technology. I am investigating on development of mathematics instructional within PMRI (Pembelajaran Matematika Realistik Indonesia) approach, which focuses on students’ ethical responsibility.

In this study I will interview your children about their experiences in the instruction process in order to gather data for this study. The interview process will take approximately 15 minutes. I will observe their learning process and use student’s portfolio and reflective journal to record their improvement. All methods, used in this research, will not disturb the instructional process.

Your children’s involvement in the research is entirely voluntary. You have the right to withdraw at any stage without it affecting your rights or my responsibilities. When you have signed the consent form I will assume that you have agreed for your children to participate and allow me to use your children’s data in this research.

The information will be kept separate from your children’s personal details, and only I and my supervisor will only have access to this. The interview transcript will not have their name or any other identifying information on it and in adherence to university policy, the interview tapes and transcribed information will be kept in a locked cabinet for at least five years, before a decision is made as to whether it should be destroyed.

This research has been reviewed and given approval by Curtin University Human Research Ethics Committee (Approval Number SMEC-17-12). If you would like further information about the study, please feel free to contact me on +6285262999303 or +61478085030 or by email m.simanjorang@postgrad.curtin.edu.au. Alternatively, you can contact my supervisor Associate Professor Bill Atweh on +61 (0)8 9266 7073 or b.atweh@curtin.edu.au. If there are something you want to complaint about ethical grounds you can call Curtin University’s Human Research Ethics Committee on (+61) 9266 2784 or email to hrec@curtin.edu.au or send your letter to the Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth WA 6845.

Thank you very much for your involvement in this research.
Your participation is greatly appreciated.
Appendix III: Consent Form for Participants (Parents)

CONSENT FORM

• I understand the purpose and procedures of the study.

• I have been provided with the participation information sheet.

• I understand that the procedure itself may not benefit me/my child.

• I understand that my involvement is voluntary and I/my child can withdraw at any time without problem.

• I understand that no personal identifying information like my/my child’s name and address will be used in any published materials.

• I understand that all information will be securely stored for at least 5 years before a decision is made as to whether it should be destroyed.

• I have been given the opportunity to ask questions about this research.

• I agree for my child to participate in the study outlined to my child.

Student’s Name: __________________________________________

Parent’s Name: __________________________________________

Signature: ______________________________________________

Date: ___________________
Appendix IV: Information Letter for Participants (Teacher)

Curtin University
School of Science and Mathematics Education Centre

Participant Information Sheet

My name is Mangaratua Simanjorang. I am currently completing a piece of research for my Doctoral of PhD Program at Curtin University of Technology. I am investigating on development of mathematics instructional within PMRI (Pembelajaran Matematika Realistik Indonesia) approach, which focuses on students’ ethical responsibility.

In this study I would like to collaborate with you in developing the appropriate instruction design. I will observe the classroom while you implicate the design. I also may interview you for asking your point of view about the students, instruction and information that needed for the study.

Your involvement in the research is entirely voluntary. You have the right to withdraw at any stage without it affecting your rights or my responsibilities. When you have signed the consent form I will assume that you have agreed to participate and allow me to use data from the classroom in this research.

The information will be kept separate from your personal details, and only I and my supervisor will have access to this. All information gathered from this study will be kept confidentially and in adherence to university policy, the interview tapes and transcribed information will be kept in a locked cabinet for at least five years, before a decision is made as to whether it should be destroyed.

This research has been reviewed and given approval by Curtin University Human Research Ethics Committee (Approval Number SMEC-17-12). If you would like further information about the study, please feel free to contact me on +6285262999303 or +61478085030 or by email m.simanjorang@postgrad.curtin.edu.au. Alternatively, you can contact my supervisor Associate Professor Bill Atweh on +61 (0)8 9266 7073 or b.atweh@curtin.edu.au. If there are something you want to complaint about ethical grounds you can call Curtin University’s Human Research Ethics Committee on (+61) 9266 2784 or email to hrec@curtin.edu.au or send your letter to the Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth WA 6845.

Thank you very much for your involvement in this research.
Your participation is greatly appreciated.
Appendices

Appendix V: Consent Form for Participants (Teacher)

CONSENT FORM

• I understand the purpose and procedures of the study.

• I have been provided with the participation information sheet.

• I understand that the procedure itself may not benefit me.

• I understand that my involvement is voluntary and I can withdraw at any time without problem.

• I understand that no personal identifying information like my name and address will be used in any published materials.

• I understand that all information will be securely stored for at least 5 years before a decision is made as to whether it should be destroyed.

• I have been given the opportunity to ask questions about this research.

• I agree to participate in the study.

_____________________________________________________

Teacher’s Name: ______________________________________

Signature: ____________________________________________

Date: ______________________
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Appendix VI: Initial design of my research

On the 25th of February 2011, I officially enrolled at Curtin University. It became the official starting date for me to enter the ‘certain uncertainty’ of a so-called higher degree research in a philosophical doctoral program. The title is held in such high regard that it makes the uncertainty magnificent. I was working under the supervision of Associate Professor Bill Atweh at that time. The title ‘professor’ scared me a bit. Since, in my mind, when we are talking with a professor we need to provide a heavy answer even for a very light question. In other words, I needed to think twice or more before I provided an answer. The first question from him regarding my research asked what I wanted to find in my research. Enthusiastically I answered him, “I want to make good students”. His response was simple, “and what do you mean by ‘good’?” Having this response at that time, I could only answer with a long “uummm..” before continuing with some characteristics and traits that I regarded as good.

That long “uummm..” represented my doubts about what I meant as “good”. The doubt arose from instant reflection triggered by my eagerness to provide an adequate answer in front of a professor. At that moment, I experienced a lack of confidence from an awareness of my lack of knowledge. Though some characteristics or traits are accepted as good, we can still question them, especially when we are part of a society in which there are different values. A particular attitude may be accepted as good in one group but not in another. Let us say, for instance, for some societies, looking straight at a person’s eyes while talking with that person, especially an older one, is not a proper thing to do as it may be considered impolite. However, for another society, it is a necessary thing to do as it shows respect or attention. So, how can I determine what is good? Is the thing that I consider good also considered good by the other? Am I, as a researcher, in a position to always determine what is good or right (Willis, 2007)?

The differences in our society brought about by culture, religion or educational background contribute powerfully to our social reality. Interactions between persons with different views create exchanges of ideas. These interactions help clarify the boundaries of the different ideas. They bring about mutual
consideration of existing differences. How should I ethically respond to these differences?

As a mathematics teacher, I had a moment when I needed to reflect on my professional practice, inquiring of myself: what kind of contribution might I make towards ethical responsibility? How can mathematics education help students to become concerned with their ethical responsibilities? I hope that through my concern to include ethical responsibility in mathematics instruction I, as a mathematics teacher, may contribute to the harmonising of significant differences in our society. My involvement in this inquiry situated me in an investigation of a way to seek to improve my society through my professional practice. In other words, I was seeking an approach within mathematics instruction that can be seen as an effort to improve the student as an individual person and as a member of the community. Since the goal was an improvement effort I initially chose ‘action research’ as the methodology for this study.

Action research is a well-known term in educational research. It is so well known that its meaning is often taken for granted while in practice there are conceptual differences that affect how to conduct an action research study. One of many definitions comes from Greenwood and Levin (2007), who describe action research as social research carried out by a team that encompasses a professional action researcher and the members of an organisation, community, or network (i.e., the stakeholders), who are seeking to improve the participants’ situation. This definition emphasizes the role of the professional action researcher as an outsider who is involved in the research. The role of this outsider actually may establish different types of action research study, such as technical, practical or emancipatory action research (Grundy, 1982; Carr & Kemmis, 1986). The differences between these types are explained briefly in Figure VI.1.
But although there are different types of action research, their goals in common are to facilitate change and improvement (Corey, 1952, 1953; Carr & Kemmis, 1986; Whitehead, 1989; Elliott, 1991; Atkin, 1993; Leitch & Day, 2000). Action research has four basic steps: diagnosing, planning action, taking action, and evaluating action (Coghlan & Brannick, 2005). Action research is an evolving process that is undertaken in a spirit of collaboration and co-inquiry between the researcher and participants (Shani & Pasmore, 1985). So, in order to achieve the aim of my study, I needed to collaborate with a school, especially with a teacher. For this requirement, I found a primary school and a mathematics teacher at that school who was willing to collaborate in this study, as well as 60 students in Year three.

Initially, I divided the study into three stages: instrument development, a workshop for teachers, and instructional design development. In the first stage the instruments – draft learning materials, an observation form, a portfolio form, and a reflective journal - were to be developed. The draft learning materials were to be used in the second stage as workshop material. This draft can be seen as an example, or a pattern, for the teacher to use in developing her own teaching material. The other instruments were to be used for collecting data.
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In the second stage, the teacher was to be introduced to the PMRI (Pembelajaran Matematika Realistik Indonesia) approach and how to deal with ethical responsibility within this approach. I shall discuss this approach later in Chapter V. While participating in the workshop the teacher would have an opportunity to experience an instructional situation that raises ethical responsibility. In this workshop, the teacher would be prepared to undertake the development of her own teaching material that focuses on ethical responsibility.

On reflection, I came to realize that based on the way I had explained my action research study plan, especially the first stage, the study might be perceived as 'technical' action research. It could be seen that I had placed myself as a professional who develops and proposes a research design, based on my reflection on a particular theoretical framework, to be applied by the teacher in her practice. In which case the teacher would have been expected to passively accepted whatever design I had proposed, and I would have had the major authority to make decisions that would be followed by the teacher.

However, because I was aware of the problem of large power distance in our society (see Chapter 1) and because of my ethical consideration of wanting the participants to gain benefit from the study it is clear that this study was more than simply technical action research. In the planned workshop I wanted to introduce the idea of PMRI to the teacher (see Chapter X). Through this introduction I wanted the teacher to understand the strength of PMRI, and with this understanding I would then with the teacher try to identify what kind of educational problems can be potentially answered by its application. So, through this workshop I would not only be introducing an alternative approach in mathematics instruction, but also giving an opportunity for the teacher to become aware of educational problems and of the benefit of PMRI in answering those problems. I hoped that with this awareness we may have developed a mutual understanding about the problem that I wanted to study in my research. Hence, the teacher may have developed a strong self-motivation to collaborate with me instead of only following my directions. Such mutual understanding and collaboration would be an indicator of 'practical' action research. Through
this workshop I also wanted the teacher to be able to develop her own PMRI instructional design. So, I would not be the one who provided the learning material in the third stage of this study. The teacher would have the initiative to undertake the practice and to compare the theory with practice throughout the process of the action research study. Thus we would be enacting an 'emancipatory' type of action research.

In the third stage, the teacher and I as co-researchers would collaborate to develop the instructional design. I had hoped that the collaboration would provide opportunities for both the teacher and me to learn more about how to improve our practices in mathematics instruction. As a first step, diagnosing, observing and interviewing methods would be used to gain as much information as possible to assist in moving to the planning stage. On moving to the action stage the procedures from the planning phase would be applied. The evaluation action stage would include monitoring and reflecting on the impact of the action. To achieve this goal observation and critical reflection methods would be used. The evaluation results would be utilised during and after the instruction in order to reflect on and to prepare for the next instructional meeting. In order to have a record of the proposed improvement in the students' ethical awareness within the context of their learning of mathematics, I had planned to use the students’ portfolios and reflective journals about their development and learning processes. So there would be several cycles of data collection until the instructional design was finalised. This initial research design process is illustrated in Figure 2.1.
Figure VI.2. Research Design
REFERENCES


Gravemeijer, K. (2004). Creating opportunities for students to reinvent mathematics. Regular lecture at the 10th International Congress on Mathematical Education (ICME 10), Copenhagen, Denmark, 4 July (pp. 4-11).


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References


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