Research Article

Negotiating and Defining "Self" as Science Teachers: A Narrative-Case Study among Non-Science Education Major Teachers

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Abstract

Learning to teach is a very fundamental stage with which beginning teachers should be concerned with. They, in particular should expect to encounter problems and frustrations, with which they must learn from their experiences and improve their instructional skills over time. This study examined how beginning non-science education major teachers developed and negotiated their science teacher identity in their first three years of teaching. Participants in this study were three public secondary teachers who are non-science education majors but are assigned to teach science subjects. A methodology combining case study research and narrative inquiry was employed in this study. Data were collected through interpretive research methods using data sources such as interviews, photo-elicited interviews, written answers to open-ended questions, observation notes, and researcher's journal of informal face-to-face and phone conversations with the respondents. This study utilized Gee's (2001) notion of D-identity and Holland et al.'s (1998) "concepts of tools of agency and self control and change". The analysis of narratives showed that each participant displayed unique characteristics in negotiating their teacher identity. The first three years of teaching serve as the induction period of teachers thus, this is the stage when participants negotiate their teacher identities facing various struggles and enactments inside the classroom, from being non-science education teachers to science teachers.

Keywords: Identity, Negotiation, Non-Science Education Majors, Science Teachers, Self

1. Introduction

Thousands of science major students are graduating every year, passing the Professional Licensure Examinations given by the Philippine Professional Regulation Commission. In spite of this, many of the teachers handling science in the field are non-specialists. In the Philippines, there are a lot of science graduates in education, however due to some reasons such as absence of regulations in the assignment of teaching loads and insufficient budget, the Department of Education failed to hire science majors to handle areas related to their specialization (DepEd, 2003). For example, in the rural areas due to inadequate budget, non-science majors are "forced" to teach science subjects. Consequently, students' achievement and aptitude in science are affected resulting to a dismal performance in the international examinations compared with other countries (David, 2009).

In local indicators of students' performance, the result of the division, regional and national achievement tests in science conducted every year showed that students performed low (Billena,

2000). Thus, DepEd, in its goal to continuously improve the performance level of students in Science and Technology at the basic education level, make ways on how to combat such problem. One of which is the conduct of Certificate Program for Non-Specialist High School Teachers in Science (DepEd Memorandum No. 125, s. 2006). The main objective of the program is to update the competencies of science teachers who are non-specialist in the said subject. The certificate program simply shows that there are many non-science majors who teach science subjects. However, no study has been conducted to explore how beginning non-science major teachers negotiate their identity as science teachers.

In the international science education community, many researchers have investigated teachers' identity (Lawrence, 2007; Lyon, 2003, Flores and Day, 2006; Proweller and Mitchener, 2004). Lawrence, in her studies has explored teachers' negotiation of middle grades science teaching identity. She defined identity as a "social process of negotiation" rather than an "individual problem of behaviour" (2007, p. 12). Lyon, on the other hand, defined identity as a complex negotiation between the many social roles of the individual (2003, p. 5). While, Flores and Day (2006) studied how beginning teachers' identities were shaped and re-shaped in their first two years of teaching. A similar study was also conducted by Proweller and Mitchener (2004) who explored pre-service teachers' construction of professional identities during their practica in urban middle grades science classrooms. These studies focused on identity development among pre-service science teachers over a considerable period of time.

This study focused on constructing a rich representation of negotiations of identity as science teachers among non-science education majors in their first three years of teaching. It explored the complexity of experiences encountered by non-science education majors as they enact their identity as science teachers.

The early years of teaching are a special time in a teacher's career, different from what has gone before and what comes after (Feiman-Nemser, 2001). Similarly, Orstein (1990) cited that learning to teach is a very fundamental stage with which beginning teachers should be concerned because they in particular should expect to encounter some problems and frustrations, in which these experiences could give lessons in improving their technical skills. Orstein (1990) also pointed out that without question, there is recognition that the induction period, the first two or three years of teaching, is critical in developing teachers' capabilities and that beginning teachers should not be left alone to sink or swim.

Teachers' identity is viewed as a subset of professional identity in the general social context (Sachs, 2001; in Lyon, 2003). Moreover, other explanations on teacher identity were cited in the works of other researchers. Lawrence's (2007) defined teacher identity as a vision of what learning to teach, or learning to be a certain kind of person in social settings entails. This is closely related to Wenger's (1998) description of identity as "a way of being in the world". Wenger emphasized that identity goes beyond how people talk about themselves and others. "Who we are lies in the way we live day to day, not just in what we think or say about ourselves..." This perspective seemed much more dynamic as he did the following comments: "identity exists – not as an object in and of itself – but in the constant work of negotiating the self". This idea is supported by the study of Davis (2006), Challenges New Teachers Face. This study cited that science teachers are expected to understand the following areas: (1) the content and disciplines of science, (2) learners, (3) instruction, (4) learning environments, and (5) professionalism. Thus, providing support focused on real problems and challenges in science is critical especially in hiring highly qualified new science teachers.

Several scholars also pointed out that learning to teach is not merely a cognitive process (Wideen et al., 1998), but rather it should be considered as a process that "requires a journey into the deepest recesses of one's self-awareness" (Kagan, 1992 pp.163-164) and may involve learning to become someone else (Sumara & Luce-Kapler, 1996). Research also indicates that professional development of teachers occurs in "stages" that extend, for most, well beyond their first year in the profession. For example, Feiman-Nemser and Remillard (1996) suggest that teaching expertise is not achieved until the five-to-seven-year mark. They characterized a teacher's development as moving

from an initial period of survival and discovery, through a time of experimentation and consolidation and finally to a point of mastery and stabilization. A broad base of agreement exists for the idea that beginning teachers need support during their transition into professional practice (Feiman Nemser, 1991; Huling-Austin, 1990; Little, 1990; Odell, 1990).

Similarly, Super's Life Span, Life's Space Theory also supports this idea (Kidd, Brown, & Fitzallen, 2015). According to Kidd, Brown, & Fitzallen, (2015) people differ in their abilities and personalities, needs, values, interests, traits, and ideas. The degree of satisfaction people attain from work is proportional to the degree to which they have been able to implement self-concepts. Thus, several problems related to learning to teach are often met by beginning teachers. To assist the beginning teachers, promising programs are being formulated such as mentorship which emerged in the 1980s as a professional development strategy for achieving a variety of goals. One goal focuses solely on teachers who are just entering the profession, while two others extend the benefits of mentoring other educators in the school and district community. Mentorship promises potential benefits in at least the following three areas - the new teacher induction which aims to help beginning teachers into the classroom and acculturate them to the specific school and district setting in which they will work; the career enhancement; and the professional development and program innovation (Little, 1990).

1.1 *Objectives of the Study*

The objective of the study is to examine how beginning non – science education major teachers developed and negotiated their science teacher identity in their first three years of teaching experience.

In order to shed light on the research purpose, this study was guided by the following research questions:

1. How do teachers who are non-science education major negotiate their teaching identity during their first three years in teaching?
2. What experiences do non-science major teachers identify as significant or problematic?
3. How do these experiences of non-science education major teachers inform their teaching identity?

1.2 *Epistemological and Theoretical Framework*

This study was underpinned by the epistemology of constructionism (Crotty, 2003). The theoretical perspective of interpretivism (Crotty, 2003; Strauss & Corbin, 1990) guided the researcher in the collection and interpretation of data. In particular, interpretation of results was influenced by several specific theories and frameworks such as Flores' and Day's (2006), Winberg's (2008) and Becher and Trowler's (2001) notion of teacher identity; Enyedy, Goldberg, and Welsh's (2006) conception of science teacher identity; and finally Stronge's (2002) and Sizer's (1999) framework of practice and identity relationship.

2. **Methodology**

This study made use of a methodology combining case study research and narrative inquiry (Connely & Clandinin, 1990; Polkinghorne, 1995) describing how beginning non-science major teachers developed and negotiated their science teachers' identity in their first three years of teaching. Narrative approach (Polkinghorne, 1995) was used to represent the case experiences of non-science education majors as they negotiated their science teacher identity. Also, Connelly's and Clandinin's (1990) statements elucidate the researcher's reason for employing a narrative inquiry approach in this study "Humans are storytelling organisms who, individually and collectively, lead storied lives. Thus, the study of narrative is the study of the ways humans experience the world. It is a collaborative

document, a mutually constructed story out of the lives of both researcher and participant (n.d.)."

Methodologically, this study also closely aligns with multiple-case study approach because it contains more than a single case (Yin, 2003). According to Herriott & Firestone (1983), the evidences from multiple-cases are often considered more compelling, and the overall study is therefore regarded as being more robust.

Data were collected through interpretive research methods (Crotty, 2003; Lyon, 2003; Strauss & Corbin, 1990) using data sources such as interviews, teacher-made lesson plans, photo-elicited interviews, written answers to open-ended questions, observation notes, and researcher's journal of informal face-to-face and cellphone conversations with the participants. The methods employed in this study were selected for two primary reasons. First, they were intended to help the researcher see the how negotiation of teacher identity through the eyes and first-hand experiences of the non-science education majors handling science subjects in the public secondary schools developed. And second, they allowed the researcher to have multiple views (collected in various contexts and formats) of her participants' thoughts, ideas, stories, and enactments of themselves as teachers, which allowed her to triangulate between sources.

In this study, the researcher closely explored the experiences of the three non-science majors separately in order to focus on their unique negotiation of identity as science teachers. The study was undertaken for one semester utilizing a maximum-variation approach in selecting the participants (Mertens, 1998). The inclusion criteria were the following: (a) public secondary teacher, (b) non-science education major teaching science (e.g. Mathematics, English, etc.), and (c) at most three years teaching experience. Research participants are described in detailed using pseudonyms so as to maintain confidentiality in their personalities.

2.1 Participants of the Study

Joel (an English major turned science teacher) is 37 years old and a graduate of Bachelor of Secondary Education major in English from one of the polytechnic schools in Northern Iloilo. He first dreamed to become a civil engineer but since he was not able to pass the National College Entrance Examinations (NCEE), he decided to take education as his second career choice. Before he finished his BS degree he had already a family of his own. He had served as volunteer teacher from 2001 until 2003 at Zerrudo National High School (a pseudonym) which is also found in northern Iloilo. Aiming for financial stability, he left his work and applied for work abroad. Unluckily his plans for a greener pasture failed, bringing his luck to Manila where he taught as a local school board teacher. Since he felt he was not satisfactorily compensated by the salary he was earning, he went home to his native town where he applied for a teaching job. Joel is now in his second year of teaching general science at Zerrudo National High School.

Santi (from chemical engineer to a science teacher) is 49 years old, single, and finished his Bachelor of Science in Chemical Engineering in one of the universities in Iloilo City in 1985. He was also able to finish his Master in Business Administration in 2007 in the same university. Due to his patience and determination, he was able to finish the Complete Academic Requirement in his Ph. D in Educational Management in 2009, also in the same institution. He had been employed in different kinds of job in Manila as a casual-contractual employee for almost fifteen years. Bored of not having job security for a number of years, he went back to his native town where he applied for a teaching job. Right now, Santi is already in his third year of teaching handling chemistry and physics at San Martin National High School (a pseudonym) in northern Iloilo.

Ella (from Filipino to Science) is 24 years old, a graduate of Bachelor in Secondary Education major in Filipino in one of the polytechnic schools in northern Iloilo. She dreamed of becoming a teacher because she was inspired by her aunt who is also a teacher. As a jobless fresh graduate, she went to Manila to work as a saleslady in one of the shopping malls. After a year, she heard that a new high school was established in their island and is in need of teachers. Luckily she was hired and was given the opportunity to teach. At first glance, one may observe that Ella is a soft-spoken and silent

type of person. She got married just few months before the research study was conducted. Ella is on her second year of teaching at Puting-Buhangin National High School (a pseudonym) where she handles general science.

2.2 Context and Setting of the Study

Three different schools were identified by the researcher to serve as settings of the study. These schools are public secondary schools where the participants are currently employed.

Zerrudo National High School (a pseudonym) is a 4-hectare public secondary school located almost 1 kilometer from the town proper. It was formerly a part of a polytechnic school located in a town where a species of seashell is abundant. This explains why the local name of that town is associated with seashells. But because of the increasing number of student population, the secondary department was relocated in 1999 and was given the name Zerrudo National High School - bearing the town's name. The school population for the recent year is 729, with four sections per year level. The school has 29 faculty members and is headed by a principal.

San Martin National High School (a pseudonym) was formerly an extension school of a national high school located in the heart of the municipality bearing a name associated with banca in the mud. Because of the increasing number of student population, in January 2009 the school was declared by the Department of Education as an autonomous school. The school covers a land area of 2 hectares with at an estimated distance of 5 kilometers from the town proper. Currently, there are 310 enrolees with 2 sections per year level. The teaching force is made up of eleven regular teachers and one volunteer teacher.

Puting - Buhangin National High School (a pseudonym) is an extension school of a national high school located in a town associated with a woman's name. It takes a one-hour boat ride from the major island going to the island where this school is located. It has an estimated distance of 1 kilometer from the seashore. The school is positioned at the foot of a mountain, giving it an interesting view for someone who is visiting the place. It has a land area of two hectares. The school has 424 enrolees as of the current year and twelve teachers and is headed by a principal.

2.3 Sources of Data

Data were collected through interpretive research methods (Crotty, 2003; Lyon, 2003; Strauss & Corbin, 1990) using data sources such as interviews, photo-elicited interviews, written answers to open-ended questions, observation notes, and researcher's journal of informal face-to face and cellphone conversations with the respondents The data focused on investigating how beginning non-science major teachers developed and negotiated their science teacher identity in their first three years of teaching experience.

2.3.1 Interviews

The researcher conducted three interviews with all the research participants. These interviews ranged between 14 - 36 minutes long where the researcher tried to elicit as many stories as possible (Chase, 2005) rather than focus on abstract visions and ideas. At the beginning of the interview, the researcher emphasized to the participants that she was more interested in their specific stories and experiences as non-science education majors teaching science subjects than in their abstract responses. However, this was not possible in all instances as the researcher tried to let the participants describe why these experiences seemed significant to them. For each interview, the researcher used a "general interview guide" (Patton, 2002, p. 342), or a list of general themes or questions she wanted to explore during the course of the interview. However, the researcher tried to allow the conversation to flow in the direction the participants chose, which meant that the researcher had to ask questions not included in the interview guide if the situation calls for it.

2.3.2 *Photo-elicited Interviews*

The researcher conducted two photo-elicited interviews with all the research participants. They were requested to think of and choose objects which they felt symbolized and resembled themselves as non-science education majors teaching science. These pictures were downloaded to the computer by the researcher. As each picture was flashed, the participant made a story out of these pictures by describing how these objects resembled and symbolized herself/himself as a non-science education major teaching science. In the course of doing this, the researcher allowed the participants to focus on discussing merely on the representations the objects gave to themselves.

2.3.3 *Written answers to Open-Ended Questions*

Open-ended questions in printed form were also given to the participants after the interview for them to express whatever ideas they forgot to give during the interviews. This is to encourage the participant who is not very articulate in talking to have a way of better expressing himself/herself. In this case, Ella was the only one who answered the open-ended questions. The other two participants expressed that they were able to say all the things that they wanted to share to the researcher during the interview sessions.

2.3.4 *Observation Notes*

The researcher observed the participants three times during their teaching experiences. While doing the observation, she took detailed field notes of each classroom discussion, how the non-science education majors handled science subjects, the classroom management they applied to the students, what the students were doing, how they interacted, and how she/he presented himself/herself to the class. These observations were also recorded using a video-camcorder for the researcher to access verbatimly the dialogues undertaking during the class discussions. Even though these dialogues were not transcribed verbatim in full, the researcher returned to these recordings and transcribed portions that became relevant to the participants' negotiation of teacher identity.

2.3.5 *Researcher's Journal of Informal Face-to-Face and Cellphone Conversations*

A researcher's journal of informal face-to-face and cellphone conversation was also made at hand for the researcher to record all important details which were considered important in the negotiation of identities of the participants during cellphone conversations. These conversations were done in case the researcher has something to clarify with the participants answers on the interviews or if the participants have something to share to the researcher which she believes would be a great importance to the research objectives.

The information that was collected allowed the researcher to make in depth descriptions and interpretations of the uniqueness of each individual's teacher identity. In addition, the methodological choices were aligned with those of case studies in that, the ultimate goal of this investigation is not to generalize, but instead to discover the uniqueness of each participant's experiences, which the researcher believes would allow her to generate explanations and interpretations of some well-worn problems associated with negotiation of identity as science teachers.

3. Results

This study utilized Gee's (2001) notion of D-identity or discursive identity and Holland et al.'s (1998) "concepts of tools of agency and self control and change." Analysis of the narratives showed that each participant displayed unique characteristics in negotiating their teacher identity. In the individual's

negotiation of identity as a teacher, there seems to be complexity as to the exhaustive process of coming up with the answers to the research questions. Interpretation of identity negotiation is a sensitive and complex process therefore the researcher needs to be cautious, to be out of biases, and to get rid of being judgmental. The following quote by Polkinghorne (1998) was beneficial in accomplishing this work, "the researcher's task is to configure the data elements into a story that unites and gives meaning to the data as contributors to a goal or purpose" (1995, p. 15). Furthermore, Wenger's (1998) citation in his work has helped much in realizing the purpose of this study "In everyday life it is difficult – and largely unnecessary – to tell exactly where the sphere of the individual ends and the sphere of the collective begins" (p. 146).

3.1 Joel: A father, a friend, and the best science teacher someday!

Joel displayed three D-identities throughout the conduct of the study. He made bids being recognized by his students and colleagues as a friend, as the best science teacher, and he made an effort to serve as a father to the learners. The friend D-identity is considered to be significant in exploring Joel's negotiation of teacher identity. For example, he described his relationship with his students being just like friends.

He confessed during the interview that most of the teachers and the students inside the school campus liked him, not in the way he teaches but in the way he treats them. This D-identity of Joel seemed to be significant during the course of the study.

The second primary D-identity useful in considering Joel's negotiation of identity is his struggles to be recognized as the best science teacher. Joel was very consistent in mentioning in the foregoing interviews that he really wanted to be recognized as the best science teacher. He considered science as one of the most difficult subjects to teach but he hopes that he would become one of the best teachers someday. He even added that he would do everything just to be recognized as one. The third D-identity Joel depicted throughout the research study is his effort to act as father to his students. This is best shown in the following examples: During the photo-elicited interview, he chose a tree to make a story of himself as a teacher. According to him, as a science teacher, the tree best symbolizes him as the head of a family, his students being the children and he being the father. And as the head of the family, it is his responsibility to provide everything they need. In addition, he took the responsibility as being the one guiding and moulding the students to become competitive citizens of the country in the future.

Joel has two tools of agency that mediate how he negotiates his teacher identity: courage and confidence in teaching. The courage tool of agency is important in Joel's establishing his identity as a science teacher. He utilizes this tool to show that despite his being non-major in science, he has the guts to handle the subject. He considered teaching science as a challenge on his part because although he was just "forced" to teach science subjects, yet he has tried his best to impart knowledge to his students.

In addition, confidence in teaching played a great role in Joel's negotiation of teacher identity. "Teaching science develops my self-confidence especially in answering student queries and in asking essential questions to the class," this is his response when asked how things went for him as non-science education major teaching science. When asked what stood him out about to teach science, he directly answered that it is his confidence. This made him versatile and resourceful.

3.2 Santi: Age matters – from career oriented to love of work!

Unlike Joel, Santi showed little transformation of his teacher identity throughout the research study. He is less teacher-centered but is more concerned of his students in handling classes. The following D-identities revealed this description of Santi: love of work, and a teacher and role model. The love of work D-identity of Santi is very obvious inside the classroom. The way he handled his science classes is less traditional. He does not follow the regular procedure in teaching high school students

(motivation, presentation, lesson proper, etc.) instead he wanted to prepare his students for college work. That is why he employed college teaching approach as his teaching strategy which he identified as "one step backward, two steps forward strategy" with speed and accuracy approach. This strategy, according to Santi, is to make students remember the previous lesson by giving them a sort of review because as students, they learn portion by portion. And then he has to make sure that the learning is extended until they finish high school. In that way, they can remember what the teacher has taught them. With regard to the "speed and accuracy" approach which Santi says, he honestly told the researcher that "I do not expect the students to develop accuracy in their high school life. This will just become evident when they are already in their college level."

Santi also showed in this D-identity that the priorities of a person in life change as he gets older. He gradually transformed from being a career-oriented person to a person who always thinks about his love of work. He supported this by statement by sharing that he had been employed in different kinds of work but he considers teaching science as the one he loves the most. It is where he enjoys so much.

In terms of punctuality, Santi expressed his D-identity by being always on time. "I am always the first in everything," he said. He even rated himself a perfect 10 in terms of punctuality in the performance appraisal for teachers. He never incurred any absences even if

he was not feeling well. He always starts his class on time and ends it on time, whether he has finished or not the topic for the day.

 Lastly, to bid being a good teacher and role model is the D-identity predominantly observed in Santi. He made decisions during science classes based from his vision of an ideal world which is "to see is to believe", that he cannot convince people simply by talking. "Sometimes you have to make them believe by doing it," this is his statement when asked regarding his of an ideal world of teaching and learning. That is why he made efforts to be seen by his students as a person who loves his work, and is a good teacher. In the good teacher and role model identity of Santi, he tried to create an image of an ideal teacher and a good example in the eyes of his students and colleagues.

Santi has four tools of agency that mediate how he negotiated his teacher identity: confidence, punctuality, resourcefulness and being meticulous. These tools of agency are very visible products of the D-identities Santi have developed throughout his negotiation of teacher identity. Confidence is an important tool of agency predominantly identified on Santi throughout his negotiation of teacher identity. Santi is not an educator, but he has managed to develop this tool of agency in his induction period as a teacher because he loves what he is doing. It was very obvious that Santi has confidence facing his students through the way he discusses the lessons, asks questions, and answers queries of students.

Punctual – this is how Santi describes himself. He always starts his class on time and ends it on time. On the contrary, there are instances when he was able to finish the topic ahead of time. He took this opportunity to let the students rest. Sometimes given an extra time after finishing the topic, Santi uses this period in relating the subject matter to other values for better understanding of the students.

The third tool of agency Santi has is his being resourceful. He showed his initiatives as a teacher in the entire research period. He lacked visual aids and other references but he managed to surpass this through the help of external factors (i.e. parents, friends, etc.).

Lastly, Santi demonstrated his being meticulous as a tool of agency. He was very particular with the concepts he was sharing with his students. He really makes it sure that what he is saying is accurate. Although he is confident in teaching, he still opens his books and review the problem solving which he is about to give to his students. He does not want his students to comment on him that he is teaching doubtful concepts.

3.3   Ella: To be a good science teacher! That's all I want!

Exploring Ella's science teacher identity is quite challenging. Insufficient collected data might be

blamed for this, but the researcher believes that it might be Ella's way of negotiating her identity. In exploring Ella's teacher identity, the researcher observed only one D-identity. It was her struggle to become a good science teacher. She kept on describing herself as a good science teacher. To achieve this identity, she always follow the standard procedure in teaching science. She starts her class with a prayer, followed by motivation, presentation, lesson proper, generalization, evaluation, assignment. Ella showed slight changes in her teacher identity. She is very conscious of herself as a science teacher. She uses Filipino and English as media of instruction in teaching science. She has always prepared activities for her students. These activities were usually written on Manila paper since photocopier machines are not available in the island. Sometimes these are written on the board ahead of time. She wanted to have greater participation from the class that is why Ella always draws out answers from the students. She made sure that at the end of the class almost everyone of the student had shared their ideas regarding the day's lesson. One of the main factors which she considered having a great influence on her becoming a good science is her love for and dedication to teaching. Her enthusiasm in teaching science has made her exert much effort in letting her science class perform science activities.

Ella employed three tools of agency in negotiating her teacher identity. These are her dedication, love for teaching science, and confidence. Ella considered science as a complicated subject but she had no problem in teaching this subject because of her dedication

to and love for teaching science. She always finds way to study and learn the topics she was to teach the following day. In addition, Ella also showed her dedication by researching on the topics which she found difficult or sometimes she would ask assistance from his colleagues. It was very obvious that because of her dedication in teaching science she has learned to love it. Lastly, Ella developed her confidence in teaching because of her dedication to and love for teaching science.

Revisiting the interviews (including the photo-elicited interviews), the researcher found that the three of them both desired to be the "teacher" they wanted to be. Joel desired to be regarded as one of the best science teachers someday. Ella wanted to be a good science teacher and Santi chose to be teacher who is looked up to as a role model by his students. During the induction period, they developed and negotiated their confidence being science teachers because of the assistance they got from their colleagues. Thus, they were able to establish their own interests and enthusiasm while learning to teach the subject. They were the same, yet different in their own ways!

4. Conclusions

The first three years of teaching serve as the induction period of teachers. During this period, negotiation of teacher identity started. It serves as the foundation of their development. Non-science education majors really have the need to adjust to their teaching loads, especially that they were usually "forced" to teach science subjects because of the lack of science teachers in the field. Throughout this period, teachers started to enact what they wanted to be in the final years of their teaching profession. Relating these situations to Gee's (2001) notion of D-identity and Holland et al.'s (1998) tools of agency or self control change, the researcher concluded that the participants negotiated their teacher identities as having various struggles and enactments inside the classroom, from being non-science education teachers to science teachers.

5. Acknowldegment

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