

## On Becoming a 21<sup>st</sup> Century Teacher: Exploring Math Student Teachers' Perception of the Math Teacher through Communities of Practices

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### ABSTRACT

Field Study 6 “On Becoming a 21<sup>st</sup> Century Teacher” of math student teachers through the framework communities of practices was observed and purposely used for this study. Thus, analyses their induction experiences. The primary research question was apprehensive with how math student teachers perceived to what bands the professional community practices of the math educators. A qualitative research study (Narrative) was designed. Written journals and face-to-face interviews by the participants were tools to collect data. Engaging, imagining, and aligning was the three ways of belonging in communities of practice framework used to analyse the data. Result shows that participants have valuable opinions and observations with regards to the faculty set-up (arrangement), teaching loads of cooperating teachers and professional relationships such as being approachable among mathematics teachers. It was revealed from the data how mathematics student teachers aligned themselves with values and norms of the university -where they finish three years of their undergraduate education and school cultures. Moreover, experiences and proficiencies in their cooperating schools strengthened views about what was upheld in the college of teacher education curriculum such as formative assessment and its importance, teaching methodologies, techniques and approaches. Strong subject knowledge were also strengthened as a product of observations in their cooperating school was significantly importance.

**Keywords:** Mathematics student teachers, mathematics teachers, communities of practice, Cooperating School.

### INTRODUCTION

Field experience is very important for the development of student teachers where they get a chance to explore and practice all theories learned in their university. There are many research studies emphasize the problems because of the tension on the theory -practice context of field experiences [1-4]. These problems concern with the effectiveness of field experiences and it was reported in local, national and international journals. For example, mathematics student teachers may not have apply what was learned from their university in a more concrete site of schools. Thus, there is a need for educators to think carefully on the problems with deployment of student teacher as their first training and preparation.

Cooperating teacher is one of the problems mentioned by some student teacher. As mentioned by [5] that student teachers and cooperating teachers relationship might be totally inefficient and ineffective if the cooperating teachers embraces a traditional way of teaching. Another problem is anchored to the traditional teaching approach to train teachers which learning occurs through different learning activities [6]. Theoretical knowledge is transferred into practice, thus learning to teach is a cognitive process. [7]

claimed that student teachers are observed and seen to resist assistance and advice if the student teachers are not successful in doing a given activity by their cooperating teacher. However, this approach ignore contextual factors that framed teaching [8]. Maybe one problem might be a limited time of teaching field experiences in the programs offered in the teacher education [9].

With the concerns above, there is a need to take precautions during internship program or deployment of student teachers experiences. Firstly, building a productive teamwork between mathematics faculty and the school is essential [10-12]. Through this teamwork, [13] mentioned results with regards to math student teachers' observations on thoughts that are important in the "university" where they enrolled and the "school contexts" as observed in their cooperating schools and how they dealt with changes between these concepts. They recommended that supervising instructors and cooperating teachers should take these thoughts of student teachers into reflection.

Another suggestion focus with the time and schedules of teaching field experiences in teacher education programs. As practice traditionally, internship program or deployment is in the last year. With this, [14] proposed different programs and the inclusion of school practicum in the first year. This program aimed an avenue for student teachers the opportunities of participating in the daily activities and works of math teachers (cooperating teachers) for them to familiarize with their accountabilities and with the professional knowledge. Thus, this program approach can aid student teachers integrates their observations and learned in their cooperating school with those theories learned from the university where they earned education for four years. [15] claimed that the university and school can widen encouragement to student teachers' professional development by giving appropriate mix of challenges and support. [16] claimed that cooperating teachers' mindfulness of their responsibilities and recognition of these roles by supervising instructors to support student teachers' progress and development is also an important concern.

With these, teaching experience offers chances for student teachers to interact with the math teachers as well as to their community for them to improve their teaching identities. In connection to this, on the deployment period or field experience subject, [15] examined student teachers' professional learning. He then focuses on how student teacher interactions with the math teachers and peers constructed their teaching selves and affected their observations which categorized as isolate, detach, engage and affiliate. With respect to isolate, the student teacher established an unfortunate rapport with their cooperating teacher. One thing more, they did not have much conversation about teaching and professional problems in the case of detach. With regards to engage, student teachers are confronted with tests and supports and have the wits to mingle to their cooperating school and with the community.

As reflected in [17] research, cooperating teachers conveyed learning to collaborate with student teachers because they could develop their social skills, thus, cooperating teachers should embrace their college cultures. Hence, social relations and school culture can inspire and influence "other's views of their would-be as teachers" [18]. Moreover, it is claimed that beliefs and practices of student teachers can be reformed through teamwork with cooperating teacher [19].

This research study was conducted in the induction process, preparations and involvement of math student teachers in the college of education of Ifugao State University (IFSU)-Potia Campus, Alfonso Lista, Ifugao. The participants are all Bachelor of Secondary Education, major in Mathematics. There are two courses in the said program during which student teachers visit cooperating school. The first is the field study 6- "On Becoming a 21<sup>st</sup> Century Teacher" course that mainly requires observation and participation. Student teachers take this course in the first semester of their fourth year in the academe. Throughout these observation and participation, student teachers provides notes and remarks on issues such as teaching methods, strategies and techniques, classroom management, faculty room setting, school resources, students factors on academic performance, questioning skills, leadership styles of their cooperating teachers and the school as a whole. "Practice Teaching" is the second course on their field experiences. This course is in the second semester of the fourth year before graduation and it has two components- (university component and school component). Firstly, the university component is guided

by the supervising instructor and they will meet every Friday. Secondly, the school component, student teachers are expected to involve at the school from Monday to Thursday.

With this, during the first phase of a field experience course, the supervising instructor (researcher) investigates the student teacher's views of what constitutes the practice of their cooperating school in general and mathematics teachers (cooperating teacher) in particular. Hence, this study focused on the math student teachers' initial dealings with a professional community.

### **Framework of the Study**

A framework that focuses on social aspects of learning is "Community of practices". It is comprised as a theoretical framework that investigates how student teachers make an induction into a recognized school with memorandum of agreement. Every profession has a socio-historical context with its own routines, conventions and practices just like teaching [14].

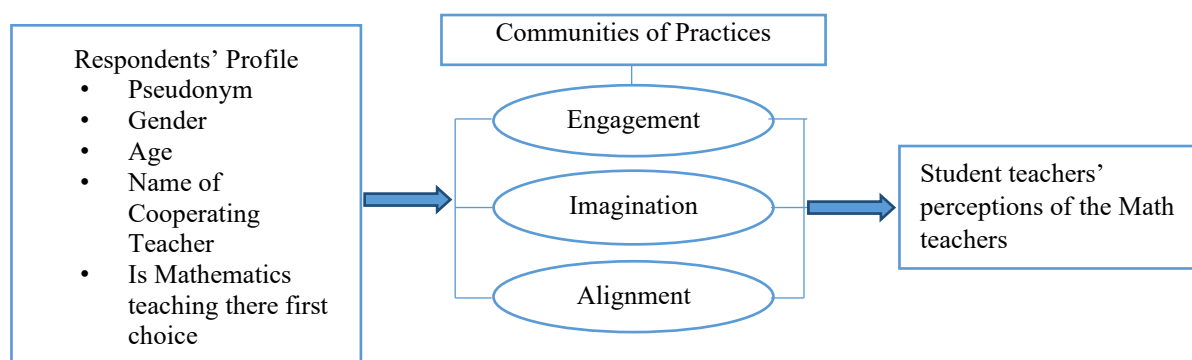
School community members learn from one another through sharing of experiences and how it process. Thus, the norms and values of the community can be familiarized by prospective teachers-new members of educator for them to learn how to perform basic tasks by absolutely observing and participating in the school community during this process. When new members come into a community, different levels of participation transpire. They defined two categories of participating: (1) central category and (2) peripheral category. Both developing an identity and mastering knowledge and skills are lens as they defined learning as the route of moving from peripheral-participation to full-participation.

On the other way, student teachers join in at the periphery. Thus, this research will investigate the 1<sup>st</sup> phase of involvement when student teachers are introduced to the school community at first. Student teachers have experiences in two different contexts such as teacher education programs in a university and their cooperating school. Student teachers also interact and or cooperate with the members of different school communities such as their peers, supervising instructor, teachers, and mentor in cooperating schools particularly math teachers. Hence, the student teachers are faced with diverse values and norms of different communities. When entering the school community, they will interact and mingle with students and teachers. It will inform the pedagogical practice of student teachers through these interactions together with their interactions to the university supervising instructor [14].

With all that intellect, this research investigated the induction events in the BSEd program in which mathematics student teachers of Ifugao State University are introduced and presented to the school community-cooperating school. The student teachers are required to perceive the members of the community and do interfaces among them. Thus the aim of this study analyses mathematics student teachers' perceptions of what constitutes the practice of the school community and mathematics teacher using "three (3) modes of belonging" to a social-learning system: engaging, imagining, and aligning [20-21].

Engaging is defined as "engage in activities, working together or alone, doing things talking, using and producing artefacts". Imagining is defined as the "to see ourselves from a different perspective, to reflect on our situations, and explores new potentials. With this, the world provides us with numerous tools of imagining (e.g., role models,...artist etc.). Aligning is "afar from engaging and is defined as follows: make it sure that school laws are followed, that different activities are coordinated, or objectives are properly communicated"

To understand better the conceptual framework, the research paradigm was presented below.



**Figure 1.** Paradigm of the study

### **Objectives of the Study**

Three modes of belonging (engaging, imagining and aligning) were used to analyse their observations and participation in the professional community (mathematics cooperating teacher, principal/school head, mathematics coordinator if any). In the light of the framework, the research questions were as follows:

1. How do mathematics student teachers mingle with members of the school community?
2. What do mathematics student teachers observe concerning professional interaction among colleagues in schools?
  - What kind/s of engagement do they observe in the professional community?
  - What kind/s of alignment do they observe in the professional community?
3. How do the experiences of mathematics student teachers in schools affect their perception of the mathematics teacher?

### **MATERIALS AND METHODS**

To establish a clearer understanding of what binds the practice of school community in general and mathematics teacher in particular, the researcher utilized a qualitative approach (Narrative research design). A qualitative research with interests in the meaning people to construct in regard to a given situation, how be able to make sense of the world, and the record of experiences that have contributed to the meaning making.

This research took place during the first term at the Ifugao State University (IFSU) – Potia Campus. The mathematics student teachers were currently enrolled in Prof. Ed. 95 (On Becoming a 21<sup>ST</sup> Century Teacher)- This subject was design in compliance with the professional education subject earned, the Teaching Profession. Brought about real life situations and several field experiences of a becoming a teacher with emphasis on the characteristics of a teacher as a person and as a professional. Also, provides a closer venue of chances for self-reflection that would prepare one to become a student teacher. There are only six mathematics student teachers enrolled in the course, all of them were taken as the participants of this study. The six participants will be deployed into three National High Schools with Memorandum of Agreement in the Municipality of Alfonso Lista. It is the choice of the mathematics student teachers to choose their cooperating school among the three national high schools and approved by the supervising instructor for reason that their homes are near to their cooperating school.

**Table 1.** The Participants

Name(Pseudonym)	Gender	Age	Name of Cooperating School	Name of Cooperating Teacher	of Mathematics Teaching as a first choice
1. May-Ann	Female	19	NNHS	Naty	Yes
2. Nobbi	Female	21	SMNHS-Main	Mylene	No
3. Che-che	Female	19	SMNHS-ext.	Rhea	No
4. Grace	Female	20	SMNHS-ext.	Eric	No
5. Bitang	Female	20	SMNHS-Main	Elikid	No
6. Manilyn	Female	21	NNHS	Naty	Yes

Generally, one cooperating teacher/mentor is appointed to one student teachers as practice in the University. Each student teacher visits and observes his/her cooperating teacher's lessons as part of observation and participation" course. Whatever their cooperating schools for the first semester, it will also be their cooperating school for the 2<sup>nd</sup> term of the school year since they are already aware of the environment where they deployed.

The data was collected during the first term of school year 2019-2020. To investigate the student teachers' induction a qualitative study was conducted. All of the six (6) mathematics student teachers were the participants for the research study. Journal writing and face-to-face interviews was use to collect data. At the end of observation and participation in the first term of school year 2019-2020, face-to-face interviews was conducted in the college of education by the researcher. For the face-to-face interview, the researcher used a tape recorder. The participants were called individually into a room and state honestly the answers to the questions. For the journal writing, the participants wrote reflective journals of his/her observations during the field experiences. The informed consent forms signed by both participants and researcher at the start of this study.

A meeting was held with the participants prior to the conduct of the interview in order to inform the nature and purpose of this study. Participants were requested to read and sign a letter of consent on the actual day of the interview for them to participate heartily in the study and for the interview to be properly recorded.

To treat and analyse the data, content analysis was used. Firstly, interviews transcribed verbatim. Secondly, transcriptions of interviews and journals were analysed based on the research questions and theoretical framework of this study. A priori and emergent codes were observed in the result of analysis namely (engaging, observing engagement, aligning, observing alignment and imagining). Each of the used codes is explained below:

**Engaging-** the instance where participants engage in school activities e.g. having connection about upcoming activities in the faculty room.

**Observing engagement-** the instance where participants observing behaviors on how members of the school community engage in daily school activity e.g. observing relationship among mathematics teachers or observing how math teachers organise activities after classes

**Aligning** – the instance where participants adapt to the school culture or challenge it e.g. trying to convince a teacher to change the teaching methods, strategies and techniques or soliciting advice from cooperating teachers.

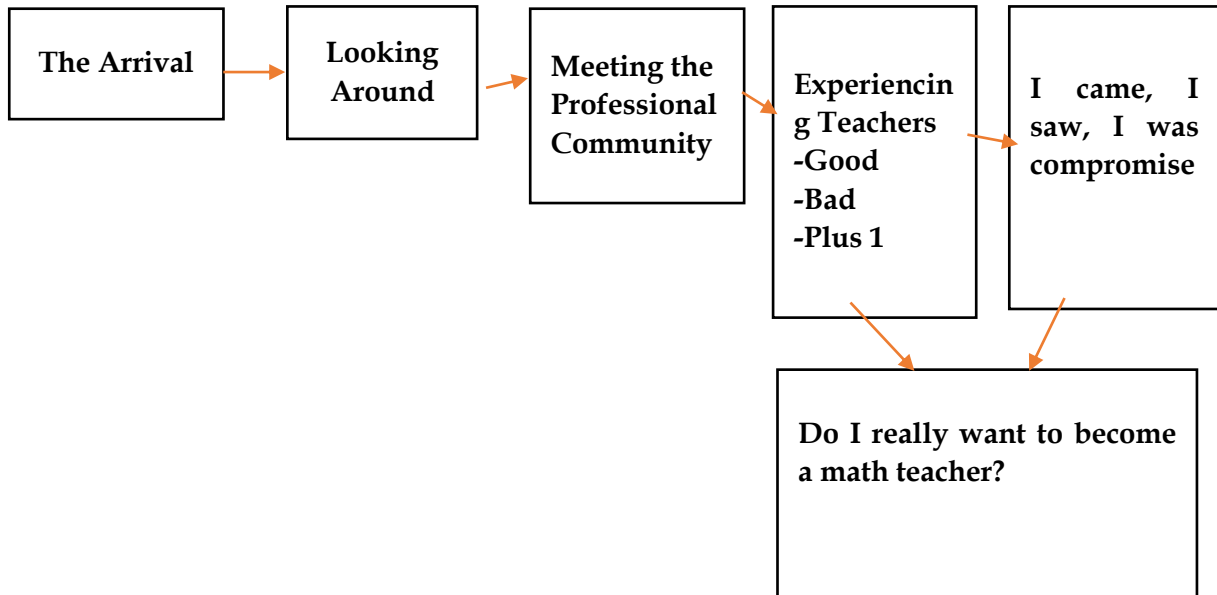
**Observing alignment** -the instance where participants observes the way in which member of a school community adapt to school culture.

**Imagining-** building their perception of the mathematics teacher and their selves as math teachers as they reflect on their observations e.g. takes a teacher as a role model.

Themes was specified considering the above codes through the data from participants' journals and interviews. The researcher used title episodes that is based from the communities of practices framework to narrate the themes.

## RESULTS AND DISCUSSION

This part presents themes and episodes that was emerge from participants' interaction as they mingled with those members of the professional community and how their observation and interactions affects their views of the MATH TEACHER.



**Figure 2.** Themed narrative episodes

### The arrival

The participants deployed for observations to their cooperating school as required to their field study 6 – On Becoming a 21<sup>st</sup> Century Teacher during the 1<sup>st</sup> Week of October 2019. The supervising instructor oriented them to do observations during MWF from 7:30 AM to 11:30 AM only. Moreover, the participants mentioned in the interview and in their journal that they were late in doing observations to their cooperating school. Upon arrival to their cooperating school, immediately they have to face their cooperating teacher and followed them for observation in the classroom.

### Looking Around

The mathematics student teachers observe varieties of activities in their cooperating school. They mentioned in their interviews and journals, they emphasized the set-up of the faculty room, cleanliness and works of teachers. Che-che says that some of the faculty members stays in the classroom because the space in the faculty room is not enough:

*The faculty room is that, it is join with the principal's office. And some of the teachers werein they have advisory class stays in the classroom. We did not enter in the faculty room. They place us outside the faculty room, we stayed in a kiosk.(che-che)*

### Seeing the dirt

During the interview, mathematics student teachers were asked by the supervising instructors on what was observed in the faculty room and how those observation change their views of being a math teacher. Majority mentioned that those tables of math teachers are not well organized. For example, Bitang said:

*What I observe in the faculty room is that the are... there is no.... It is not organize wherein the book on the tables are not properly organize and also there are some pieces of dirt. The*

*instructional materials/ models are organizely set on the side. I suggest that the teachers, when they come in the morning, they should clean, they should organize their things on the table. (Bitang)*

## Meeting the professional community

Some participants conveyed different professional dialogues. There are four participants declared that the principal/head teacher talk about matters connected to the discipline of students and how does mathematics teacher gave actions into it. And it is proven during observation of the participants as they mentioned in the interview. For example, Bitang said:

*"It change sir, ah.... On my observation, at school, in the classroom... the teacher shows hot tempered. So, whenever the students are noisy or they are not listening, he speaks bad words like "u-shang-na", "Okinnisna", .... He should be more kind and it should be harmonious to the..... ofcourse Iam also a student or high school student from the past.... So I experience how hard to be a student. So... the teacher should consider the feelings of students... their needs. Ofcourse.. we teachers have purpose to teach students, how to deal, how to be or how to attain their goals in the future. The teacher should be like that...." (Bitang)*

The mathematics student teachers received some advice from their cooperating teachers. There might be many advices by their mentor if they observe as early as September 2016. Although they have just observe for 2 weeks, their cooperating teacher suggest to them that they should not be lazy teacher, they must to do assigned task and must go to school early (taken from the statement of Nobi and Bitang). As prescribed in their FS 6 portfolio that they must observed a good and experienced teachers. The participants declared that they appreciated and acknowledged the advice of experienced teachers. Hence, the advice were aligned to their views about the math teacher.

## Experiencing Teachers

### The good

Another theme concerned on the methods, strategies and techniques of teaching used by the teachers of mathematics. For instance, Che-che made affirmative observations about the methods of teaching of her cooperating teacher. She especially like the way she have a group activity.

Another theme is concerned with the assessment of the mathematics teacher. For example, Manilyn with her cooperating teacher which she observe.

*"I like the way she gave an activity after the lesson. She had checked it individually and gave an immediate response to right and wrong answers. I think it's better to give an immediate response during assessment than checked their papers in later time, so I want to adopt her style of assessment." (Manilyn)*

Manilyn has faith with the significance of assessment during classes was strengthened with her notes of how formative assessment have been used by math teachers effectively.

Majority of the mathematics teachers in their cooperating school uses ICT integration as mentioned by the participants.

Other kinds of engagement observed were traits of faculty wherein they are approachable and majority of the faculty are coaches for different school competitions such as district meet, provincial meet and others.

Mathematics student teachers observed the occurrence of school culture as part of aligning. One of these characteristics was associated to methods of teaching, strategies and techniques. All of the participants

mentioned about their remarks about the teaching methods of their cooperating teachers. One of them was Manilyn, and commented positively about the teaching approach of her mentor:

*When the teacher had teach the lesson, students or some of the students just know how to perform the calculation but not the whole problem. But I like the way she gave an activity after the lesson. She had checked it individually and gave an immediate response to right and wrong answers. I want to adopt her style. She is an approachable teacher, open to everyone, they even talk about their Christmas party. She is open to suggestions of her student and she is fair to all.*

The excerpts above concludes that the math student teacher seen the way in which her cooperating teacher challenged the hope of their cooperating school (good management in the classroom) which is an indication of alignment.

### **The bad**

Classroom management (cleanliness) was another issue outstretched by some of the participants. Manilyn assert in her journal that her cooperating teacher is not very strict to her students on the cleanliness of their room. She added, I want to maintain the cleanliness of the room when I became a teacher, maybe, I cannot proceed with the lesson if there are distraction inside the room. Participants also observed some characteristics of a public school. The mathematics student teachers mentioned that majority of the high school students from public schools were not behaving well.

### **Plus 1: The math teacher's additional burden**

Another issue raised by 2 participants (Bitang and Nobli) was the teaching loads of mathematics teachers. For example, Bitang said:

*"When the head teacher came in the math laboratory, when Mrs. Ogano is already there, she is complaining why we are going to observe for senior high school and she is telling that she is full load and she have many things to do and she cannot accommodate us for the observation. The head teacher told that we have to observe other teachers and that is sir Elikid."*

### **I came, I saw, I was compromise**

As mathematics student teachers conducted school observation and mingled with math teachers in the school community built an images of the professional community that affects the way they see themselves as math teachers. Thus, different themes emerge from the analysis of data.

Being a role model is the first theme emerge. During the dialogues, math student teachers were asked how they change their perception of a math teacher after dealings to their cooperating teacher. And they also mentioned to their journals. Four of the participants talk about how cooperating teachers influence their student teachers and changed their views about the work of a math teacher. For example, the case of Che-che:

*I don't want to become a math teacher, but if I do become a teacher, I want to be like my cooperating teacher. (Based from her journal, her cooperating teacher is flexible and can manage the class well). It motivates me in pursuing the choice that I have now.*

Nobli was also influenced by her cooperating teacher. Presented to her journal that, she appreciated her cooperating teacher because he is intelligent, brave and well prepared in the discussion.

Another student teacher who impress with her cooperating teacher. The case of Manilyn:

*I like the teachers' compassion to the students, she is conducting remedial classes for those slow learners (Reflected to the journal of Manilyn)*



Sometimes, mathematics student teachers were face with bad cases in their own definitions. Two participants stated that their experiences with the cooperating teacher did not change their points of views. For instance, Bitang claimed that she would not take her cooperating teacher as a good example. As mentioned by her, the teacher speaks bad words during discussions, especially so if his students cannot do the task given.

### **Do I really want to become a math teacher?**

The theme of imagining emerge from the exploration and that is concerned with being a public school mathematics teacher. Mathematics student teachers said that their self -images of a public school have been faced with disciplinary concerns. They said that public school have low level of discipline. Despite a negative or positive change of perceptions, some mathematics student teachers said that they still want to work in a public or a private school because it is a great opportunity to employ after graduation.

*Since as long as I will be employed, public or private, it is a great opportunity.... (may-ann)*

*..... this profession is really what I wanted... So, whatever negative statement or bad influence of the teacher from public school, It doesn't affect my choice... I grab any opportunity from public or private school (manilyn)*

*ofcourse in my observation, the students perceive math as difficult subjects so... I want to be a math teacher in public school so... ah... I will be able to teach them... to implant to them that math should be valued... they should love math...(Bitang)*

This only means that the math teachers would like to be employed to teaching after graduation whether public or private school for professional development.

## **CONCLUSIONS**

The participants did not yet interact with the school principal and some school head teacher because they were out for meetings and activities. The participants did not yet meet the mathematics coordinator or head of mathematics because they were just observe for two weeks. They mostly interacted with their cooperating teacher.

The faculty room was joined with the principals' office. Teacher's tables in the faculty room are not well arrange. Some of the mathematics cooperating teachers were complaining because they have full teaching load. The teaching methods of some cooperating teacher likes by participants especially the way they give a group activity. This means that it leads to the 21<sup>st</sup> century teaching. Majority of the mathematics teachers in their cooperating school uses ICT integration. Participants had a chance to observe assessment that reinforced by their cooperating teacher and they like it so much.

Perception of four math student teachers have changed. The participants truthfully understood the significance of classroom management and getting to know students. They were overwhelmed by the openness and willingness (approachable) of their cooperating teacher for professional enrichment. As they said, they wanted to be like them in the future and took them as a good example. On the other side, two of the mathematics student teachers did not want to be like them when they become teachers because of negative criticism.

Participants already familiar that some public schools have low level of discipline even though teachers have a high or great level of authority inside the classroom. Some of the mathematics student teachers revealed that they still want to work in a public or a private school because it is a great opportunity to employ after graduation.

## RECOMMENDATIONS

The researcher recommends the following: (1) The supervising instructor should deploy student teachers for field experiences as early as one month after start of classes in the first semester of the school year. The supervising instructor should also be the teacher for the subject “The Teaching Profession” to monitor the norms that reinforce from the university to their cooperating school. (2) The mathematics student teachers should be encouraged by the supervising instructor and the cooperating teacher to observe seriously the professional activities of mathematics teachers in their cooperating school and the school community as a whole. (3) Training and Seminar must be given by the college supervisor to the cooperating schools pertaining to the roles of cooperating teacher. (4) The researcher recommends further study on the mentoring practices of mathematics cooperating teachers in the Philippine education system that serves as reference for future researchers.

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## REFERENCES

- [1] Rhoads, K., Samkoff, A., & Weber, K. (2013). Student teacher and cooperating teacher tensions in a high school mathematics teacher internship: The case of Luis and Sheri. *Mathematics Teacher Education and Development*, 15 (1), 108 –128.
- [2] Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, 57(3), 300 – 314.
- [3] Goos, M. (2005). A sociocultural analysis of the development of pre-service and beginning teachers' pedagogical identities as users of technology. *Journal of Mathematics Teacher Education*, 8, 35-59.
- [4] Nolan, K. (2006). A socio-cultural approach to understanding pre-service teachers' negotiated journeys through theory/practice transitions. *Paper presented at the 2006 Annual Meeting of the American Educational Research Association (AERA)*, San Francisco, CA, 7-11 April
- [5] Frykholm, J. A. (1998). Beyond supervision: Learning to teach mathematics in community. *Teaching and Teacher Education*, 14(3), 305-322.
- [6] Lerman, S. (2001) Cultural, discursive psychology: A sociocultural approach to studying the teaching and learning of mathematics. *Educational Studies in Mathematics*, 46, 87-113. retrieved from <http://link.springer.com/article/10.1023/A:1014031004832> on November 5, 2016.
- [7] Singh, G., & Richards, J. C. (2006). Teaching and learning in the language teacher education course room: A critical sociocultural perspective. *Regional Language Centre Journal*, 37(2), 149-175.
- [8] Ellis, V. (2007). Taking subject knowledge seriously: From professional knowledge recipes to complex conceptualizations of teacher development. *The Curriculum Journal*, 18(4), 447 – 462.
- [9] Gale, T., & Jackson, C. (1997). Preparing professionals: student teachers and their supervisors at work. *Asia-Pacific Journal of Teacher Education*, 25, 177–191.
- [10] Carter, B. (2012). Facilitating preservice teacher induction through learning in partnership. *Australian Journal of Teacher Education*, 37(2), 99 – 113 retrieved from <http://ro.ecu.edu.au/cgi/viewcontent.cgi?article=1583&context=ajte> on October 8, 2016
- [11] Sim, C. (2010). Sustaining productive collaboration between faculties and schools. *Australian Journal of Teacher Education*, 35(5), 18-28.
- [12] Akkoç, Balkanlıoğlu, İmre (2016). Exploring Preservice Mathematics Teachers' Perception of the Mathematics Teacher through Communities of Practice. *Australian Journal of Teacher Education. Mathematics Teacher Education and Development*, 18.1, 37-51.

- [13] Postlethwaite, K., & Haggarty, L. (2012). Student teachers' thinking about learning to teach: A study of student teachers of mathematics and science at the end of their initial training. *Research Papers in Education*, 27(3), 263-284.
- [14] Sutherland, L. M., Scanlon, L. A., & Sperring, A. (2005). New directions in preparing professionals: examining issues in engaging students in communities of practice through a school–university partnership. *Teaching and Teacher Education*, 21, 79–92.
- [15] Tang, S. Y. F. (2003). Challenge and support: The dynamics of student teachers' professional learning in the field experience. *Teaching and Teacher Education*, 19, 483 – 498.
- [16] Graham, B. (2006). Conditions for successful field experiences: Perceptions of cooperating teachers. *Teaching and Teacher Education*, 22, 1118 – 1129.
- [17] Wang, J. (2001). Contexts of mentoring and opportunities for learning to teach: A comparative study of mentoring practice. *Teaching and Teacher Education*, 17 (1), 51-73.
- [18] Nguyen, H. T. (2009). An inquiry-based practicum model: What knowledge, practices, and relationships typify empowering teaching and learning experiences for student teachers, cooperating teachers, and college supervisors? *Teaching and Teacher Education*, 25 (5), 655-662.
- [19] Rozelle, J., & Wilson, S. (2012). Opening the black box of field experiences: How cooperating teachers' beliefs and practices shape student teachers' beliefs and practices. *Teaching and Teacher Education*, 28 (8), 1196-1205.
- [20] Wenger, E. (1999). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- [21] Wenger, E. (2010). Communities of practice and social learning systems: the career of a concept. In C. Blackmore (Ed.), *Social Learning Systems and communities of practice* (pp. 179-198). London: Springer Verlag.