

Examining the Complexities of Teaching through Case Writing

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Abstract—This paper elaborates the complexities of teaching as articulated in cases written by preservice teachers. This qualitative study describes how preservice teachers examined the various dimensions of teaching and learning through a case writing project. Anchored on constructivist perspective and interpretive design, multiple sources of data were collected. These include course projects, interviews, observations, results of case discussions, and journal reflections. Each group prepared a case narrative based on the interview they conducted. The 20 case narratives highlighted dilemmas like student conduct and discipline, inadequacies of teachers, limitations of the school system, pedagogical mistakes, and relationship with administrators, co-teachers and parents. The preservice teachers were challenged by the dilemmas and felt the urgency to prepare in order to be skilful when dealing with students, administrators, colleagues and the members of the community. Implications to teacher preparation are also noted in this study

Index Terms—case writing, complexities of teaching, preservice teachers

I. INTRODUCTION

Teaching is a noble profession that puts into a high pedestal a person whose interest is on molding young minds. The pride of teaching children and adolescents results from the fact that the teacher's competence and exemplary character has the power to influence a young person's future direction in life. Individuals who possess the passion for educating the young pursue degrees in elementary or secondary education. Through an intensive and experience-rich teacher education curriculum, students in teacher education programs are honed well to metamorphose into preservice teachers. As such, their preparation as full-time teachers becomes more labor-intensive, field-based, experiential, and generally challenging. Hence, preservice teachers enter an exploratory period of their academic lives through the practicum and field experiences in actual school settings. Much of their efforts are geared toward the application of the theories and principles of teaching and learning which they learned in their major and professional education courses.

While most teachers feel the intangible rewards of teaching, schools of today are faced with challenges that

are shaped by several factors. Hence, pre-service and in-service teachers sometimes feel inadequate to teach in the face of these challenges. Davis, Petish and Smithey [1] contend that teachers face challenges on the expectations that they need to understand: (1) the content; (2) learners; (3) instruction; (4) learning environments; and (5) professionalism. Nevertheless, teacher education needs to put its best efforts in preparing teachers who would be able to cope up with these challenges and maintain a favorable disposition toward teaching in order to stay productive in the profession. Problems arise when a preservice teacher feels that working with someone else's framework is more restrictive than creating one's own [2].

On the positive side, Sadler [3] posits that preservice teachers experience both internal and external supports. The external supports include the feedback, advice, assistance, expression of praise and encouragement of their cooperating teachers, and their methods courses that help them plan and design lessons. Preservice teacher-mentor relationship is essential to a good teaching experience. The internal support would include a willingness to invest oneself in the school community and their knowledge of content. Goethals, Howard and Sanders [4] pointed out the importance of collaboration. They contend that student teachers should collaborate with teachers, parents, administrators, community members and university facilitators in order to effectively provide the most productive learning climate for the students. However, dilemmas in actual situations arise when collaborations fail or tensions ensue. For a preservice teacher whose limited experience is evident, the concerns within and outside the problem could really be challenging.

The compelling reason for exploring case writing in preservice teacher education is the need for anticipation of the real-world of teaching. Actual teaching should be segregated from the idealistic view and drama-like portrayal of teaching and learning. In education, it is also inevitable that teachers hold firmly onto their beliefs and conceptions about teaching and learning. These beliefs are often shaped by their observations as well as direct and indirect experiences. These beliefs oftentimes become myths if they show unrealistic situations in the teaching and learning processes.

This research was undertaken to engage preservice teachers in case writing activities that will allow them to examine the complexities of teaching and learning. Cases provide preservice teachers an opportunity to reflect on

anticipated pedagogical problems when they enter the practicum (student teaching) stage of their academic work. Teacher education institutions aim to prepare preservice teachers with the best experiences that allow them to metamorphose into responsible and productive teachers. The use of cases as a context for exploring these beliefs will provide the preservice teachers a sense of community in sharing their beliefs with their peers, help them ponder upon their conceptions and make necessary adjustments if necessary. In addition, the preservice teachers' involvement in meaningful classroom activities will allow them to share their thoughts without inhibition and fear of reprimand. Your goal is to simulate the usual appearance of papers in the. We are requesting that you follow these guidelines as closely as possible.

II. OBJECTIVES OF THE STUDY

This study aimed to explore how preservice teachers articulate teaching and learning dilemmas through the writing of case narratives. More specifically, it sought answers to the following questions:

1. What case narratives could be developed by preservice teachers based on the experiences of in-service teachers?
2. What pedagogical dilemmas and concerns are highlighted in the cases?
3. How do they resolve dilemmas embedded in the developed case narratives?

III. REVIEW OF LITERATURE AND FRAMEWORK

Cases are usually related to legal matters. In this study, cases are used in the context of teaching and learning. Koballa and Tippins [5] describe a case as a type of narrative which can potentially clarify the professional knowledge of teachers and a text that prompts conversation and reflection on issues that invite a variety of interpretations. They further add that in teacher education, cases have the ability to: (1) provide vicarious experiences that bring the reality of the classroom into the teacher education curriculum; (2) contextualize the knowledge that students receive through their courses; (3) assist students in dealing with the many dilemmas they will encounter in their classroom practice; (4) offer theories to explain why certain actions are appropriate; (5) present the portrayal of a problem situation and readers may treat the teacher's actions as a model for practice; (6) convey moral or ethical principles; and (7) teach the neophyte "to think like" a member of the profession. Shulman (1992) contends that a case, being a narrative of critical events, contains a plot, contextual, and often emphasizes human agency and intention. The usefulness of cases in classroom settings is attributed to their status as narratives and their contextualization in time and place.

Dilemma-based cases present the complex issues of teaching and learning [6]. Darling-Hammond and Hammerness posit that cases add context to theory and allow the exploration of precepts, principles, theories, and perennial issues as they actually occur in the real world [7].

Case-based pedagogy in teacher education has been investigated in various research settings. Researchers have used cases: as a context for collaborative inquiry [6]; to examine changes in teachers' thinking [8]; to understand teachers' moral agency [9]; as dilemmas during internship [10]; to understand the sociocultural and semiotic tools used by teachers [11]; in the context of educational innovation [12]; and in teacher mentoring [13].

Richert reports the study she conducted using case-based methodology [14]. In her study, 11 students in a master's degree class were engaged in a case writing activity. These students wrote cases on professional dilemmas and issues that they encounter in their respective schools. Other salient features of her research included the conduct and facilitation of case conferences and the elicitation of case commentaries from the other members of the class. The results showed that these teachers were able to use the cases to learn about the issue/dilemma, its scope, complexity and consequences. Yoon, Pedretti, Bencze, Hewitt, Perris, and Van Oostveen [15] investigated the extent to which cases and case methods influence self-efficacy about teaching science among a group of elementary preservice teachers. Employing a naturalistic methodology, twelve preservice science teachers were followed as they participated in a case and case method activity illustrating exemplary practice in teaching science. A multimedia case was prepared using seven videotaped sessions of teacher interviews and classroom teaching. The teacher participants were asked to fill out questionnaires, view the multimedia case, engage in small group reflections, participate in online discussions, and participate in follow-up interviews. The findings suggest that the case and case method provided enabling mechanisms for the participants to gain confidence in teaching science. The case acted as a boundary object since the preservice teachers negotiated and applied previously learned teaching principles. Likewise, the case method provided the teachers with multiple points of entry since they have varying degrees of knowledge. These studies point to the potential of using cases in teacher preparation.

This study was primarily anchored on the tenets of constructivism and situated cognition theory. Constructivism emphasizes that people are active learners and must construct knowledge for themselves [16]. This theory highlights the fact that learners are actively involved with the information presented to them through manipulation and social interaction. Situated cognition is closely associated with constructivism since it involves the relationship of a person and the context rather than solely on the mind [16]. The case narratives clearly show the actual situations in a peculiar classroom.

IV. METHODOLOGY

Design. Narrative inquiry, anchored on the tenets of interpretive methodology, was the primary design of this study. Narrative inquiry is a qualitative research methodology that assumes that individuals construct reality by sharing stories and critical incidents in life,

hence, the turning events in one's experiences. In this study, the individual cases were written in the form of narratives. Riessman claims that sequences of action characterize narrative analysis and narrative analysts tend to know how and why events happened the way they did [17]. Narratives embedded from interview talk were good avenues in representing the thoughts, ideas, experiences, actions and beliefs of the in-service teachers who were interviewed by the preservice teachers. An interpretive perspective informed this study in its attempt to examine situated interpretations of the social world [16].

Research Setting. The research was conducted in one public university in Ilocos Norte, Philippines that offers a bachelor's degree in secondary education.

Participants of the Study. There were two groups of participants in this study. The primary participants were 93 preservice teachers. In this study, preservice teachers referred to undergraduate students pursuing the Bachelor in Secondary Education degree. As preservice teachers, they are being prepared to become high school teachers in specific disciplines. They were enrolled in the 3-unit course, *The Teaching Profession*, taught during the Summer Term of 2015. There was a variation in the preservice teachers' field of specialization. Their majors were English, Filipino, Mathematics, Biological Sciences and Physical Sciences. Maximum variation sampling was employed to understand phenomenon by seeking individuals that represent the range of experience relevant to the research questions posed [18].

Research Instruments. This study employed tools such as interview guide, case writing project guidelines, interview project guidelines, questions and rubric, guide to reflection journal writing, and guide to the case discussion.

Data Collection Methods and Procedures. Multiple data sources were involved in this research investigation. The data obtained and analyzed for this study included 20 case narratives (average of 6 pages each), 20 interview projects, 93 reflection journals, 20 case discussion outputs, one set of observation notes and 93 post-activity interviews. The interviews allowed the preservice teachers to express meaning about this aspect of their academic life [19]. The group case discussion was an important way of eliciting rich data from the participants. It provided opportunities for the members of the focus group to share ideas and listen to others. Listening what others have to say will assist them in formulating their own. Reflection journals written by each participant contained narratives of the individual's actions, experiences and beliefs [20]. As such, journals are rich sources of information on how the participants feel about entire case writing project.

The case writing project is part of the requirements of the 3-unit course, *The Teaching Profession*. It was emphasized to the preservice teachers that although it is a course requirement, participation in the study was purely voluntary. The case writing project lasted for 6 weeks during the Summer Term of 2015.

Each group (a total of 20) identified a specific in-service teacher to interview. The in-service teacher

should have at least five years of experience teaching high school in a specific field (English, Filipino, Biological Sciences, Physical Sciences or Mathematics). Upon obtaining the approval and informed consent from the in-service teachers, each group then interviewed one teacher. A uniform interview guide was used. From the interview, each group decided to highlight a dilemma and write it one case narrative. Several iterations and revisions were necessary. Toward the end of the project, one class session was allotted for the group case discussion. Each group was given a case to examine and analyze. They were asked to resolve the dilemma based on their understanding of the whole situation and the theories and principles they have learned in their previous classes. Each preservice teacher was also required to keep a reflection journal in order to capture his/her feelings and perspectives regarding the entire case writing project.

Data Analysis. The result of interviews and other artifacts from the preservice teachers were analyzed using inductive analysis and narrative analysis [21]. The bulk of data were analyzed inductively through coding and salient themes and recurring ideas or patterns that emerged were noted and elaborated [19]. The interviews conducted by the 20 groups of students were the primary bases for the writing of case narratives in order to create a coherent picture of the dilemmas embedded in them. Narrative analysis was employed. It is an analytic approach that involves the construction of a plot drawn from descriptions of actions, events, and happenings in the data [22]. The descriptions are eventually made into a story in which data elements are linked together in order to create a coherent whole.

V. FINDINGS

This section presents and analyzes the data obtained in this study. Interpretations are also provided to make sense and give meaning to the diverse information obtained from the participants. It is hereby presented according to the research question being answered.

The Storied Life of a Teacher. The case narrative was written as an open case [23]. An open case uses a real or imaginary classroom situation and has the following basic components: (1) description of the teacher; (2) teacher's background and/or experiences; (3) description of the classroom, school or community; (4) description of the students; (5) teacher's feelings and intentions; (6) students' feelings and intentions; (7) actual or imaginary dialogue; and (8) description of other relevant parties (parents, principal, other teachers). Table 1 enumerates the titles and concerns of the 20 case narratives written by the preservice teachers.

TABLE I. CASE NARRATIVES WRITTEN BY THE PARTICIPANTS.

| Title of Case | Category of Pedagogical Concern |
|------------------------------------|--|
| Miss Misunderstood | Student discipline Relationship with parents |
| Larawan (The Picture) | Student discipline Relationship with students |
| Call of Duty: Schism of Paramounts | Student discipline Teacher's accountability Teacher-Community relationship |

| | |
|--|---|
| Your Philosophy of Education or Your Superiors'? | Student performance Teacher's principled stance |
| The Days of Android | Student discipline Relationship with colleagues ICT utilization |
| Removing a Strip from a Memory Box | Teacher's conceptual mistake |
| Talk 'N' Tape | Student discipline |
| Case 1.7. Rule is Rule | Assessment issues |
| The Galactic Speck | Student discipline Laboratory instruction |
| 2 Day's Gest (To Digest) | Student discipline Teacher's accountability |
| Lost and Found: Temper | Student discipline |
| When it Rains, it Falls | Student discipline Limited materials |
| Duguang Papel (Blood-stained Paper) | Student's emotional well-being |
| Case 1.0 Catching a Sneaky Bird | Student discipline |
| To Get the Answer How | Control of classroom discussion |
| When Things Start to Stink | Student discipline Control of classroom discussion |
| Case 101: Memories Built by a Pair of Scissors | Student discipline Relationship with parents |
| Kapag Puno na ang Salop (When the Cup is Full) | Relationship with colleagues |
| The Echoing Voice from Within | Student discipline |
| Tinig ng Konsensiya (Voice of Conscience) | Student's trust versus accountability |

The table clearly shows that the case narratives centered on three important issues and concerns in schools: (1) student discipline; (2) pedagogical skills; and (3) relationships. With the changing societal structure, dealing with students who have disciplinary problems brought about by domestic violence, parental neglect and emotional instability has become a daily routine to most teachers. Much effort is always devised by teachers to be able to control students in the classroom before, during or after official class hours. The following excerpt from the case, *When Things Start to Stink* illustrates this.

Mr. Lee: Digestion begins in the mouth, when we chew and swallow, and is completed in the small intestine. The undigested food enters the large intestine as a liquid paste. In the large intestine water is removed from the liquid paste turning what is left into solid waste. Now class, what is the by-product of digestive system? (Mr. Lee observed that some of the students raise their right hands and he concluded that they are very interested in this part of the lesson.)

Raul: manure sir! (The whole class laughs!)

Mr. Lee: Stop laughing class, manure is correct! Can someone describe manure or feces?

Leonie: It is so yucky sir, like Jeany! (Leonie points his finger to Jeany and laughs!) (The whole class also laughs!)

Mr. Lee: Stop! Listen class! Listen! (The whole class is very noisy shouting "Jeany yucky! Jeany yucky!" and no one listens now to Mr. Lee)

Mr. Lee didn't know how to manage the class, he stopped for a while and thought of something he could do in order to manage the situation in the classroom. The first thing he thought was to throw the books, chalks and erasers on his table. Second was to get a meter stick on the table and hit the students one by one. Third was to strike the black board or the table. Lastly, to give a surprise exam that will serve as a punishment to students.

The teacher's pedagogical knowledge and skills are significant indicators of performance and competence. In one of case narratives written, it was apparent that a teacher's skills were at the center of a controversy. The following excerpt from the case, *Removing a Strip from a Memory Box* illustrates this.

"Ma'am, based on the book, the definition of polynomial function is a function wherein the degree of the polynomials is a positive integer. Why did you put $\frac{3}{\sqrt{x}} + 2x - 1$ in

the polynomial functions? The term should not be there ma'am."

Ms. Kara sees that what Ben is talking about was true. Her feet are glued on the floor. She cannot move, she didn't immediately respond to Ben instead. She didn't know what to do.

"What will I do now? I already taught it. Maybe it's okay if I will discuss again from the top but they already copied it. I know that it is not a polynomial but why did I put it there?" These are just the words that are playing in the mind of Ms. Kara.

As revealed in some of the case narratives, harmonious relationship with people is a hallmark of teaching. As an educator and member of the community, a teacher needs to handle tensions that might arise between a teacher and his/her students, teacher and his/her supervisor, teacher and his/her colleagues, and teacher and the members of the community. The degree of the tension may not be as serious as a lasting conflict between parties. The tension is internal in nature. This is shown by the dilemma posed to teachers who are caught in challenging situations where patience, self-control and sense of responsibility are mostly needed. The following excerpt is taken from the introductory part of the case, *Call of Duty: Schism of Paramounts*.

This open case focuses on the problems encountered by a teacher who takes his students' security into great consideration during his occasional absences. Concerned with his students' welfare, he tried to discipline them in ways he thought were proper – acting nonchalant without feeling negligent and taking the students' safety the biggest matter he could deal with – but neither of it would turn out right. Mr.

Kenneth Pedrosa portrays the image of the tension one experiences when caught up on possibly choosing between two seemingly opposing superiors – the principal and the municipality. Caught in the middle of a great turbulence, he is confused on whom to follow and in what methods he must execute to have a balance between his priorities as a teacher and as a social coordinator in his municipality.

Tensions between self and the system are inimical to teacher's growth. Tensions arising from the feeling of helplessness are also apparent especially those involving superiors and members of the community as shown in the previous excerpt from one case narrative.

Hurdling Over the Obstacles. Despite the dilemmas encountered by the teachers portrayed in the case narratives, resolution to these could still be formulated. Since the case narratives are "open", no solution or remedy was suggested and discussed. Hence, the power of mental thought was promoted as the preservice teachers collaboratively discussed the case narrative assigned to them. As the discussions went on, it was apparent that the preservice teacher put on the shoes of the protagonist in the case, in this case, the teacher. They examined every dimension involved in the case including the simple and complex situations presented in the case. At the end, the dilemma is resolved with a group agreement. It was noted that the preservice teachers based their resolutions on both factual and practical knowledge about learners, learning process and the learning environment. The result of the case discussions and the interviews with the preservice teachers was a rich source of information. With these data, several themes emerged.

The first emerging theme could be presented as **professionalism in the face of adversity**. To the teachers, behaving professionally is of primordial importance. This could be attributed to the cultural demand and societal norms that teachers are the paragon of virtues. Hence, it is important to maintain a good reputation despite the problems encountered in the school. One of the preservice teachers elaborated:

"I know that in becoming a teacher, I must expect difficult situations between teacher and students, teacher and parents, teacher and his colleagues. If things do not work well, I still have to remain professional in my dealings. I learned that anything, either good or bad, may happen in my career. But as long as I know my rights as a person and as a teacher, I can stand firm to the end even though the school will be against me."

The second theme emerging from the rich data could be dubbed as **preparation is the key**. The preservice teachers firmly believe that academic preparation and academic engagement form part of the pillars of success in teaching. Being ready means that all anticipated problems are given immediate attention when they do happen in the classroom. One of the preservice teachers shared the following viewpoint:

"As a teacher, you must always be ready on things and incidents that may happen inside and outside of the classroom. It is important to be ready to handle real life situations encountered in the classroom."

The last emerging theme could be aptly presented as **learners' welfare at the center**. While it is true that teaching is wrought with challenges, the preservice teachers felt the need to put the welfare of their students at the center. This shows their great concern for their students. The dilemmas presented students being unruly, disrespectful and problematic. However, the preservice teachers still felt that students be given primary importance. This could be explained by their engagement in college where they are prepared to understand and appreciate the psychology of adolescent learners whose transition to mature roles bring about changes in behaviour, personal disposition, and priorities.

"Teaching will be a great battle for me in the future. With all the guidance, encouragement, insights and knowledge I gained, I will dedicate myself in teaching and be an instrument for the promotion of the welfare of the young people."

With the engagement of the preservice teachers with the stories shared to them by the full-time teachers, they were able to grasp the meaning of being an educator. To the preservice teachers, the case narrative shows a glimpse of what to expect in their future. The narratives have shown the preservice teachers the complex world of professional teaching. The case writing activity allowed the preservice teachers to examine closely through first-hand accounts the complexities of teaching which include: (1) maintaining professionalism in the face of challenges; (2) keeping harmonious relationships with others; (3) self-control in an unruly classroom; and (4) preparedness in mind, body and heart. They feel the need to be prepared with the anticipated problems as shared by the teachers they interviewed.

The findings of this study are consistent with that of Yoon et al.'s because the preservice teachers anchored their case narratives on experiences and made these as a boundary object to negotiate and apply previously learned teaching principles [15]. The findings further suggest that the preservice teachers, despite their limited experience in the actual classroom setting, were able to use the case narratives to learn about the scope, complexity and consequences of a particular dilemma [14]. This finding shows that the preservice teachers drew their knowledge about handling classroom dilemmas from experiences of teachers, observations in the field, media portrayal, academic subjects they have taken, and other possible influential sources.

VI. CONCLUSION AND RECOMMENDATIONS

Student discipline is the most predominant dilemma encountered in the actual classrooms as revealed in the cases written by the preservice teachers. In general, the preservice teachers feel and believe that in every dilemma, there is a resolution that is based on sound principles of

teaching and learning and in accordance with established laws and regulations.

In view of the conclusion, the following recommendations are hereby advanced:

- Harness the power of case writing in teacher preparation in order to make preservice teachers feel and act like members of the profession.
- Expand research work along this field to include resolution of dilemmas based on multiple perspectives from school teachers, administrators, parents, and students.
- Explore the possibility of using cases that are published in the literature to examine other classroom dilemmas.

Teachers make a difference in the lives of their students. With these teachers is the responsibility of guiding the students make informed decisions toward a productive life. One implication of the findings presented is the need to prepare teachers in the real world of work. Engaging them in case-based pedagogy provides them the opportunity to reflect on their personal dispositions toward teaching and learning. Preservice teachers are more prepared through active engagement in diverse courses, pedagogical experiences and field-based training. Through the use of case-based pedagogy in teacher preparation, preservice teachers will have opportunities to reveal, confront, challenge, and change their cultural models and to develop new models for teaching in diverse classrooms (Moore, 2008).

REFERENCES

- [1] E. A. Davis, D. Petish, and J. Smithey, "Challenges new science teachers face," *Review of Educational Research*, vol. 64, pp. 607-651, Winter 2006.
- [2] H. Bennett, *The Trainee Teacher's Survival Guide*, New York, NY: Continuum International Publishing Group, 2006, Part 2.
- [3] T. Sadler, "'I won't last three weeks': Preservice science teachers reflect on their student-teaching experiences," *Journal of Science Teacher Education*, vol. 17, pp. 217-241, Sept. 2006.
- [4] M. S. Goethals, R. A. Howard, and M. M. Sanders, *Student Teaching: A Process Approach to Reflective Practice: A Guide for Preservice and Inservice Teachers*, 2nd ed. Upper Saddle River, NJ: Pearson/Merrill/Prentice Hall, 2004, Chap. 12.
- [5] T. Koballa and D. Tippins (Eds.). (2000). *Cases in Middle and Secondary Science Education: The Promises and Dilemmas*, Upper Saddle River, NJ: Merrill Prentice Hall, 2000, pp. 2-10.
- [6] E. L. Arellano, T. L. Barcenal, P. P. Bilbao, M. A. Castellano, S. Nichols, and D. J. Tippins, "Case-based pedagogy as a context for collaborative inquiry in the Philippines," *Journal of Research in Science Teaching*, vol. 38, pp. 502-548, April 2001.
- [7] L. Darling-Hammond and K. Hammerness, "Toward a pedagogy of cases in teacher education," *Teaching Education*, vol. 13, pp. 125-135, June 2002.
- [8] R. Powell, "Case-based teaching in homogeneous teacher education contexts: A study of preservice teachers' situative knowledge," *Teaching and Teacher Education*, vol. 16, pp. 389-410, April 2000.
- [9] J. A. Whitcomb, "Composing dilemma cases: An opportunity to understand moral dimensions of teaching," *Teaching Education*, vol. 13, pp. 179-201, June 2002.
- [10] B. B. Levin, "Dilemma-based cases written by preservice elementary teacher candidates: An analysis of process and content," *Teaching Education*, vol. 13, pp. 203-218, June 2002.
- [11] E. B. Moje and S. E. Wade, "What case discussions reveal about teacher thinking," *Teaching and Teacher Education*, vol. 13, pp. 691-712, Oct. 1997.
- [12] M. Z. Hashweh, "Case-writing as border-crossing: Describing, explaining and promoting teacher change," *Teacher and Teaching: Theory and Practice*, vol. 10, pp. 229-246, 2004.
- [13] L. Orland-Barak, "What's in a case? What mentors' cases reveal about the practice of mentoring," *Journal of Curriculum Studies*, vol. 34, pp. 451-468, July 2002.
- [14] A. E. Richert, "Writing Cases-A vehicle for inquiry into the teaching process," in *Case Methods in Teacher Education*, J. H. Shulman, Ed., New York, NY: Teachers College Press, 1992, pp. 155-174.
- [15] S. Yoon, E. Pedretti, L. Bencze, J. Hewitt, K. Perris, and R. Van Oostveen, "Exploring the use of cases and case methods in influencing elementary preservice science teachers' self-efficacy beliefs," *Journal of Science Teacher Education*, vol. 17, pp. 15-35, 2006.
- [16] M. Crotty, *The Foundations of Social Research: Meaning and Perspective in the Research Process*, Thousand Oaks, CA: Sage Publications, 2003, pp. 2-17.
- [17] C. K. Riessman, *Narrative Methods for the Human Sciences*, Thousand Oaks, CA: Sage Publications, 2008, Chap. 2.
- [18] P. Maykut and R. Morehouse, *Beginning Qualitative Research: A Philosophic and Practical Guide*, Washington, D.C.: The Falmer Press, 1994, Chap. 7.
- [19] C. Marshall and G. Rossman, *Designing Qualitative Research*, 4th Ed., Thousand Oaks, CA: Sage Publications, 2006, Chap. 4.
- [20] R. C. Bogdan and S. K. Biklen, *Qualitative Research for Education: An Introduction to Theory and Methods*, 5th Ed., Boston, MA: Pearson Education, Inc., 2007, Chap. 3.
- [21] K. Charmaz, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*, Thousand Oaks, CA: Sage Publications, 2006, pp. 42-95.
- [22] D. E. Polkinghorne, "Narrative configuration in qualitative analysis," in *Life History and Narrative*, J. Amos and R. Wisniewski, Eds. London, UK: The Falmer Press, 1995, pp. 5-24.
- [23] D. J. Tippins, T. R. Koballa, and B. D. Payne, *Learning from Cases - Unraveling the Complexities of Elementary Science Teaching*, Boston, MA: Allyn and Bacon, 2002, pp. 1-12.



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