

## The Characteristics of Dilemmas of Science Student Teachers in Korea

Heekyong Kim<sup>1</sup>, Bongwoo Lee<sup>2</sup>

<sup>1</sup>Kangwon National University, <sup>2</sup>Dankook University(Korea)

<sup>1</sup>[heekyong@kangwon.ac.kr](mailto:heekyong@kangwon.ac.kr), <sup>2</sup>[peak@dankook.ac.kr](mailto:peak@dankook.ac.kr)

### Abstract

*The purpose of the study is to explore the types and coping methods of dilemmas which science student teachers experienced during student teaching. For this, we collected the 131 dilemma journals which 34 pre-service science teachers wrote during 4-weeks student teaching in South Korea. Results showed that there were five categories of the contexts of dilemmas, that is, 'science class', 'home room teacher', 'science teaching except class', 'training program', and 'interactions with peer student teachers and supervising teacher'. Analysis of the dilemmas based on the science teacher standards showed that only 50.4% of dilemmas were recognized that they had relevance to science teacher standards by student teachers. To dealing with these dilemmas, student teachers considered the dilemmas as the conflicts of irreconcilable alternatives rather than the opportunities of conciliation and compromise, therefore, they choose just one alternative (80%) and only 20% of dilemmas were resolved by compromise choice. Based on the results, we discussed the implications for teacher education.*

### 1. Introduction

The dilemma is the conflicts and opposing tendencies within oneself that require a deliberation between multiple, equally viable and sometimes unattractive alternatives [1-2]. The dilemmas as a teachers composed of the interpersonal dilemmas derived from teacher collaboration and intrapersonal dilemmas (teaching dilemmas) related to curriculum, teaching strategies, student learning, classroom management and teacher-student interactions [2-3]. Recent studies showed that these dilemmas can have beneficial effects on teacher learning and change, since they can provide teachers with the opportunity to examine and challenge their beliefs and to explore alternatives for change and growth [4-7]. But it is difficult to find the studies related to dilemma of science student teachers. Admitting the importance of student teaching in teachers' professional development[8], there is need to look into the dilemmas during student teaching as the important sources for pre-service science teachers' professional development. In this study, we investigated the dilemma which science student teachers experienced during student teaching in South Korea.

### 2. Research method

Participants were 34 pre-service science teachers in South Korea. During 4-weeks student teaching, they wrote the dilemma journal three times, and a total of 131 dilemma journals were collected for analysis.

Table 1 *The information of participants*

gender	male	14
	female	20
major subject	physics	9
	chemistry	11
	biology	14
school type	middle school	9
	high school	25

### 3. Results

All 131 dilemma journals was categorised according to the context, coping methods, and relevance to science teacher standards.

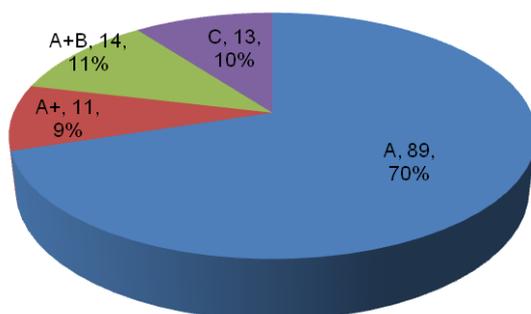
#### 3.1 The contexts of dilemma

Results showed that there were five categories of the contexts of dilemmas, that is, 'science class', 'home room teacher', 'science teaching except class', 'training program', and 'interactions with peer student teachers and supervising teacher'. The Table 2 showed the description and the ratio of each category.

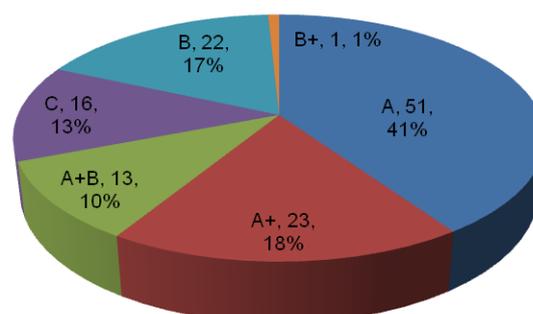
Table 2 *The contexts of dilemmas*

Contexts		No(%)	Description
Science class	Preparation	22 (16.8%)	Dilemma that occurred during preparing class
	In class	20 (15.3%)	Dilemma that occurred during class
Home room teacher		42 (32.1%)	Dilemma that occurred during playing roles as a home room teacher(ex. morning assembly, cleaning time, counsel)
Science teaching except class		6 (4.6%)	Dilemma that occurred during several work besides teaching and home room teacher (ex. guide of club activity, several competition)
Training program		20 (11.5%)	Dilemma that occurred during activities related to improvement of student teachers (ex. training, class inspection)
Life as trainee teacher		20 (15.3%)	Dilemma related to life of student teacher (ex. relationship with other student teachers, supervising teacher)
Etc		6 (4.6%)	-

#### 3.2 The coping methods



(a) The participants' coping method of dilemma: A(selection), A+(selection + improvement), A+B(mediation), C(replacement)



(b) The participants' coping plan for the future: A(same selection), A+(same selection + improvement), B(other selection), B+(other selection + improvement), A+B(mediation), C(replacement)

Fig 1. Coping method of the dilemmas

When the student teachers faced dilemmas, they just struggled to select the best choice between two alternatives rather than to find the resolution. As we see in the Fig.1 and Table 3, in most cases (80%) student teachers just choose one alternative (A or A+ in Fig.1) and only 20% of dilemmas was resolved by compromise choice (A+B or C in Fig.1). This tendency was not changed in the participants' coping plan for the future dilemma. Therefore, results indicated that student teachers

considered the dilemmas as the conflicts of irreconcilable alternatives rather than the opportunities of conciliation and compromise which they can use as the source of professional development.

Table 3 Comparison between first coping method and future coping plan

First	Future	A	A+	A+B	C	B	B+	no reply	Total
	A	41	16	3	6	20	1	2	89
	A+	1	7	0	2	1	0	0	11
	A+B	2	0	10	1	1	0	0	14
	C	6	0	0	7	0	0	0	13

### 3.3 Dilemmas based on the student science teacher standards

Each dilemma was analyzed from the framework of science teacher standards (Table 4). The results showed that only 50.4% of dilemmas were recognized that they had relevance to science teacher standards by student teachers. For the other dilemmas (about 50%), participants reported the efforts which they would try but these were not related to the relevant professional knowledge or skills which they need for resolving the dilemma.

Table 4 Dilemmas based on the pre-service science standards

Professionalism		Analysis of expert	Student teachers' cognition	Agreement	Example	
Professional knowledge and skills as the science teacher	Knowledge	Content Knowledge	2 (1.5%)	4 (3.1%)	2	I didn't know how I should answer a question related to the theory of relativity because I didn't know it.
		Teaching Knowledge	3 (2.3%)	6 (4.6%)	2	Should I teach contents more than the textbooks?
	Teaching method	Design of teaching	17 (13.0%)	18 (13.7%)	12	I learned several teaching models in university. But it is difficult to select appropriate teaching model among them.
		Practice of teaching	15 (11.5%)	10 (7.6%)	7	In student's presentation, he has some trouble. Should I request him to stop the presentation or not?
	Teaching inquiry	3 (2.3%)	3 (2.3%)	2	My experiment is very costly	
Professional knowledge and skills as the teacher	General knowledge	1 (0.8%)	1 (0.8%)	1	When a student asked some question of other subject	
	Counselling ability	11 (8.4%)	7 (5.3%)	6	when a student pleaded for help related to friendship	
	Guidance of life	38 (29.0%)	17 (13.0%)	17	I found students' faults. What should I do?	
	etc	41 (31.3%)	65 (49.6%)			
	Total	131	131	49		

#### 4. Conclusion

In this study, we explored the dilemmas which science student teachers experienced during their student teaching in South Korea.

First, we found five categories of the contexts of dilemmas, that is, 'science class', 'home room teacher', 'science teaching except class', 'training program', and 'interactions with peer student teachers and supervising teacher'. About 30% of dilemmas were related to the science teaching, and 32% was about the home room management. The other third was related to student teachers' distinct contexts such as the interaction with supervising teacher. These results indicate that there are different dilemmas which student teachers might face because of the context of student teaching, so teacher education need to look into this aspect if we want to understand the student teaching properly. Second, student teacher considered the dilemmas as the conflicts of irreconcilable alternatives rather than the opportunities of conciliation and compromise. Although dilemmas could be the opportunities for teacher's professional development if they were used properly such as the source of reflection of teacher's practice, only 50.4% of dilemmas were recognized in relation to science student teacher standards by participants. There is need to guide student teachers into recognizing dilemmas as the good opportunities to reflect their own teaching practice and complex issues of school rather than just difficulties which student teachers must avoid. For this, university staffs' active help to guide student teachers' reflective practice during teaching practice will be needed.

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