

Original Article

Teachers' Perceptions and Practices of Reflection

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ABSTRACT

This study investigated science teachers' perceptions and practices of reflection. Semi-structured interviews with seven teachers and weekly guided journal entries of the teachers provided data for the study. Analysis of the data showed that the teachers all believed that reflection was one of the effective teacher characteristics and useful for increasing the quality of teaching and learning. However, they could not provide a proper explanation of what reflection was. Their reflections were mostly at technical level and limited to preparing for the lessons. Inadequate in-service trainings, work load and low level students were identified by the teachers as the impediments to reflection. Based on the results of the study, suggestions for teacher education and practice were included at the end of the paper.

KEY WORDS: Reflection, Levels of reflection, Teacher perceptions

INTRODUCTION

Today's teachers must function in classrooms that are characterised by complexities, ambiguities and dilemmas. There is no codified body of knowledge and skills that teachers can employ whenever they face these challenges, nor is there pre-set solutions to the problems they face (Lortie 1975). Thus, they need to continuously refresh and update their knowledge and skills, and frame and solve complex problems.

Reflection is described as an essential attribute of competent teachers who are prepared to address these challenges (Boud et al. 1985; Moon 2004; Schön 1983, 1987; Larrivee & Cooper 2008; Osterman & Kottkamp, 2004). Many researchers see reflection as the foundation for the highest professional competence (Valli, 1997; York-Barr, Sommers, Ghere & Montie, 2001; Zeichner & Liston, 1996).

There are many definitions of reflection, all of which dates back to the definition of Dewey (1933) who defined it as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (p. 9). Thus, according to Dewey, reflection can be thought as an action similar to critical thinking. Schön (1983) further developed Dewey's notion of reflection with the concepts of reflection-on-action and reflection-in-action. According to Schön, reflection-in-action takes place during the action. It refers to the process of interpreting, analyzing, and providing solutions to problems while the action is actually taking place. Reflection-on-action on the other hand takes place after the event has occurred. Through reflection on action we can find meaning and make sense of what we are doing and understand ourselves (Schön, 1987; Ghaye & Ghaye, 1998). Killion and Todnem (1991) defined the term *reflection-for-action* as thinking about future actions with an intention to improve or change our practice. Likewise, Boud et al. (1985) defined reflection as "an important human activity in which people recapture their experience, think about it, mull it over and evaluate it".

What is common in all of the definitions above is analysing the experience in order to achieve deeper meaning and understanding. Obviously, reflection is more than "just thinking hard about what you do" (Bullough & Gitlin, 1995). Hence, reflective teachers demonstrate the ability to analyze the process of what they have done or they are doing, while at the same time make judgments to improve their practice so that it best matches the needs of students (Reiman 1999). Reflective practitioners give careful attention to their experiences and how meaning is made and justified. They analyze the influence of context and how they shape human behavior. Teachers who are reflective are responsive to vast array of students' needs in today's classrooms. Hence, as Schön and Zeichner (1996) argued, reflection is essential if teachers are to understand the complex nature of the classroom and to solve problems.

Many organizations in the USA, such as the National Commission on Teaching and America’s Future (NCTAF); the National Foundation for the Improvement of Education (NFIE); National Board for Professional Teaching Standards (NBPTS); and the National Staff Development Council (NSDC) have all identified reflection as a goal for teachers and students to attain. In Turkey, it also has been identified as one of the competencies that teachers need to have (MEB, 2005). In order for teachers to be reflective they need to be educated as reflective practitioners through pre service and in service educations. If the main goal of faculties of education is to educate effective teachers, then they need to give emphasise on developing reflection (Tok, 2008).

Recently there have been many research on reflection in teacher education (Groom & Maunonen-Eskelinen, 2006; Frid, Reading & Redden,1998; Gimenez, 1999; Ferraro, 2000; Rodgers, 2002; Stoddard, 2002; Bölükbaş, 2004; Davis & Waggett, 2006; Ekiz, 2006; Philip, 2006; Yorulmaz, 2006; Bölükbaş, 2007; Chalk & Hardbattle, 2007; Dolapçioğlu, 2007; Ersözlü, 2008; Kerimgil, 2008; Köksal & Demirel, 2008; Kızılkaya & Aşkar, 2009; Coşkun, 2010; Demiralp 2010; Duban & Yelken, 2010). These studies have been conducted mostly with student teachers to investigate ways to improve reflection in teacher education. Studying teacher reflection is also important to reveal current situation and to determine their training needs. Therefore, this study aimed to research into levels of reflection of Science teachers in schools. The main research question of the study is; “what are the science teachers’ perceptions and practices of reflection?”. The sub-questions are;

- What is the level of knowledge that teachers have about reflection?
- What are the teachers’ levels of reflectivity?
- What are the impediments that prevent teacher reflection?

In order to respond to the study’s questions, in addition to the in-depth interviews, the teachers were asked to write weekly journals during a school term. The journal entries were used to categorise teachers’ levels of reflection.

The literature describes different levels of reflection, which range from just describing what happened in a lesson to critical reflection which is the highest level that incorporates the consideration of moral, ethical, and political issues (Day; 1999; Farrell, 2004; Jay & Johnson, 2002; Larrivee, 2004; Moon, 2004; Van Manen, 1977; Zeichner and Liston, 1996). Zeichner and Liston defined four levels of reflection: factual, prudential, justificatory, and critical. King and Kitchener generated seven levels of reflectivity which can be condensed into three: pre-reflective, quasi-reflective, and true reflection. Moon (2004) identified and described four levels of reflection as descriptive writing, descriptive reflection, dialogic reflection and critical reflection. In this study, Moon’s levels have been used to determine teachers’ levels of reflection, details of which have been provided in the Method section below.

METHODOLOGY

Sample

Seven science teachers working in seven secondary schools were involved in the study. They were all teaching regular classes. The sampling selection was made according to Merriam (1998) who defined it as ‘*non-random, purposeful and small*’ (p. 8). A purposeful criterion of ‘holding a postgraduate degree’ was used in this study. The assumption behind using this criterion to select the participants was that they would be more familiar with the term as they may have come across the term reflection during their postgraduate studies. The table below summarises biographic information of the participating teachers in the study.

Table 1. Teacher characteristics

Experience (year)	Postgraduate study	Gender		Total
		Female	Male	
3	M.A.	1 (Ö1)	-	1
4	M.A.	1 (Ö2)	1(Ö3)	2
5	M.A.	-	1(Ö4)	1
7	M.A.	-	1(Ö6)	1
8	PhD	1 (Ö7)	-	1
10	M.A.	1 (Ö5)	-	1
Total				7

As can be seen from the table, the teachers' experience changed between 3-10 years (Table 1). Four of the participants were female and three were male. One of the teachers held doctorate degree and the others had master's degree.

Data Collection

The data for the study was collected through in-dept interviews and weekly written journals.

Interview

In order to receive information on the teachers' perceptions and practices of reflection, face-to-face semi-structured interviews with the teachers were employed in this study. The rationale for employing semi-structured interviews was to probe and go into more depth (Robson, 1993). The interviews lasted approximately 30 minutes each and were digitally recorded with the permission of the interviewees, in order to facilitate discussion and recall.

Journals

Various approaches have been defined in the literature to help develop reflective skills including, micro teaching, portfolios, action research, ethnography and journal writing (Calderhead 1989; Ferraro, 2000; Yorulmaz, 2006; Şahin, 2009). Journal writing is seen as an opportunity for teachers to use the process of writing to describe and explore their own teaching practices (Tresman & Edwards, 1993; Stoddard, 2002; Vanhulle, 2005; Ekiz, 2006).

The teachers in the study were asked to write weekly journals referring to the reflection prompts that have been provided to them. In this study, reflection prompts – what have you done before the lesson? How did the lesson go (details)?, What have you done after the lesson?, Did you evaluate the lesson – were used to guide teachers' reflection and to reveal their levels of reflectivity (Parrillo 1994; Creasap, Peters & Uline, 2005).

The teachers wrote journals during a five week period in the term. Since the aim of this study was not to improve teachers' reflectivity but to reveal current situation, their journals were not collected or any feedback or guidance were not provided during this period. The journals were collected at the end of the five week period.

Data Analysis

The data from the interviews were analysed qualitatively for content following the procedures advised by Miles and Huberman (1994). The content analysis comprised determining codes to identify the participant comments that related specifically to reflection first; then, pulling them together to form categories based on the research questions, so that they became the answers to the research questions. These categories are characteristics of reflective teachers, the content and levels of teachers' reflective practice, and impediments to reflective practice, which also formed the subheadings of the Results and Discussion section in the paper. In reporting the findings, pseudonyms are used and teachers are identified as 'T' followed a number.

The journals were analysed qualitatively. The teachers' responses for each question were grouped based on the similarities. Journal entries together with the interview data were used to categorise teachers' reflection areas and reflection levels.

The areas of reflection have been categorised according to the works of Schön (1983) and Killion and Todnem (1991). The excerpts from the journals and interview data were analysed to identify comments related to the areas of reflection-in action, reflection-on action and reflection-for-action.

Moon (2004)'s levels of reflection provided a model to assess the levels of reflection in the teachers' journals. The analysis of the journal entries included the placement of extracts into one of the four categories described by Moon as descriptive writing, descriptive reflection, dialogic reflection and critical reflection, as detailed below.

1. "Descriptive writing: This is a description of events or literature reports. There is no discussion beyond description.
2. Descriptive reflection: ... some evidence of deeper consideration in relatively descriptive language. There is no real evidence of the notion of alternative viewpoints in use.
3. Dialogic reflection: ... a 'stepping back' from the events. There is consideration of the qualities of judgements and of possible alternatives for explaining and hypothesising... analytical or integrative, linking factors and perspectives.

4. Critical reflection: ... aware that the same actions and events may be seen in different contexts with different explanations associated with the contexts.” (Moon, 2004:75)

RESULTS AND DISCUSSION

In this section, the findings of the study are presented and discussed in the light of the literature.

Teachers’ perceptions of reflection and the characteristics of reflective teachers

During the interviews the teachers were asked about the characteristics of reflective teachers in order to reveal their knowledge of reflection. The teachers’ views about the characteristics of reflective teachers are presented in the table below.

Table 2. Teachers’ perceptions of the characteristics of reflective teachers

<i>Reflective teachers;</i>	<i>Teachers</i>
<i>Encourage student thinking</i>	T1,T2,T3,T6,T7
<i>Evaluate own performance</i>	T1,T2,T5,T6,T7
<i>Apply classroom rules</i>	T2,T3,T5,T6
<i>Are open to change</i>	T3,T4,T5,T7
<i>Help students relate new knowledge to daily life</i>	T2,T5,T6,T7
<i>Encourage students to participate in the lessons</i>	T2,T3,T6,T7
<i>Have a good subject knowledge</i>	T4,T5,T6,T7
<i>Are good listeners</i>	T3,T4,T5
<i>Are aware of their own deficiencies and try to improve them</i>	T1,T3,T4
<i>Are capable of using differentiation</i>	T1, T2,T7
<i>Keep the class attention high</i>	T1,T3,T6
<i>Encourages student research</i>	T2,T5,T6
<i>Assess own needs, gaps or deficiencies</i>	T2,T5,T6
<i>Take student suggestions into account</i>	T3,T5,T7
<i>Are capable of motivating students</i>	T3,T6,T7
<i>Avoid giving negative feedback</i>	T3,T5
<i>Have wide range of knowledge</i>	T4,T7
<i>Monitor student performance</i>	T4,T7
<i>Have good communication skills</i>	T4,T7
<i>Come to lessons prepared</i>	T4,T5

As can be seen from the table above the participants listed many characteristics that they perceive reflective teachers have. However, some of the items in the list are not directly related to being reflective. Evaluating own performance, encouraging students to think, openness to change, being aware of own deficiencies and trying to improve them and assessing own performance are the traits defining reflective teachers. Nevertheless, some of the items like applying classroom rules as indicated by four of the seven teachers are not an attribute that comes to mind when talking about reflective teachers. The other items in the list are more of the characteristics of effective teachers rather than reflective teachers.

Hence, the teachers in the study mostly talked about effective teachers and effective teaching when they were asked about reflection and reflectivity. Certainly, effective teaching and reflectivity are related but the teachers’ comments indicate that they are not sure about the meaning of reflection. They mostly explained reflection through constructivism and effective teaching. One of the teachers’ comments below exemplifies this; one of the teachers who claimed that she was a reflective teacher supported her claim saying that “*I use technology in my lessons. Even though I know that classroom management will be difficult, I teach my lessons through group work and other activities based on student participation*” (T4).

Levels of reflection

As indicated earlier, reflective thinking is one of the characteristics of effective teaching and it is one of the qualities expected from teachers in Turkey. Thus, during the interviews the teachers were asked questions and presented scenarios to reveal if they do reflect in action, on action and for action.

All of the study's teachers indicated that they planned lessons considering possible student questions and the topics that students might have difficulty. T5 said; "I do research about the topic before the lesson and try to figure out what the students might ask".

In addition, the teachers reported using feedback from their observations during the lessons in order to make changes in their teaching. T6 said; "I observe students during the lessons. According to their reactions and behaviours I can change the method of teaching or the activities."

Similar feedback could also be received in written form at the end of the lessons. The teachers indicated asking students to write about their learning and expectations in relation to the lessons. T3 said; "I ask them to write what they expect from me and evaluate the quality of my teaching after lessons."

To summarise the teachers in this study indicated thinking about their teaching before, during and after the lessons. However, the important question to be asked here is that what is the level of their thinking?

Reflective thinking requires thinking about our actions, experiences and strengths and weaknesses. As indicated earlier, such thinking can be at different levels, changing from the lowest level that is technical (Van Manen, 1977) or descriptive (Jay & Johnson, 2002; Moon, 2004) which is not reflective to the highest level that is critical reflection that analyse events considering more political and ethical issues and consequences (Moon, 2004; Larrivee & Cooper, 2006). It is this latter level that is meant when one talks about reflection and its positive effects on the quality of teaching and learning.

Lesson planning requires thinking about our future actions to take precautions. Thus, planning can be thought as part of the reflective thinking process. However, only thinking about the content and the methods of the lessons in terms of planning does not mean that reflective thinking takes place. This can be descriptive level of thinking, which is the lowest level of reflection based on Moon (2004)' model. In addition, thinking about the actions and experiences after the lessons consisted of considering the strengths and weaknesses of the lesson for most of the study's teachers. Such thinking can be an example of dialogic reflection. Hence, according to the interview data, the study's teachers' reflections were mostly descriptive or dialogic.

The levels of teachers' reflection were also determined from the analysis of their journal entries. As explained in the method section earlier, the teachers were asked to write journals considering the reflection prompts provided to them at the beginning of the study. The teachers wrote their journals each week after their lessons. The table below presents the highest level of reflection that each teacher attained by the end of the study.

Table 4. Teachers' levels of reflection

		<i>Teachers</i>
<i>The level</i>	<i>Descriptive writing</i>	<i>T3</i>
<i>of</i>	<i>Descriptive reflection</i>	<i>T2,T4,T5,T6</i>
<i>reflection</i>	<i>Dialogic reflection</i>	<i>T1, T7</i>
	<i>Critical reflection</i>	<i>-</i>

As can be seen in the table, the data from the analyses of the journal entries supported the interview data. Four of the teachers wrote at the descriptive level, one wrote at descriptive writing level and one teacher could write at dialogic level. None of the teachers' entries could be categorised at the critical level.

Descriptive writing excerpts consisted of the definition of the events that took place during the lessons. Below is an example from T3's journal;

I looked at the attainment targets of the unit and prepared the equipment before the lesson. I wrote the key terms on the blackboard and taught the lesson emphasising the important terms. I asked different students to read the passages in the textbook. I dictated the summary of what we covered. I asked short answer questions at the end of the lesson.

Descriptive reflection excerpts consisted more details than the descriptive writings. They involved not only a description of events but some attempt to provide reason/justification for the events or actions but in a reportive or descriptive way. Below is an example from T5's journal;

I explained them how the sound occurs. Then I explained the term frequency using the illustration in the textbook and giving examples from daily life. Then we conducted an experience to see different frequencies of sound. I wanted to do experiments because I believe that students should be active in the lessons. I asked them to draw conclusions based on their observations. This made them to think about what they learned. It was a good lesson.

Below is another example from T2;

I could not do any preparations for the lesson today because I was too tired. I photocopied end-of-unit test for the students just before the lesson and gave it to them and they solved. I could not remember answer to one of the test questions. I could not solve it because I could not look at it before the lesson. After the lesson I looked it up from other resource books and I could solve it. This was not a good lesson.

Dialogic reflection was identified in two of the teachers' journals. Dialogic reflection requires a 'stepping back' from the events and discourse with self and considering alternatives. Such reflection is analytical or/and integrative of factors and perspectives. Below is an excerpt from T1;

...This was a successful lesson. However, sometimes I have ineffective lessons too. I plan to use some material but students may not respond. Sometimes I feel frustrated when students are not interested. Many reasons could be behind this. Students may not have the necessary background knowledge to understand what I teach. They may have different learning styles too. I try to find solutions for these problems. I sometimes talk to other teachers to close the gap in their knowledge structure or employ different methods and activities in my lessons.

Examining the interview and journal data together it is clear that the study's teachers' writings mostly stayed at descriptive level. The teachers actually think about their experiences but this does not mean that they are reflective. Reflection is not "*just thinking hard about what you do*" (Bullough & Gitlin, 1995). Learning or professional development through reflection requires looking at our experiences through critical lenses. Looking through critical lenses means questioning our experiences, researching the reasons behind the events, setting cause and effect relationships and considering wider effects of our actions (Smyth, 1989; Murray and Kujundzic, 2005). This is what is expected of reflective teachers, which was absent in the study's teachers.

Impediments to reflective thinking

As indicated earlier the study's teachers were not very familiar with the term reflection and their journal entries mostly fell at descriptive level. Hence, the study's teachers were not too familiar with the terms reflection or reflective teaching.

From the data collected different reasons for this result could be drawn. Below table presents impediments to teacher reflection in this study.

Table 5. Impediments to reflection

Statements	Teachers
<i>Inadequate inset trainings</i>	<i>T1,T2,T3,T4,T7</i>
<i>Lack of time to reflect</i>	<i>T1,T2,T3,T5,T7</i>
<i>Workload</i>	<i>T1,T2,T3,T4</i>
<i>Inadequate collaboration among colleagues</i>	<i>T2,T5,T6,T7</i>
<i>Absence of constructive and logical criticism</i>	<i>T2,T3,T4,T5</i>
<i>Not following the innovations and developments in the profession</i>	<i>T1,T4,T5,T6</i>
<i>Low level of students</i>	<i>T2,T5,T6</i>
<i>Not taking student expectations and feedback into account when teaching</i>	<i>T2, T3</i>
<i>Fear of being criticised</i>	<i>T3</i>

As can be seen from the table, all of the teachers indicated that inadequate in-service training was an impediment for them to reflect. None of the teachers reported attending to any training on reflection. Besides, looking at the in-service training programs that the Ministry of National Education have conducted in the last ten years, we noticed that there has been no training on reflection.

Workload and time have also been raised by almost all of the teachers as the impediments to reflection. Because of heavy workload, teachers may not put aside the necessary amount of time so that they might “mull over” what has happened and what should be happening. Thus, it seems to be important to provide time for teachers to reflect; however, this itself may not ensure that they will be reflective. Grant and Zeichner (1984:109) also reported in their study that “*reflection ...does not occur in many schools even when time set aside for that purpose*”.

In this study teachers’ perceptions of the levels of achievement and motivation of the students have emerged as an important issue affecting their reflectivity. It was a common idea among the study’s teachers that thinking about their practice and actions might be necessary only if they had high achieving and motivated students. One said; “*I think about my lessons if there is something unusual or extraordinary. Generally, we do not have time for thinking as we have another lesson teach. Besides, according to the feedback from students, we may not find it necessary*” (T7). This view was also shared by T2 who said; “*if you have students who come to the lessons prepared, you think about your lessons and try to find better ways to improve your teaching*”. Likewise, T5 said; “*I think about my practice and try to improve it according to the students’ reactions*”. Other research also reported that teachers’ beliefs about learners, curriculum, and numerous other factors directly influence or mediate classroom practice (Arredondo & Rucinski 1998; Odabaşı Çimer, 2004; Odabaşı Çimer & Çimer, 2010).

CONCLUSION AND SUGGESTIONS

This study investigated teachers’ perceptions and practices of reflection through interviews and weekly written journals. Clearly, the teachers have an inadequate understanding of reflection. They could not provide a proper description of reflection and they defined reflective teachers with effective teacher characteristics.

Their levels of reflectivity were determined through their journal entries. Overall, the comments in the teachers’ journals were largely descriptive statements about what happened in the lesson. In addition, there were some brief evaluative comments about how successful the lesson was. However, there was no evidence of critical reflection where teachers analyse classroom events and their own feelings in depth and draw conclusions for future actions. Hence, reflection for the study’s teachers was just a process of recalling what happened in a lesson.

This lack of understanding and inability to reflect critically shown by the teachers is the results of lack of clarity and guidance. As indicated by all the teachers, they had not been given any training on reflection, but they are expected to reflect. Moreover, reflection is enacted by critical thinkers (Barnett, 1997) and the study’s teachers have not been not exposed to critical thinking either through their schooling or teacher education programmes. This presents implications to policy makers and the authorities who expect teachers to reflect without providing them appropriate training.

In addition, the results of the study supported previous research results that teachers’ efforts in order to improve teaching and learning quality are mostly affected by their perceptions of the student quality (Good & Brophy, 1987; Rowntree, 1987; Stipek, 2002; Odabaşı Çimer, 2004; Odabaşı Çimer & Çimer, 2010). The study’s teachers saw thinking about their practices and trying to improve them necessary only if there are students who are interested and motivated. If there is no effort on the part of students, the teachers did not want to spend time to think about how their lesson went or the ways to improve their practices. Hence, it seems necessary to achieve a conceptual change in teachers. It is important for a teacher to believe that every student can succeed if given the opportunity or if there is a teacher willing to work with and help them. Such conceptual change is a process that may be difficult but can be achieved through well organised trainings and sustained support (Odabaşı Çimer et al., 2010).

This study provided insights into teachers’ perceptions of reflection and their levels of reflections and the reasons behind their lack of deeper analytical reflections. The results of the study are limited

to the seven teachers' perceptions and practices determined through interviews and weekly written journals. Those studies that would be conducted in the future could involve more teachers in their sample and could employ observation as the data collection method too.

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