

## CHAPTER 12: REFLECTIVE THINKING AND TEACHING REFLECTIVE THINKING

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### THE MEANING OF REFLECTIVE THINKING

Reflection is the concept on the basis of reflective thinking. Reflection, the most general sense, is the cognitive inquiry process that contains analyzing and finding ways which will lead to production of new knowledge and experiences in the context of previous knowledge and development of alternative ways<sup>1</sup>.

In the early 20<sup>th</sup> century, J. Dewey proposed an approach that all people learn from their experiences in education and stated that life itself was training and development, and the real purpose of education was to make development explicit. He also indicated that the most important need of the society was students' learning to reflect to life what they have learned at school. Dewey defines the reflective thinking as active, persistent and careful consideration of knowledge structure supporting any belief or knowledge and results that it aims to reach. According to Dewey<sup>2</sup>, in the process of reflective thinking, the following two main stages are available:

1. A doubt, confusion and hesitation status in which thinking occurred.
2. A research and questioning aimed at finding ways to clarify this doubt and to solve this confusion.

Dewey focuses on the importance of action and describes a reflective practitioner as an individual questioning his/her assumptions and practices as well as being active and determined. A reflective practitioner's attitudes can be summarized as open-mindedness, whole-heartedness and responsibility<sup>3</sup>.

Later, this concept is discussed in detail by Schön<sup>4</sup>. Schön states that reflection contains an approach based on close examination of what practitioners do in reality. Reflection includes questioning the action: Did my practice work? Why did it work? Why didn't it work? What else can be done? Considering in this context, reflection covers re-thinking and re-formatting on the practice. Schön<sup>5</sup>, developing Dewey's ideas, suggests two types of reflection as reflection-in-action and reflection-on-action. According to Schön, many experienced practitioners have knowledge by making reflection-in-action for their own practices. In reflection-on-action, the practitioner has the opportunity of making a more detailed reflection for a longer time about his/her experience since in this type of reflection, individual analyzes these practices by making reflection about his/her practices after action and reaches the conclusions. In short, practitioners, in both types of reflection, direct their future practices by questioning their own practices. While they form their works in reflection-in-action, in reflection-on-action they evaluate their practices by focusing on how knowledge about the practice reaches the unexpected conclusions after the study<sup>6</sup>.

Considering the history of the reflection, we get the information that this concept is not new and it is primarily defined as Socratic questioning and dialogues in the philosophy of Plato<sup>7</sup>. The method, which Socrates used to elicit what his students know, is regarded as the first of the studies for the development of thinking. In this method, questions rather than answers are given to students. The answer to each question is another question. In other words, each question's answer is a question to be answered. Aristotle emphasized the importance of practice in learning by criticizing people discussing the truth instead of behaving properly.

## RELATIONSHIP BETWEEN REFLECTIVE THINKING AND OTHER THINKING SKILLS

At the end of the reflective thinking, the individual sometimes tends to think creatively. Organizing, reasoning, developing assumptions and predictive skills of critical thinking skills are within the scope of questioning and evaluation skills of reflective thinking<sup>9</sup>. Like many other thinking skills, critical thinking is a broader concept, which includes reflective thinking. In short, while a person thinks critically, he/she thinks reflectively, too.

Reflective thinking has a very close relationship with metacognitive thinking. Metacognition is that individual inspects his/her thinking process and distinguishes his/her thinking behavior. In reflective thinking, the individual thinks about his/her thinking and learning styles. In addition, reflective and metacognitive thinking require establishing a connection with past experiences, to ask questions about the knowledge learned, and to ask questions himself/herself in learning process. Norton (1994) concluded that there was a positive relationship between creative and reflective thinking, and also stated that Dewey's reflective thinking phases were similar to creative thinking phases<sup>10</sup>. Additionally, reflective thinking is a skill which can be displayed in parallel with the development of individual's self-regulation processes.

## DEVELOPING REFLECTIVE THINKING

The basic thinking skills and a supportive environment are necessary for transferring the reflective thinking into education. In order to develop this style of thinking, studies like autobiographical writing, using imagination, group discussions, analyzing and developing teaching programs should be included<sup>11</sup>. Some methods, which can be used to develop reflective thinking skills, are ordered below and then these methods are explained:

1. Writing Learning Texts
2. Keeping Reflective Diary
3. Preparing Portfolio
4. Constructing Concept Maps
5. Asking Question
6. Self-questioning
7. Joining Reflective Discussions
8. Negotiated Learning
9. Self-evaluation<sup>12</sup>.

### 1. Writing Learning Texts

Learning texts are known as reflective writings, too. They are materials in which individual saves his/her personal reactions, questions, feelings, changing views, thoughts, and information about learning processes and content. In these writings, experiences cannot only be described but explanation, analysis and reflections are also included. Previous texts written in this way will both serve development of writers' cognitive processes and undertake the task of being a model to readers of these writings. Students gain the ability to reflect because they think of learning process while they are writing learning texts. Students learn more effectively in this process. Teachers can get feedbacks from students' learning texts. Teachers can plan activities related to process more accurately. Like students, teachers can make reflections by writing texts related to their own practices, and they can develop themselves by this way. While students develop their thinking skills with learning texts, they operate their mental repetition processes in learning subject.

### 2. Keeping Reflective Diary

Students' keeping reflective diary about processes of practice plays an important role in their reflective thinking. Through reflective diaries, students make reflection about their own learning processes by establishing a relationship between theory and practice at a higher level. The main purpose of using reflective diaries in education is to help students to gain awareness about what they do, how they do,

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why they do and to develop useful problem-solving strategies. Thus, students will be aware of their strengths and weaknesses in the field of theoretical knowledge and practice<sup>13</sup>.

The effects of keeping diaries about reflective thinking on pre-service teachers are as follows:

- Being stimulant about starting to think questions and new issues,
- Helping to streamline thoughts,
- Having the opportunity to review learning material later,
- Being able to see changes in emotion and behavior,
- Preventing to repeat the same mistakes,
- Better self-monitoring.

A pre-service teacher who gets these skills, just like the students, will make reflection and evaluation about his/her teaching practice and he/she will plan to develop these practices and to overcome deficiencies of practices. Teachers' keeping reflective diaries regularly will also help them to follow their own developments.

### 3. Preparing Portfolio

Like keeping diary, preparing portfolio is one of the instruments to develop reflective thinking skills. A portfolio is primarily created by the student; it allows students to select, to examine, to make reflections on completed projects and to review the old products; it includes knowledge which is meaningful for only student and help to plan his/her current and future requirements; it is collected to demonstrate the student' progress towards his/her development goals<sup>15</sup>. Through portfolios, students can evaluate their practices and develop their reflective thinking skills by questioning their practices.

### 4. Constructing Concept Maps

The concept map is a visual design, which exposes events, facts, ideas and explains relationships between them. The concept maps aim to establish relationships between concepts in the form of suggestions. While concepts are taught with visual ways by concept maps, the level of learning concepts can also be used for learning purposes. Concept maps prepared by students are also important in the evaluation process. Students must have knowledge about the subject to prepare a concept map.

Concept maps are taught to students at every stage of the educational process. These maps are increasing their ability to design and to express thoughts<sup>16</sup>. In terms of reflective thinking, while preparing a concept map, students determine the key concepts first and then they list the important concepts by sorting from general to specific and show relations between concepts<sup>17</sup>. Thus, students gain insight about their own learning by focusing on the relationships between concepts and make queries about how to learn these concepts.

### 5. Asking Question

Asking question has a very important role in the development of thinking skills. Open-ended questions posed to the students at teaching process will increase their awareness. Higher-order thinking questions of students and teachers develop reflective thinking. Questions developing reflective thinking should be prepared before the course, different questions for different purposes should be chosen and they should be prepared at different cognitive stages. In short, the activity of asking question should be carried out in a conscious way.

Teachers stimulate students' reflective thinking by asking questions as the following:

- How did you carry out/do this task?
- What were you thinking when you do it?
- Why did you choose this approach/method etc.?
- Can you explain all the steps you followed in this task?
- What kind of changes do you make if you do it again? Why?

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## 6. Self-questioning

Students evaluate the process with questions, which they ask themselves along their learning process. By these questions, students decide to what, when, why and how they have learned and will learn, and also complete their deficiencies. Primarily teacher should be a model for students by using the strategy of self-questioning aloud at the activities.

The following are examples of questions, which students can ask themselves:

What do I know about this subject?
What do I need to learn about this subject?
How much time will this subject take?
What should I do about the subject later?
Could I learn all the knowledge, which I need on this subject?
Could I reach my learning goals about this subject?

## 7. Joining Reflective Discussions

Reflective discussions are seen as a beneficial activity which students are aware of similarities and differences in their practices<sup>18</sup>. In classroom discussions, students' constructive criticism about each other's practices will gird for correcting their errors and consolidating right activities. In these discussions, providing an environment which develops to reflect and creating an atmosphere in which students can talk comfortably without trial of their applications will facilitate that they behave sincerely, in other words, they make higher level of reflections. For this purpose, large group discussion techniques, circle discussion technique and inner-outer circle activities can be used.

## 8. Negotiated Learning

Negotiated learning is students' participation in decisions related to the learning process. The students involved in this process are more effective in the learning process. Agreements can be done with the whole class or groups. Signing an agreement is an example of negotiated learning. Learning contracts play a role in students' responsibility for their own learning.

Negotiated learning can be applied as individual and group. Applied as individual, learning contract can be used as a tool for supporting negotiated learning. Diverse learning needs of different students can be specified at learning contract. When students practice their contracts, they study at different speeds, levels and tasks on common goals, and develop their learning and thinking skills.

Learning Contract

Acquisition	Topic:	Group Student	or	Learning Features	Achievement Standard	Student inventions and suggestions
		1				
		2				

## 9. Self-evaluation

In order to develop reflective thinking, students should evaluate their friends and themselves within the process and at the end of process. Students develop and motivate themselves with this process. A student having self-evaluation skills will play an active role in the process of his/her own learning. He/she will have a critical perspective on his/her own learning and will gain responsibility about his/her development.

## REFLECTIVE TEACHING

Henderson (1996) describes reflective teaching as creative problem-solving activities and an inquiry approach caring to constructivism at teaching and giving priority to give attention to the feelings of others. All teachers can benefit from reflective teaching. Teachers think about what they want to

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accomplish in the classroom before the practice and they try to supply materials needed to achieve their purposes. These preparations relieve teachers before coming to class. So they can regularly reflect what happened in the past, what is happening now and what will happen in the future about subject. At reflective thinking practices, it is observed that students' motivation, willingness to take risks, self-esteem and independence increase<sup>20</sup>.

According to the model of reflective teacher education, pre-service teacher transfers his/her knowledge of theoretical and teaching experience into practice. He/she makes practices benefiting from his/her theoretical and teaching experience knowledge. He/she think about any problem at practice effectively, persistently, and systematically to solve the problem or to make the practice more effective. He/she uses new knowledge and skills, which he/she configures at the end of thinking process again at practice. The cycle continues in the same way. After performing reflective thinking and teaching, he/she gains professional qualification and becomes a teacher<sup>21</sup>.

One of the important aspects of teacher education is reflective diary, which helps pre-service teachers to think and to reveal the practical problems, which they experienced at schools. Reflective diaries are used in studies for pre-service teachers' understanding their practices and being understood by others. Such diaries help them to see their practical problems more systematically, carefully and persistently. These issues are the basis for teacher educators to understand how pre-service teachers' experience<sup>22</sup>.

### CHARACTERISTICS OF TEACHER THINKING REFLECTIVE

Norton (1997) lists the characteristics of teachers adopting reflective thinking as follows:

- He/she always evaluates the teaching process, thinks for making changes or reflects his/her thoughts.
- Teachers are open-minded. They are always open to questions and reactions about their ideas and teaching practices, and produce alternative solutions.
- They feel responsible for students' personal, educational and emotional needs. They control of each student's development stages.
- Teachers thinking reflective are interested in science and art of teaching. They enjoy this attitude because it helps them to understand who they are.
- Reflective teachers foresee and they help their students to foresee.
- Reflective teachers not only make generalizations by identifying the problems but also they use it to change their professional development and understanding of practice.

Action of reflective thinking is characterized as continuous evaluation and willingness to development. According to this definition, a reflective practitioner or teacher evaluates the practices within the framework of a specific plan in accordance with the information obtained from a variety of data, makes reflection and questioning about his/her studies and develops these practices. The stages, which a teacher will follow in reflective teaching process, are as follows:

A reflective teacher thinks about his/her practices by looking at them again during the day: "Did my practice work? What could I do to help that student?". Reflective thinking is an ongoing process that involves teacher's questioning before school, at school and after school. Teacher constantly controls the development of each student and continues to reflect even if there is not any data obtained from students<sup>24</sup>.

A teaching program to develop thinking skills, teachers whose reflections can be an example to students, curriculum which supports students' reflective, critical and creative thinking skills, evaluation which reveals students' multi-faceted development, method and materials will be effective for students to gain reflective thinking skills. Democratic and collaborative classroom environment in which scientific thinking is supported can also be effective to develop reflective thinking skill<sup>25</sup>. Feedback is important at teaching process based on reflection and students need to make sense of

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feedback presented by teacher and to implement this feedback to improve their performance in the future.



Figure: Reflective Teaching Process

### THE ROLE OF STUDENT IN REFLECTIVE THINKING

In a teaching process supporting reflective thinking, it should be provided that students are confronted with pre-determined problems and they transform their theoretical knowledge into practice. Students facing new problems and practices will be able to develop their reflective thinking skills which organize and query actions such as asking question, studying, discussing. Students' associating the school learning with out-of-school life will greatly contribute to development of thinking.

### THE CHALLENGES AT TEACHING REFLECTIVE THINKING

In general, teaching of thinking and reflective thinking will be time-consuming in parallel with the process of skill teaching. Exams of the existing educational structure may limit the time for teaching activities. As a result of this, families may react. Furthermore, in the present classes, the problems about performing the student activities, which are required for the teaching of thinking, arise. The deficiency of materials or budget problems in teaching process is one of the obstacles about the teaching of thinking. That teachers who will ensure the students' development of reflective thinking do not have enough knowledge about teaching of thinking can be seen as a major obstacle for reflective teaching.

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