



## PROSPECTIVE SCIENCE AND TECHNOLOGY TEACHERS' METAPHORS RELATED TO SCIENCE AND TECHNOLOGY TEACHER CONCEPT

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### Abstract

Science and technology course is one of the leading course in which students are thought abilities to obtain knowledge rather than transfer knowledge directly. Teachers guide students to obtain these abilities. So it is important to define field and job perception of future science and technology teachers. Metaphors are one of the tools that can be used for this. Besides it is regarded as a symbolic language tool that two idea or concept associated for comparison in deep meaning metaphor presents more of this. The aim of this research is to find prospective science and technology teacher's perception related to science and technology teacher concepts through metaphor. In the research it is used phenomenology one of the quality research features. Research is conducted by 90 prospective teachers who go on their teaching in University of Dokuz Eylül Buca Education Faculty in the spring semester of 2009-2010 academic year. The prospective teachers are asked an open ended question related to science and technology teacher. The result of the research we obtain data about perception of prospective teachers related to and science and technology It is tried to understand point of view of teacher of the future related to their own job.

**Key words:** science and technology teacher concept, prospective science and technology teachers, metaphor

### INTRODUCTION

Science and technology course is one of the leading course in which students are taught to ability to access knowledge rather than transfer knowledge to them. (Kaptan and Korkmaz, 2000). Teachers guide students for acquiring these abilities. In that sense it is very important to identify field and job perception of future of science and technology teacher. Metaphor is one of the tools that can be used for this purpose. Metaphor as a linguistic tool that combine two matter or concept each others, is regarded as a symbolic language tool in which two different idea or concepts are connected to make comparison or passing one experience to the other (Palmquist, 2001; Hansen, 2004). Lakoff and Johnson (2003), explained the basis of metaphor to understand or experience something with a viewpoint of another thing. Metaphor frames our perception partially in a distinctive way (Morgan, 1998). This shows how we comment events. Metaphors are regarded

as an intellectual tool that one can use to explain or understand highly abstract, mixed and theoretical concepts (Yob, 2003; Saban, 2004). Metaphors enable to make connection between new knowledge and previous one by finding similarities between them so they help new knowledge to be explained more concretely (Senemoğlu, 2007). It can be said that metaphors are some of the definitions that form our conceptions.

At present, metaphor that attracted the attention of educators has been the subject of various investigations in national and international literatures. Some of these researches are Aydın and Ünalı (2010), Botha (2009), Alger (2009), Töremen and Döş (2009), Aydoğdu (2008), Cerit (2008), Shaw, Massengill and Mahlios (2008), Öztürk (2007), Girmen (2007), Saban (2004, 2008, 2009), Arslan and Bayrakçı (2006), Saban, Koçbeker and Saban (2006), Forceville (2002). A leading approach today is state which metaphors are used by participants in study group to explain concepts or facts such as teacher, student, knowledge, manager, inspector, school and culture.

In Turkey there aren't any researches about science and technology teachers' metaphors related with "science and technology teacher" and because of this it is needed to make such research.

#### *Objective of the research*

The perception of science and technology teachers in primary education about the concept of "science and technology teacher" may change according to education they take throughout the school life, their experiences, feature of the environment in which they are, their attitudes against the course etc. these perceptions of science and technology teachers will form their attitudes and professional perspectives. From this perspective it has been thought that detection of perceptions which science and technology teachers developed about teaching science and technology as an abstract and general concept provide important knowledge and perspectives to the academic staff and educators.

The purpose of this study is to find perceptions of prospective science and technology teachers about science and technology teaching concept through metaphors. For this reason we try to answer following questions.

1. Which of the metaphors are used by prospective science and technology teachers to explain their perception about science and technology teacher concept?
2. Under which category metaphors about science and technology teacher concept stated by prospective teachers can be gathered in terms of common features?

## **METHOD**

#### *Research design*

The study adopted the quantitative research design method phenomenology is used. Phenomenology design focuses on facts we aware but don't have in depth and detailed understanding. Phenomenology provides us an appropriate research base for study that aims to research facts which are not completely foreign us and we don't totally (Yıldırım and Şimşek, 2006).

*Working group*

The study was carried out with 90 prospective science and technology teachers studying in Dokuz Eylul University Buca Faculty of Education during the spring semester of 2009-2010 academic year.

*Data collection instruments*

With the aim of revealing perceptions of science teacher participated in the research about science and technology teacher each of teacher were asked to complete sentence given " Science and technology teacher .....is like." "Because ....." Metaphors that are developed by prospective teachers with their own scripts were collected and evaluated.

*Analysis of data and interpretation*

In the study in the evaluation of the data obtained from the content analysis technique was used. In the content analysis main aim is to reach concepts and contacts that can explain data collected from. Data summarized and reviewed in descriptive analysis is processed deeper in content analysis and themes and concepts that can not be identified in descriptive approach can be identified as a result of this analysis. In the content analysis the fundamental process is to bring together similar data within the framework of certain concepts and themes and interpret and organize them so that the reader can understand (Yıldırım and Şimşek, 2006).

**FINDINGS**

In Table 1. it is presented metaphors of science and technology teachers about "science and technology teacher" and their categories.

*Table 1. Metaphors of Science And Technology Teachers About "Science And Technology Teacher" And Their Categories*

| Categories   | Metaphors  | Frequency of metaphors | Metaphors amount |
|--|--|------------------------|------------------|
| <b>Teacher as an information resources and transporter</b> | Month (1), Wise (4), Scientist (22), Nature expert (1), gas lamp (1), Rainbow (1), Sun (2), lightkeeper (2), Science teacher (1) Sheep (1), Master (1), Journalist (2) | 39                     | 12               |
| <b>Teacher as a collaborative leader</b>                   | Coach (1), leader (1), guidance (11)   | 13                     | 3                |
| <b>Teacher as a shaper</b>                                 | Artist (1), preschool teacher (6)  | 7                      | 2                |
| <b>Teacher as an element of indispensable</b>              | Brain (2), Blood (1), Blessing (1), water (2)  | 6                      | 4                |
| <b>Teacher as a protective and reassuring</b>              | Parents (2), lover (2)   | 4                      | 2                |
| <b>Teacher as a guider</b>                                 | tool (1), preparatory to Life (1), Life Coach (2)  | 4                      | 3                |

|                                     |   |    |    |
|-------------------------------------|---|----|----|
| Teacher as a valuable asset         | The key to the future<br>(1), Diamond (1), Important People (1) | 3  | 3  |
| Teacher as a corrective             | Alterative (1), doctor (2)                                      | 3  | 2  |
| Teacher as a problem solver         | Problem solver (1), mathematics teacher (1)                     | 2  | 2  |
| Teacher as a tireless worker        | Housewife (1), volunteer worker for welfare (1)                 | 2  | 2  |
| Teacher as an integrator            | Force of attraction   | 1  | 1  |
| Teacher as a trainer and educator   | Gardener (1)  | 1  | 1  |
| Teacher as a mechanized being       | Simple machine (1)  | 1  | 1  |
| Teacher as an element of negativity | Activity constructor (1)  | 1  | 1  |
| Teacher as an entertaining          | A funny friend (1)  | 1  | 1  |
| Teacher as an innovator             | Explorer (1)  | 1  | 1  |
| Teacher as an element of authority  | Main teacher (1)  | 1  | 1  |
|                                     | <b>TOTAL</b>  | 90 | 42 |

### Conceptual categories

*Category 1. Teacher as an Information Resources and Transporter:* this category which regard science and technology teacher as a information source and transmitter includes 12 metaphor and 39 (%43,3) prospective teachers. Some of the teachers' expressions are given in below

"Science and technology teacher look like **moon** because he/she organized what he learned and reflect them students."

"Science and technology teacher look like **a nature specialist** because he/she explains physical, chemical and biological reasons of each events".

"Science and technology teacher look like **a scientist** because he gives us information that will make our life easier."

"Science and technology teacher look like **a gas lamp** because he enlighten his students."

"Science and technology teacher look like **a rainbow** because he got education of many lessons."

"Science and technology teacher look like **a sheep** because he explains subject in a pure and clean way."

*Category 2. Teacher as a Collaborative Leader:* this category which regard science and technology teacher as a collaborative leader includes 3 metaphor and 13 (%14.5) prospective teachers. Some of the teachers' expressions are given in below

"Science and technology teacher look like **a coach** because he educates students according to their ability."

"Science and technology teacher look like **a leader** because he give love of science at an early age ."

"Science and technology teacher look like **guidance** because he shows how to access information."

*Category 3. Teacher as a Shaper of Teacher:* this category which regard science and technology teacher as a shaper includes 2 metaphor and 7 (%7.8) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **an artist** because he produces material that interest students."*

*"Science and technology teacher look like **preschool teacher** teacher because he shapes his students in science at an early age."*

*Category 4. Teacher as an Element of Indispensable:* this category which regard science and technology teacher as an element of indispensable includes 4 metaphor and 6 (%6.7) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **a brain** because many lessons make sense with science."*

*"Science and technology teacher look like **a blood** because it gives life to the students."*

*"Science and technology teacher look like **a blessing** because many information make sense with science."*

*"Science and technology teacher look like **water** because he is vital for wealthy society."*

*Category 5. Teacher as a Protective and Reassuring:* this category which regard science and technology teacher as protective and reassuring includes 2 metaphor and 4 (%4.5) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **a parents** because he is model for students."*

*"Science and technology teacher look like **a lover** because he protects students from dangers."*

*Category 6. Teachers as a Guide:* this category which regard teacher as a guide includes 3 metaphor and 4 (%4.5) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **a tool** because he directs students to the information*

*"Science and technology teacher look like **a preparatory to the life** because he prepares students against event that they can encounter in daily life."*

*"Science and technology teacher look like **a life coach** because he teaches students to life."*

*Category 7. Teacher as a Valuable Being:* this category which regard science and technology teacher as a valuable beings includes 3 metaphor and 3 (%3.3) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **a key to the future** because upbringing of individual beneficial for the society is in his hands."*

*"Science and technology teacher look like **a diamond** because he is very valuable."*

*"Science and technology teacher look like **important people** because he gives information that make our life meaningful."*

*Category 8. Teacher as a Corrective:* this category which regard science and technology teacher as a corrective includes 2 metaphor and 3 (%3.3) prospective teachers. Some of the teachers' expressions are given in below

*"Science and technology teacher look like **a doctor** because he cure with his knowledge."*

"Science and technology teacher look like **a alterative** because he changes students false perceptions and correct them."

*Category 9. Teacher as a Problem Solver:* this category which regard science and technology teacher as a problem solver includes 2 metaphor and 2 (%2.2) prospective teachers. Some of the teachers' expressions are given in below

"Science and technology teacher look like **problem solver** because he provides solutions for every field of life."

"Science and technology teacher look like **a mathematics teacher** because he solves problem by using his logic."

*Category 10. Teacher as a Tireless Workers:* this category which regard science and technology teacher as a tireless worker includes 2 metaphor and 2 (%2.2) prospective teachers. Some of the teachers' expressions are given in below

"Science and technology teacher look like **a housewife** because they work in many field without tired and wearisome."

"Science and technology teacher look like **a volunteer that work for welfare** because he works to achieve level of contemporary civilization."

*Category 11. Teacher as a Integrator:* this category which regard science and technology teacher as a integrator includes one metaphor and one (%1.1) prospective teacher. The teacher' expression is given in below

"Science and technology teacher look like **a power of attraction** because he regard science and technology together and use."

*Category 12. Teacher as a Trainer and Educator:* this category which regard science and technology teacher as a trainer and educator includes 1 metaphor and 1 (%1.1) prospective teacher. The teacher' expression is given in below

"Science and technology teacher look like **a gardener** because he takes students from nothing about science teaches and educate them."

*Category 13. Teacher as a Mechanized Being:* this category which regard science and technology teacher as a mechanized beings includes 1 metaphor and 1 (%1.1) prospective teacher. The teachers' expression is given in below

"Science and technology teacher look like **a simple machine** because he has to work always since he make easier our life with the thing he teach."

*Category 14. Teacher as an Element of Negativity:* this category which regard science and technology teacher as an element of negativity includes 1 metaphor and 1 (%1.1) prospective teacher. The teacher' expression is given in below

*"Science and technology teacher look like **an activity designer** because he makes lesson boring by remove lesson from its aim."*

*Category 15. Teacher as an Entertaining:* this category which regard science and technology teacher as an entertaining includes 1 metaphor and 1 (%1.1) prospective teacher. The teacher' expression is given in below

*"Science and technology teacher look like **a funny friend** because he can evaluate natural events curiously with students."*

*Category 16. Teacher as an Innovator:* this category which regard science and technology teacher as an innovator includes 1 metaphor and 1 (%1.1) prospective teacher. The teacher' expression is given in below

*"Science and technology teacher look like **a explorer** because he has got a rearcher soul."*

*Category 17. Teacher as an Element of Authority:* this category which regard science and technology teacher as an element of authority includes 1 metaphor and 1 (%1.1) prospective teacher. The teacher' expression is given in below

*"Science and technology teacher look like **a main teacher** because there are many things he has to know."*

## DISCUSSION

Prospective teachers have got some perceptions they developed about science and technology teacher depending on their education they receive during their student years, their observations and their experiences they got as a result of interactions they made teacher with different characteristics. This study was carried out by thinking that it is important to reveal this perception of teachers of future.

Meaningful learning occurs as a result of learner building new information on his current mental frame (Gales and Yan, 2001). In this process teacher guide students to achieve knowledge rather than transform knowledge. The results of research show that the majority of prospective teachers regard science and technology teacher as a information source and transmitter.

As a result it has been seen that science and technology prospective teacher regard science and technology teacher as an element of information source and transmitter, the collaborative leader, shaper, indispensability, protective and reassuring, guide, a valuable beings, corrective, problem solver, tireless, integrative, educator, mechanized, negativity, entertaining, innovator, and authority. Saban (2004) as a result of his research in which classroom prospective teachers show their perception about concept of teacher through metaphors shows that prospective teacher percept teacher as a knowledge source and transmitter, forming and formative students, healing

students, entertain while teaching, supporting individual development of students and guide students during the learning process. It is seen that results are parallel to each others. In his study which Cerit (2008) analysis perceptions of student, teacher and manager about concept of teacher used metaphors he got conclusion that teacher is information source and transmitter, mother/father, friend, guide and enlighten his environment. In this study it is striking that same metaphors are revealed about science and technology teacher.

## CONCLUSION

As a result of this study provide important information that metaphors can be used as powerful tool in revealing personal perceptions of future of teachers about their jobs. In that sense the number of qualitative and quantitative researches that analysis what are the attitudes of prospective teachers about learning they got in the past and which of the teacher role they focused on through metaphors. This study having been done with prospective teachers will be repeated with science and technology teacher and results can be compared. Metaphors can be used in providing knowledge to prospective teachers about roles of teacher in future and establish to teacher identity. It can be showed practically to prospective teachers that teacher is not only information source and transmitter he has also guide and directive identity.

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