EVRİM BİLİMİ, TEMEL BİLİMLER VE MATEMATİK ARASINDAKİ TANIMLAR VE İLİŞKİLERE YENİ BİR YAKLAŞIM

A NEW APPROACH TO THE DEFINITIONS AND RELATIONSHIPS BETWEEN EVOLUTION SCIENCE, BASIC SCIENCES AND MATHEMATICS

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ÖZET

Literatürde de bilim, matematik, evrim, evrim teorisi ve evrim bilimi hakkında pek çok bilgi ve kavram yanılgısı bulunmaktadır. Ancak bu kavramların tanımları ve aralarındaki ilişkiler hakkında düzenli ve yeterli bilgi bulunmamaktadır. Bu kafa karıştırıcı nedenler beni bu araştırmayı yöneltti. Bilim, matematik, evrim, yaratık, varlık ve bilgelik kavramları arasındaki ilişkilerle ilgili bilgilerimiz, kavram yanılgıları ve kafa karışıklığı içinde görünmektedir. Bunları netleştirmek için literatür kaynaklarından dikkatle bu kavramların tanımları ve ilişkileri incelenmiştir. Bu temel kavramların özgün tanımları ve ilişkileri doğru yapılmadığı için kavramlar yanlış anlaşılmalara neden olmuştur. Tıpkı Hücre, Hücre Teorisi ve Hücre Biliminin açık ve doğru tanımları olduğu gibi. Evrimle ilgili kavramlarda da aynı mantık yürütüldü ve kullanıldı. Bazı kavramların birden fazla doğru tanımı olabilir. Eğitime katkı sağlamak için bu kavramların yeni özgün tanımları ve ilişkileri önerilmiştir. Matematik: bilimdeki tüm bilgileri, olayları, olguları, süreçleri, yaratıkları ve ilişkileri semboller, yazılar, denklemler, kümeler ve şekillerle ifade eden bilimin ana yüzüdür. Hiçbir bilim dalı matematik olmadan çalışamaz. Bilimi bir beden olarak kabul edersek, matematik kalbi gibidir. Ancak matematik, diğer disiplinlere ihtiyaç duymadan tek başına çalışabilir. Dolayısıyla matematik, bilimin kalbi ve diğer tüm bilim dallarının toplamının ortak paydası gibidir. Bu mantıktan hareketle matematik dışındaki tüm bilim dalları bilimin doğal, kültürel ve yaşamsal ara yüzünü oluşturur. Bilimin evrimsel ara yüzü, bilimdeki tüm değişikliklerin gerçek hayat hikâyesini ifade eder.Matematik, evrim ve bilimin konumları, tanımları ve ilişkilerinin ortak paydası nedir? Varlık ve yaratık kavramları ile bilim, matematik, evrim bilmi ve bilgelik (hikmet) kavramları arasındaki ilişkiler nelerdir? Bu soruların cevapları problem cümlelerimizin çözümü olmuştur.
Anahtar Kelimeler: Doğa Bilimleri; Sosyal bilim; Evrim Bilimi; Matematik

ABSTRACT

In the literature, there is also a lot of information and misconceptions about science, mathematics, evolution, the theory of evolution, and the science of evolution. However, there is no tidy and sufficient information about the definitions, and relationships between these concepts. These confusing reasons led me to do this research. Our information about the relationships between the concepts of science, mathematics, evolution science, creature, being and wisdom seems to have misconceptions and confusion. To clarify these, the definitions and relations of these concepts carefully studied from literature sources. Since the original definitions and relationships of these basic concepts were not made correctly, the concepts caused misunderstandings. Just as there are clear and accurate definitions of Cell, Cell Theory and Cell Science. The same logic carried out and used in concepts related to evolution science.

Some concepts may have more than one correct definition. New original definitions and relationships of these concepts have been proposed to contribute to education. Math is the main face of science that expresses all the knowledge, events, facts, processes, creatures and relationships in science with symbols, writing, equations, sets and shapes. No branch of science can work without mathematics. If we accept science as a body, math is like its heart. However, mathematics can work alone without the need for other disciplines. Therefore, mathematics is like the heart of science and the common denominator of the sum of all other branches of science. Based on this logic, all branches of science except mathematics constitute the natural, cultural and life interface of science. The evolutionary interface of science expresses the real-life story of all the changes in science. What is the common denominator of the positions, definitions and relationships of mathematics, evolution and science? What are the relationships between the concepts of being and creature and science, mathematics, evolution science and wisdom? The answers to these questions has been the solution to our problem sentences.

Keywords: Natural Sciences; Social Science; Evolution Science; Mathematics

1.INTRODUCTION

If science is a body, mathematics is like the heart that gives it life. No branch of science can work without mathematics. However, mathematics works alone without any discipline. Mathematics is like a bilaterally related main face between wisdom science and science.

Evolution refers to the change of living and inanimate creatures over time. In order not to fall into the misconception, it is very important to know the originality of the definitions of the concept of evolution, the theory of evolution, and the science of evolution. Generally, these concepts are described about biology discipline and living things (Meagher, 2007). The concept of the theory of evolution known today explains only the evolution of living things. It is not the theory of evolution of the inanimate. In this respect, it causes misconception. The real equivalent of this concept is “The theory of the evolution of living organisms.” However, “every living and inanimate creature has a changing real-life story, or evolution, that is partially reversible and/or irreversible in natural and artificial conditions.” The science that studies the relationships of these changing real-life stories is called ‘Evolution Science.’ The Science of Evolution (Evolution Science) includes all the theories, real information and practices related to the evolution of everything (OuYang, et al., 2001a; 2001b; Hayes et al., 2017; Demirkuş, N., and Alkan D. (2018a); Demirkuş N., and Bilgin E.A.(2018b).

1.1. Science

Burn et al., (2003) mentioned that Defining science is notoriously difficult. In the same study, a pure definition of science is given in The Panel on Public Affairs of the American Physical Society: “Science is the systematic enterprise of gathering knowledge about the world and organizing and condensing that knowledge into testable laws and theories.”

The study is also included the opinion of the report Science for all Americans: “identifies the fact that science is carried out in, and consequently influenced by, its social context.”

In his study, Gilbert (1991) has given the following views about science: “Science is a multifaceted activity which may be operationally defined in a number of ways. It is therefore important for changes in the goals of science education to be accompanied by a critical reexamination of current conceptualizations of science.”

According to Mathewson (2005), science: “The phenomena and procedures of science and technology are visual, analogical and thematic. Based on these characteristics, the visual core

of science can be described in terms of ‘master images’ in the content of science, and ‘visual processes’ in the practice of science.”

Science according to Eto (2008): “The hypotheses are tested in a scientometric way by observing the trend in the magazine Science. Unexpected results are obtained. The actual trend in Science does not reflect what has long been considered about science.”

In his study in 1993, Pomeroy presented the conclusions, and judgments of two international conferences organized in the fields of science history and philosophy of science in 1989 and 1992: “As a result, a number of scientists, philosophers, and science educators developed a substantial body of literature examining the relationship of philosophy and history of science to science teaching. This study arises from three related issues: (1) the literature that contains conflicting opinions and data as to the current philosophical status of scientists and science teachers; (2) questions of whether the philosophers and luminaries of science represent the same view of science held by research scientists; and (3) a sense that the relative philosophical stances of scientists and teachers might provide interesting implications for science teacher education. “

In the article Knorr-Cetina (1981), she had given information about new principles and methods between social and natural sciences: “In fact, new rules of social science method have been developed, displayed and defended in a constant dispute with the standard set by this natural science model, and they have made the departure from this standard the declared goal of an indigenous social methodology. Perhaps not surprisingly, the standard itself has found little attention in the dispute. While the ‘positivistic’ conception is vigorously rejected as a model for social science methodologies, it is more or less taken at face value when it refers to the natural and technological sciences.”

1.2. Mathematics

Russell's (2020) views on the philosophy of Mathematics are as follows: “The Philosophy of Mathematics has been hitherto as controversial, obscure and unprogressive as the other branches of philosophy. Although it was generally agreed that mathematics is in some sense true, philosophers disputed as to what mathematical propositions really meant: although something was true, no two people were agreed as to what it was that was true, and if something was known, no one knew what it was that was known”

Dummett's (1994) views on the definition of mathematics are as follows: “If mathematics is not about some particular realm of empirical reality, what, then, is it about? Some have wished to maintain that it is indeed a science like any other, or, rather, differing from others only in that its subjectmatter is a superempirical realm of abstract entities, to which we have access by means of an intellectual faculty of intuition analogous to those sensory faculties by means of which we are aware of the physical realm.”

Harel's (2008) view of mathematics is as follows: “Seeing mathematics as a science (though not exclusively) does not solve a lot of philosophical problems. In presenting a context of other sciences for mathematics, philosophy of mathematics is set into philosophy of science, leaving most of its problems intact.”

1.3. Education in Evolution Science

Some literature information about evolution theory, natural selection, evolution mechanisms and adaptation concepts taught in Evolutionary Science Education is given below: "Many of the misconceptions that block an understanding of natural selection develop early in childhood as part of 'naïve' but practical understandings of how the world is structured (Gregory 2009). Misconceptions about adaptation and natural selection that describe the process of evolution are noteworthy (Shtulman 2006). There are many studies in the literature suggesting results consistent with the findings of this study. According to the studies in the literature, students carry countless misconceptions about natural selection and adaptation (Shtulman 2006; Nadelson, et al., 2009; Shtulman and Calabi 2012). Evolutionary theory explains a wide range of biological phenomena. Proper understanding of evolutionary mechanisms such as natural selection is therefore an essential goal for biology education (Göransson et al., 2020)."

2. METHOD

Numerous literature and scientific documentary films related to the definitions and relations of Science, Mathematics, Evolution, and **Evolution Science** studied.

Between 2006 and 2015, at Van Yüzüncü Yıl University Faculty of Education / Department of Biology; Biology, Science, Physics, Technology, Mathematics, Environment ... etc. Nine master theses have been prepared on the concepts in the fields (Demirkuş and Gülen, 2017; Demirkuş et al.,2017; Demirkuş et al., 2018a; 2018b; Demirkuş et al., 2018c; Demirkuş and Batıhan Güzel, 2019; Demirkuş and Öner, 2019; Gürlek and Demirkuş 2020; İnce and Demirkuş 2021).

Approximately 100 articles and 176 scientific documentary films studied, especially regarding the Big Bang Theory and the Evolution of the Lifeless. Two master's theses have been prepared containing the concepts in these articles and films (Demirkuş and Gülen, 2017; İnce and Demirkuş 2021).

Those sources related to the definitions and relationships of the concepts were reviewed one by one (Borko 1968; Chalmers 2013; Demirkuş et al., 2018a; 2018b; Demirkuş 2019).

At various stages of the study, opinions of expert scientists from different branches were taken (their names are mentioned in the acknowledgment section).Definitions of the concepts related to the subject were selected and/or new definitions were created, and all concepts were associated (see Figure 1).

3. RESULTS AND DISCUSSION

3.1. Science

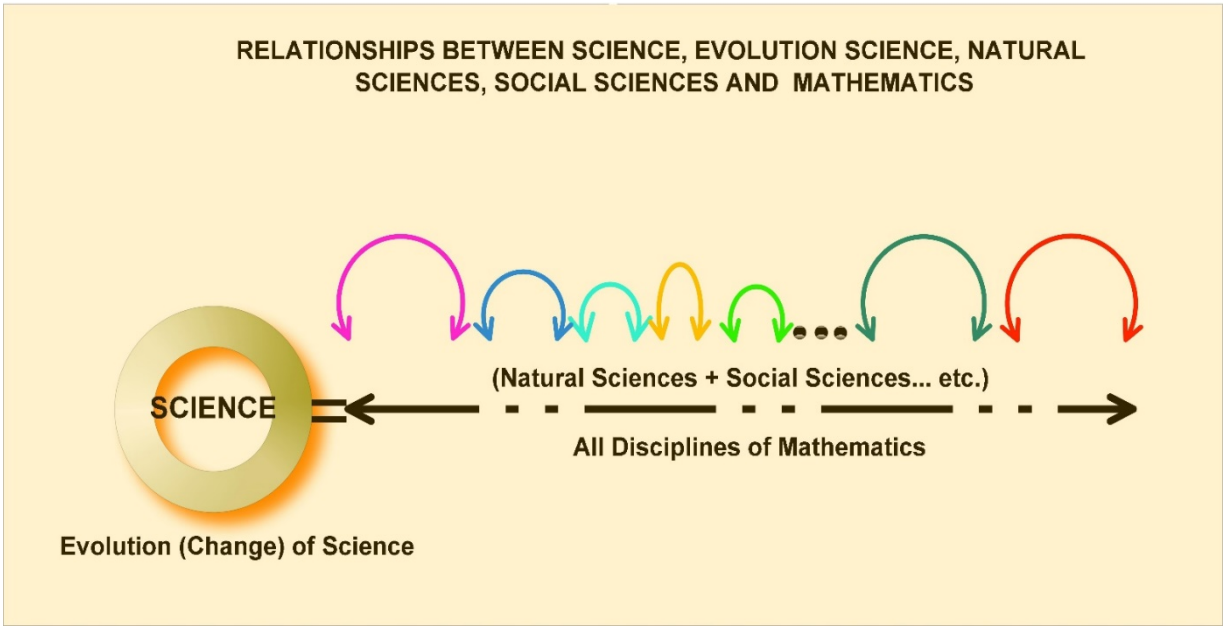
It is one of the comprehensive concepts that include the total knowledge and applications in all branches of science. It is a tool to recognize all creatures, events, phenomena, processes and reveal the truth about everything. In short, it is as if 'science' equals the sum of other disciplines divided by mathematics (Borko 1968; Chalmers 2013; Demirkuş et al., 2018a; 2018b; Demirkuş 2019).

3.2. Mathematics

It is the main face of science that expresses all the knowledge, events, facts, processes, creatures and relationships in science with symbols, writing, equations, sets and shapes. No branch of

science can work without mathematics. If we accept science as a body, math is like its heart. However, mathematics can work alone without the need for other disciplines. Therefore, mathematics is like the heart of science and the common denominator of the sum of all other branches of science. Based on this logic, all branches of science except mathematics constitute the natural, cultural and life interface of science. The evolutionary interface of science expresses the real-life story of all the changes in science. The evolutionary interface refers to the changing science depending on natural and social conditions (Hersh, 1997; Harel, 2008; Demirkuş et al., 2018a; Demirkuş 2019). "With this logic, science has three faces: Natural, cultural and life interface (all other branches of science except mathematics), Evolutionary interface, Mathematical main face (All Disciplines of Mathematics) (see Figure 1).

Figure 1. Relationships between Science, Evolution Science, Natural Sciences, Social Sciences and All Disciplines of Mathematics



3.3. Evolution

The best example of the evolution of living things is the new species that have evolved on earth for millions of years. This evolution is tried to be explained by Darwin's 'The theory of the evolution of living organisms' principles (Barnosky et al., 2011; Longo, et al., 2015).

The good examples of inanimate evolution are explained by the 'Big Bang Theory' about the formation of the universe. In the first stage in the universe, the formation of electrons and hydrogen atoms from plasma and the formation of all light elements from the supernova are very important examples for the evolution of lifelessness (Hoyle et al., 2000; Demirkuş and Gülen, 2017; İnce and Demirkuş, 2019). Based on these two examples, basic information about both living and inanimate must be given in evolutionary science lessons. The evolution of living and inanimate creatures produced in natural and artificial environments should be combined. New definitions and relationships should be determined about these issues. Briefly, information

about the production of elements in the laboratory environment, the production of elements in supernovae, viruses produced from biological bases in the laboratory environment or new species produced in nature should be given under the discipline of the science of evolution (Smith at al. 2003).

4. CONCLUSIONS

The definition equation we have constructed between the relationships of the concepts of science, mathematics, evolution, does not contradict the theories of the Big Bang and the Evolution of Creatures.

Everything has potential as being in energy. However, the beings that appear in the universe are called creatures.

Within the scope of the Science of Evolution discipline; the evolution lessons of living things and inanimate should be given together relationally. In this subject, definitions and relations of new concepts should be developed. For example, what are the limits and rules of the principles of evolution in inanimate creatures?

During all these studies and consultations, it is in a judgment that we feel that evolution, like time, can also be a dimension of the universe.

THANKS

I am grateful to the administrators at Van Yüzüzncü Yıl University, which allows me to work in different disciplines, to the Van Yüzüncü Yıl University Scientific Research Projects Coordination Unit, which supports projects, and to the faculty members who accept assistant counseling in different branches. In particular, I shared my ideas about this study; Prof. Dr. Harun AKKUŞ, Prof. Dr. Cemil TUNÇ, Prof. Dr. Tunay BİLGİN, Prof. Dr. Serhat KOCAKAYA and Prof. Dr. Heybetkulu MUSTAFAYEV, thank you.

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