

# The History of Development of Turkish Elementary Teacher Education and the Place of Science Courses in the Curriculum

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Received 12 August 2006; accepted 16 April 2007

Turkey has more than 130 years of experience of elementary teacher education in formal meaning after opening of the first elementary teacher school. During this time period, approximately in every 10 years there were some major changes based on the level of elementary teacher schools such as middle school, high school or higher education institutes, the number of years of education, and the name and weekly hours of courses. The average percentage of weekly hours of science or science related courses is around 9.69%. The highest percentage of weekly hours of science courses in the history of Turkish elementary teacher schools with the range of 12.1% and 16% belongs to the beginning of Republic or Atatürk era between 1923 and 1938 years. This also shows the main approach of the era of Atatürk to the education as well as elementary teacher education. The lowest percentage of weekly hours of science related courses as 2.1% corresponded to the two-year higher education institutes during 1970s. It shows that this period was the most neglected, and politicized era in Turkish elementary teacher preparation and education. On the other hand, Turkish elementary teacher education has begun to show acceleration in changing and takes its proper place in both qualitative and quantitative meaning, such as increasing the level of elementary teacher education schools to four-year college level institutions and the percentage of weekly hours of science related courses.

*Keywords:* History, Elementary, Teacher Education, Science Courses, Turkey

## INTRODUCTION

The Every nation has its own history of education despite some similarities with others. Generally, the educational history of a nation mainly deals with instructional and educational activities from a historical perspective (Akyuz, 1993, p. 1). In this paper, there is no purpose to give a general summary of the History of Turkish Education but to show the history of Turkish teacher education, particularly elementary teacher education and preparation. In this context, it is

necessary to underline some important events and eras affected elementary teacher education and preparation from historical perspectives. The main purpose of this paper is to examine the historical development of Turkish elementary teacher education and preparation as well as the place and importance of science courses in the whole curriculum from the past to the present. Before the beginning of the history of elementary teacher schools and the place of science courses in Turkey, it would be necessary to give a brief history of Turkish Education History until the opening of the first elementary teacher schools in 1867.

The history of Turkish education goes back to early centuries. In the Turkish history, some important events influenced education, such as; dispersion of Turks from Central Asia to the Indian peninsula, around the Caspian Sea, and the west, and converting to Islamic

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religion in 9th century. When they founded an empire called the Great Seljuks around 10th century in Iraq and Iran, the most important influence seen on the Turkish people was the effects of Islamic religion. Consequently, many cultural and religious elements began to be seen in every aspect of life of Turks. With the newly conquered places and established states, education life and system were almost under the complete influence of Islamic religion and civilization and also, some elements of Persian and Arabic cultures. Like every state, they needed educated people for the sake of state. Eventually, a few numbers of schools (called Medrese) taught some essential knowledge for state affairs and religious purposes could be seen during the Great Seljuk Empire, Anatolian Seljuk State and the Ottomans (Akyüz, 1993). One of the famous of these schools was the Nizamiye Medrese founded near Baghdad in 1067 (Turan, 1969). After the disintegration of Anatolian Seljuk State, the Ottoman Dynasty later became one of the most powerful empires in the history and the same education system survived until 18th century. Until that time, it is difficult to say that a special school designed for teacher preparation was established in the Ottoman Empire. Only during the reign of Sultan Mehmet II, also called Conqueror Sultan Mehmet, in Istanbul there were the medrese students who were supposed to become a kind of elementary teachers were taught some kinds of courses, such as instruction methods but this type of medrese was not seen after Conquer Sultan Mehmet (Ozturk, 1996). To sum up the teachers of low-level schools (mekteps in Turkish) were the heads of mosques (Imam or Hoca in Turkish) in many places. The teachers who were going to teach in medreses (high level schools) graduated from medreses after a long education period and additionally they needed to be certified by certain authorities to become instructor. In the Medreses, in addition to religious courses, some calculation and algebra courses were taught but not science related courses, especially after Conquer Sultan Mehmet era (Adivar, 1991, p. 57). According to some historians, by the late of 16th century, it could be found few scholars dealing with science activities, such as astronomy but they were not well respected by the other scholars. Unfortunately, at the end, some of those famous scholars paid the results of their activities with their lives, for example Molla Lutfi (Bahadir, 1996). In the result, general attitudes toward the people who were dealing with or studying some sort of science related courses, apart from some medical and astronomy courses, were not good and not well respected especially after the last half of 16th century (Akyuz, 1993, p. 53 and 61).

When the power balance began to shift from the Ottoman Empire to the western powers at the end of the last half of 17th century, the Ottoman Empire entered a new state or era called the stagnation period.

After one hundred years later, around the second half of 18th century, the Ottoman Empire realized the military superiority of some European countries. The first western style schools opened during the second half of 18th century were mainly military schools due to reasons mentioned above (Kodaman, 1991, p. 1-2; Adivar, 1991, p. 221; Atuf, 1931, p. 50). However, for these schools there was a need of adequately educated student source. Traditional school system was not capable of providing this kind of students (Kocer, 1967, p. 6-7). The proclamation of decree of Tanzimat (reorders or revisions) in 1839 accelerated these changes in the Ottoman Empire. It was seen a new school type called Rustiye, a kind of middle school, in order to foster students for the schools mentioned above for the first time in the Ottoman Empire (Ozturk, 1996, p. 4 and Kocer, p. 6). Additionally, in 1869 with the acceptance of the decree of the general education policy (Maarifi-i Umumi Nizamnamesi), these kinds of schools began to disseminate throughout of the Ottoman Empire (Akyuz, 1993, p. 162-164). On the other hand, the preparation of teachers for these schools was a strong necessity but there was no special teachers' school for these schools. Finally, it was a turning point in the history of Turkish education that on the 16th of March, 1848 for first time a teacher school was opened for the needs of newly opened middle schools (Ozturk, 1996, p. 4, Kafadar, 1997, p. 96). After this date, the history of Turkish teacher education began to make progress. Even the first years, the school was not enough for quality and quantity for teacher education but it was a beginning. This beginning later made the beginning of other teachers' school called the school of elementary school teachers in 1868 (Akyuz, 1993, p. 158).

#### **The First School of Elementary School Teachers during Reorder (Tanzimat) and First Constitutional Era**

Educational reforms in the Ottoman Empire began from up to down in the second half of 18th century as the classification of the high school or college level military and technical schools. As mentioned above, when the need of educated students before coming to these kinds of schools increased, it was thought to open middle level schools for upper level schools. After opening middle level western style schools, there was a need for teachers. Consequently, it was followed by the opening of the first teachers' school in the history of Turkish education in 1848. Finally, this movement was ended with the revision of traditional elementary schools (Sibyan Mektepleri) and opening a school of elementary teachers on 15th of November, 1868 (Dilaver, 1994 and Bilim, 1998). This school was only for two years and the name of courses are presented in the following table 1.

**Table 1. The name of courses of the first opened elementary teacher schools in 1877 (Akyuz, 1993, p. 158 and Kocer, 1967, p. 24-25)**

Teaching Methods
Calculation
Geography
Persian
Turkish Language and Grammar
History of the Ottoman
Algebra
Writing

Later, the female elementary and middle teachers' school was opened and its courses were almost the same as the male elementary teachers' school's courses. After that, these teachers' schools began to be seen in other major cities, beyond Istanbul, the capital of the Ottoman Empire.

There were almost no science-related courses in the first elementary teachers' schools' curriculums at the beginning. It would be thought that there was no need for science-related courses for teacher candidates in these teachers' schools. Another reason would be that these schools were still under the pressure from the traditional schools because the teachers of these elementary teachers' schools mainly coming from traditional school systems (Medrese) and courses mostly pertinent to religious subjects (Akyuz, 1993, p. 161).

In 1904, middle and elementary teachers' schools were converged under one school as a kind of primary teachers' schools and the level of these schools could be considered as a high school level (Ozturk, 1996, p. 16). The name of courses and their weekly course hours are listed in the table 2 (Kocer, 1967, p. 37 and Berker, 1945).

In 1904, the revised curriculum of elementary teachers' schools included a sort of science course, translated to English as a physical science course for the first time. When compared to the first curriculum of elementary teacher schools, the new curriculum seems to show some elements of western influence as there was a foreign language course and a physical science course. The percentage of weekly hours of physical science course was around 5.4%. However, Hasim Pasha, Minister of Education in 1906, wrote Sultan Abdulhamid a letter in which *Ilm-i Esya* (Physical Science) Course was not a necessary course so that it would be abolished from the program (Akyuz, 1993, p. 220). The reason to abolish the course was that it was considered as an unnecessary course for students.

There was no major change until the Second Constitutional Era (1908). In 1876, as the first time a constitution was promulgated and the duration of this period was only one year. The first Ottoman Parliament

**Table 2. The Name of Courses of Middle and Elementary Teachers' Schools and Weekly Hours in 1904**

The name of Course	First Year	Second Year
The Noble Qur'an and Its Reading	4	3
Turkish and Grammar	3	-
Teaching Methods	-	1
The Art of Fine Hand Writing	-	2
Arabic	2	2
Persian	2	2
French	-	1
Calculation	2	2
<b>Physical Science (<i>İlm-i Esya</i>)</b>	<b>1</b>	<b>1</b>
General Ottoman Geography	2	2
The History of Islam	2	1
Writing	1	1
<b>Total</b>	<b>19</b>	<b>18</b>

was abolished when the Turkish-Russian War started in 1877, and the country began to be governed by the absolute rule of Sultan Abdulhamid until 1908. During this time the number of primary teachers' schools, out of Istanbul, was increased. However, there was no significant change in these schools' curriculum.

### During the Second Constitutional Era

In the late times of the Ottoman Empire, there were several ideas or approaches in order to save the Empire. Generally, some intellectuals, who especially studied in Europe, believed that the Empire could be saved through education and reaching the vast areas of the Empire by increasing public literacy level. Therefore, education reforms began to make progress. One of them was Temporary Primary Education Law accepted in 1913. According to this law, it was planned to open one teachers' school in every province center and in some province centers, teacher's schools for girls (Binbasioglu, 1995 and Dilaver, 1994). However, in this period there were many internal and external problems. The most important one was the First World War. During this time period, also, the number of years of education for the primary teacher schools was increased from three years to four years. There were also some new courses in school curriculum, some of which were related to science area (Ergun, 1996, p. 318). However, this change was not implemented fully due to the First World War. Additionally, the first boarding teachers' schools were thought to be opened in rural areas or

**Table 3. The Name of Courses in the Primary Teachers' School as Weekly Hours in 1913 (Kocer, 1967, p. 53-54)**

<b>Courses</b>	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b>	<b>3<sup>rd</sup> Year</b>	<b>4<sup>th</sup> Year</b>
Qur'an and Religious Knowledge	2	2	2	2
Teaching Methods and Applications		1	2	12
Punctuation and writing rules	5	3	2	
Ottoman language	2	3	2	2
Reading and Memorization	3	2	2	3
French	1	1	1	
Calculation and Algebra	3	3	3	2
The Ways of Keeping Notes on Accounting			3	
Geometry		2	2	1
Geography	2	2	1	1
Cosmography (Astronomy)*				1
History	2	2	2	2
<b>Physics*</b>		2	1	1
<b>Chemistry*</b>			2	
<b>Natural Science *</b>	3	3		
<b>Health Knowledge*</b>				2
Theoretical and Applied Agriculture and the History of Economy	2	3	3	3
Civilization and Law	1	1	1	
Hand Tools Course	1			
Fine Writing	1	1	1	
Music	2	1	1	
Picturing	2	2	2	1
Hand Activities	2	2	2	2
Physical Education	2	2	2	2
<b>Total</b>	<b>36</b>	<b>35</b>	<b>36</b>	<b>36</b>

\*Science/related courses.

villages. In table 3, the name of courses and weekly hours are listed at the above.

This school curriculum seems to be as much as contemporary at its time for primary teachers' school in the Ottoman Empire but as mentioned above, it could not applied due to the First World War. The total number of hours of science related courses was 14 hours a week and the percentage of science related courses was 9.7% (14/143) in the total number of weekly hours of courses for four years. Additionally, the number of primary teachers' colleges was increased to 16 and was spread out to the some major cities of the Ottoman Empire in 1914. It is necessary to remind that these primary teachers' schools seem to be a kind of upper secondary school. However, there was no clear evidence of the kinds of students that could be accepted to this primary teachers' schools and of the category under which this schools could be placed (Ozturk, 1996, p. 27). However, some times these schools were under a department of college level teachers' schools during 1913-14 in Istanbul, according to the official guide and policy of teachers schools prepared by the government (Ozturk, 1996, p. 26). Also, their graduates were mostly

appointed to the elementary schools at that time even their names bear the primary teachers colleges or schools.

Unfortunately, many educational reform movements could not bring about some expected results in education, especially in teacher education. After the promulgation of the second constitution era in the Ottoman Empire, there were many internal and external problems. The most important one was the collapse of the Ottoman Empire as a result of the First World War. As a result of these developments, many elementary teachers' schools in rural area were closed or postponed their instruction due to financial reasons, lack of qualified instructors, internal and external problems such as wars and the disintegration of the Ottoman Empire.

### **Primary Teacher Schools After 1923 (Republic Era)**

After the collapse of the Ottoman Empire, the mainland, Anatolia, was under a threat of invasion by other countries. With the liberation war, Turkey gained

**Table 4. Curriculum of Primary (for elementary) Teachers Schools in 1924**

<b>Courses</b>	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b>	<b>3<sup>rd</sup> Year</b>	<b>4<sup>th</sup> Year</b>	<b>5<sup>th</sup> Year</b>
Religious Knowledge	2	2			
Turkish and Literature	6	5	3	3	3
History	2	2	2	2	
Sociology					2
The knowledge of Motherland				2	
Education and the history of Education				3	4
Teaching Methods and Applications					9
Calculation	3	2	2		
Geometry	2	2	1		
Algebra				2	
<b>Physics</b>		2	2	1	
<b>Chemistry</b>		1	2	1	
<b>Zoology</b>				2	
<b>Botanic</b>		2			
<b>Agriculture/Physiology *</b>			2		
<b>General Health Control and School Health Control</b>				2	1
Cooking*				1	
Geography	2	1	2	1	
Art	2	1	1	1	1
Hand Projects			1		
Writing	2	1			
Music	1	1	1	1	1
Physical Education	1	1	1	1	1
Foreign Language	3	2	2	2	2
Vocational Courses for Girls*	1	2	4	4	4
<b>Total</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>28</b>

\*These courses for only Girl Teachers Elementary Schools

her liberation and independence, under the leadership of Mustafa Kemal. Finally, there was a young republic, founded at the 29th of October, 1923. With the following of establishment of the republic, there were some reform movements in many areas and one of the most important reforms was the unification of education. With this law all schools and foundations related to education were unified under the ministry of national education and traditional schools, medreses, were abolished permanently. The other one was that elementary education was compulsory and free (Kocer, 1967, p. 67).

One of the important aims of the young Turkish republic was to disseminate the basic education to all of the citizens since the majority of people living in rural area were still illiterate. In 1924, the committee of science considering education made some important decisions that 1) the number of grades for elementary schools was five, 2) the duration of elementary teachers' schools was increased from four years to five years, 3) their curriculum was mostly changed and revised based

on the ideas of the young republic. The first curriculum of Primary Teacher Schools could be seen in the following table after establishing the Republic in 1923.

This is the first elementary teachers' schools' curriculum after the foundation of the Republic of Turkey. When two curriculums as in 1914 (Table 3) were compared, some differences can be easily discerned that the percentage of science courses increased from 9.7% to 12.1% (17/140).

The other difference between two school curriculums in 1914 and 1924 was that it showed the first signs of secularization in school curriculums as it decreased the number of religion related courses (Table 3 and 4).

The levels of these elementary (or some times they could be called primary) teachers' schools could be classified as a combination of middle and secondary schools at that time (Dilaver, 1994, p. 32). As mentioned above, the majority of population was still living in rural area, especially in villages. During this time, the newly established republic was inviting some foreign educators

**Table 5. Weekly Hours of Courses of the Primary Male and Female Teachers' Schools in 1938**

<b>Courses</b>	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b>	<b>3<sup>rd</sup> Year</b>
Literature	3	3	3
Pedagogy		2	1
Psychology**	2	2	
The History of Education	2	2	
Teaching Methods and Application			2
Sociology		2	7
History			2
Geography	2	2	2
Mathematics	2	1	2
<i>Physics and Chemistry</i>	4	4	1
<b>Natural Sciences and Health */**</b>	4*/2**	4*/2**	3**
School Health */**	2*	2*	1**
Foreign Language	3	2	
Gymnastics	1	1	1
Hands on Activities	2	1	1
Music	1	1	1
Military information */**	2/1	2/1	2/1
Sowing**	2	1	1
Child Care**		1	1
Home Administration**			1
Drawing**	1	1	1
<b>Total */**</b>	<b>29*/30**</b>	<b>29*/30**</b>	<b>29*/30**</b>

\* For male primary teacher schools

\*\* For female primary teacher schools.

to Turkey such as John Dewey in 1924. In Dewey's report, it was mentioned that for rural areas or villages it was necessary to open another type of village teacher school to meet the needs of villagers (Turan, 2000). This fact led to another discussion to open a different elementary teacher school for village schools in 1925. As a result of this movement, with the minister of education, Mustafa Necati, in 1927 two village teacher schools were opened with a three-year instruction period after elementary school graduation (Kocer, 1967, p. 91). The new village teacher schools' curriculum showed some pragmatist approach in elementary teacher education. This was suggested by John Dewey that education should meet the needs of people according to where they live. Therefore, special attention was paid to agricultural courses and their applications. For example, in 1924 primary teacher schools for male students there was only a two-hour in a week agriculture course but in village teacher schools there was a six-hour-week agriculture course. On the other hand, the ratio of science courses in the village teacher schools seems to be decreased, (compared to) primary teacher schools. For example, the percentages of science courses in primary teacher schools and village schools were 12.1% (17/140 hours/five-year total weekly hours) and 8.6% (10/116 hours/three-year total weekly hours), respectively (Table 4 and Kocer, 1967, p.

91-92). This movement could be called as the beginning of a dual system in the Turkish elementary teacher education.

### **Primary Teacher Schools after Ataturk Era (1938)**

In 1938, elementary teachers' schools were reorganized that their education periods were three years after graduation from a middle school. The curriculum of these schools was as the following.

The total numbers of weekly hours of science related courses in primary teachers' schools for male and female is 14% (13/87) and 16% (15/90), respectively (Kocer, 1967, p. 106-107). This primary teacher school curriculum seems to be the most secular due to no courses affiliated to religion and the highest proportion of science related courses between 14% and 16%.

In the history of Turkish Republic, the period from 1923 to 1938 is generally called Ataturk's era. For the education history of Turkey, this era also means secularization and unification of education (Ozodasik, 1999 p. 44 and 117; Cumhuriyet Doneminde Egitim (Education in the Republican Era), 1983, p. 114). When the Turkish Republic was founded, one of the most important goals of the Republic was to establish a

Table 6. The Weekly hours of courses taught in the Village Institutes after 1947 Revision

Courses	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
Turkish	4	4	4	4	4
General Psychology				2	
Child and Young Psychology					1
Pedagogy (Educational Science)				1	1
General Teaching Method				2	
Special Teaching Method and Application					6
Sociology					2
The History of Education					1
History	2	2	1	1	1
Geography	2	2	1	1	1
Civic		1	1		
Mathematics	5	3	3	3	
<b>Physics</b>		2	2	2	
<b>Chemistry</b>		2	2	1	
<b>Natural Science</b>	2	2	2	2	
School Health					1
Writing	1	1	1		
Drawing or Art	1	1	1	1	1
Hand Work		1	1	1	
Physical Education and National Plays	1	1	1	1	1
Music	2	2	1	2	1
Military			1	1	1
Child Care and Home Administration				1	1
Cooperating					1
Total hours of Agriculture Courses and Applications*	12	10	11	9	10
Total hours of Vocational Courses and Applications*	12	10	11	9	10
<b>General Total Hours in a Week</b>	<b>44</b>	<b>44</b>	<b>44</b>	<b>44</b>	<b>44</b>

\* These courses consisted of different agriculture and vocational courses and their applications such as; Agronomy, Horticulture, Zoo-technique, Bee Keeping, Fisheries, Black Smith, Carpenter, Home Building, Concreting, Weaving, etc.

state based on the contemporary values and to foster and make her citizens think scientifically (Cetin, 2000 p. 664-665, Yilman, 1999, p. 10, Kazamias, 1966, Turan, 2000).

### Village Institutes between 1940 and 1953

For the preparation of elementary school teachers, sometimes called classroom teachers, village institutes have an important place in the history of Turkish teacher education. These institutes have different meanings and functions. Since 1868, elementary teachers' schools passed from different phases or eras. The first elementary teachers schools founded in 1868. A two-year primary teacher school was opened in 1904. A four-year primary teacher school was opened in 1913. A five-year primary teacher school was opened in 1924. A three-year primary teacher school was opened after middle school in 1938 as a high school level. Despite

the changes in duration and curriculum of elementary teachers' schools more than 70 years, they were beyond to meet the need of elementary school teachers of Turkey in 1940. In order to convey the principle of Turkish Revolution and Republic to every corner of the country, the republic needed idealist elementary school teachers who could work in rural areas. The current teachers at that time were not much familiar to rural areas or village life (Turan, 2000). Additionally, teachers who had urban life experiences did not want to go to villages. However, one of the important goals of the young Turkish republic was to educate and elevate life standards of villagers as well as disseminate the principles of Turkish revolution while around 90% of the village population were still illiterate (Akyuz, 1993 p. 339). A different elementary teacher school for village elementary schools called village institutes came to life in 1940 (Dilaver, 1994 p. 34-35 and Dilaver, 1997 p. 6-7). According to Turan (2000), John Dewey's report

upon Turkish Education System suggested that school curriculums should meet the needs of local communities. From this point, according to the law the majority of students of village institutes had to come from village elementary school selected among talented or top graduates. These students had to work in villages for at least 20 years after graduation (Kocer, 1967 p. 116-117). The graduates of village institutes were not only elementary school teachers but also agriculture and health technicians, mechanics, or carpenters of villages (Kocer, 1967, p. 117). From 1940 to 1948, the number of village institutes increased to 22. According to Village Institute Law, a student who was accepted to the institute had to come from a village school and after graduation he/she had to go to a village school at least 20 years compulsory service. Also, instead of regular salary like urban elementary school teachers, they had to use designated agricultural fields by the government in a village to make living. Only a small amount of salary and some agricultural equipment were given to these village school teachers (Dilaver, 1997, p. 73). A few years after the opening of the village institutes, the criticism began for the village institutes mostly related to the load of elementary school teacher. The criticism was that a teacher being able to do all these jobs mentioned above seemed impossible. The weekly hours of courses of these village institutes is given at the table 6.

After elementary school graduation, the most talented village boys and girls were admitted to the village institutes to become an elementary teacher as well as a village trainer or technician with the following 5 years education period with the equivalency of high school graduation. As seen in the table 6, almost half of weekly courses belong to agricultural and vocational courses. However, the percentage of science courses in the village institutes is 8.6% (19/220). This percentage shows a sharp decrease in the ratio of science related courses while giving a special attention to agriculture and vocational courses in the village institutes (Dilaver, 1997, p. 58-59). In 1953, the curricula of primary teacher schools and village institutes were converged under one curriculum as female and male primary teacher schools and village institutes. Additionally, the number of school years was increased from 5 years to 6 years. With these developments and some additional political and education reasons, some of which were that a person could not do all the training and teaching jobs at the same in a village, village institutes were converted to the primary teacher schools and their curricula in 1954. As a result, the village institutes and a special village elementary school teacher preparation era were ended. They took their places in the history of Turkish education. As could be seen in the table 6, in a short time in these schools, a student who graduated from a village elementary school with good grades could be an elementary school teacher as well as a village

trainer with five-year education. Also, a student in a village institute was supposed to learn almost every thing with very heavy curriculum and 44 hour-courses in a week. This approach, in the elementary teacher education, seems to be impossible in today's standards. On the other hand, instead of abolishing village institutes, they could be revised and updated under the conditions of Turkey so that this experience would not have been a historical case in the preparation of elementary school teachers of Turkey.

#### **Six-year Primary Teacher School Era between 1954 and 1970**

With the closing of village institutes, one school and teacher preparation system for elementary schools began in 1954. As a result of closure of village institutes and combining with the current primary teacher schools in 1954, the number of years of primary teacher schools was increased from five to six years. It means that the level of primary teacher schools was the equivalent of high schools. In the table 7, the name and weekly hours of courses could be seen between 1954 and 1970.

After 1954, elementary school teachers began to graduate as a total of 23 hours science courses of six years education. The percentage of science courses at the total courses is 10.6% (23/215). This percentage seems to have a slight increase when compared to science courses in the village institutes (8.6%, Table 6). The reason for this slight increase would be because of elimination of some field base courses and their applications from the curriculum. On the other hand, the general trend for the percentage of science related courses seemed to be around 10% on the primary teacher schools until 1970. The other significant part of this curriculum was the absence of foreign language courses. Before closing high school level primary teacher schools, the number of years of education increased to seven years between 1970 and 1974. The percentage of science courses increased from 10.6% to 13.8% due to increasing of school years and weekly hours of science courses (Dilaver, 1997, p. 156).

#### **Higher Education Era in Elementary Teacher Education as Two-year Education Institutes between 1974 and 1992**

According to the new national education law in 1973, teachers should be prepared and educated at the college level or in higher education after high school graduation. With this new law, elementary school teacher preparation and education at the high school level was ended up in the history of Turkish elementary school teacher education. Some of the current primary teacher schools were converted to normal high schools as a kind of boarding schools called teacher high

**Table 7. The name and weekly hours of courses in primary teacher schools between 1954 and 1970 (Kocer, 1967 and Dilaver, 1997).**

Courses	Years					
	1	2	3	4	5	6
<i>EDUCATIONAL SCIENCES GROUP</i>						
Introduction to Psychology				2		
Educational Psychology					2	3
Instructional Method and Applications					2	6
Educational Sociology					1	2
Organization and Administration						1
Seminar					1	2
<i>TURKISH LANGUAGE AND LIT. GROUP</i>						
Reading	3	2	2	1	1	
Grammar	1	1	1	1	1	
Composition	1	1	1	1	1	1
The History of Turkish Literature				1	1	
Child Literature						1
<i>SOCIAL SCIENCES GROUP</i>						
History-Geography and Social Sciences	4	4	4			
History				2	2	1.5
Geography				2	2	1.5
<i>NATURAL SCIENCES GROUP</i>						
<b>Nature and Science</b>	<b>3</b>	<b>4</b>	<b>5</b>			
<b>Physics</b>				<b>2</b>	<b>2</b>	
<b>Chemistry</b>					<b>3</b>	
<b>Biology and Health Sciences</b>					<b>2</b>	<b>2</b>
Mathematics	4	4	4	4	3	
National Defense				1	1	1
Religion				1	1	
Physical Education	2	2	2	2	2	2
Music	2	2	2	2	2	2
Art (Drawing, Painting, and Fine Writing)	3	3	3	2	2	2
Work and Home Working	6	6	5	5	3	3
Agriculture	3	3	3	4	3	3
Free Studies and Works	3	3	3	3	3	3
<b>Total</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>37</b>

schools and the others were closed. For the first time, two-year education institutes (four semesters) were opened at the junior college level for elementary school teachers after high school graduation in 1974.

The number of two-year education institutes was 50 and mostly opened in the province centers. However, the time period between 1974 and 1980 was the increasing social unrest and many of those institutes could not function properly. In 1981, their numbers were decreased to 17. In the following year, 1982, these education institutes were named as education high schools at junior college level. This is another turning point on the elementary teacher education in Turkey that for the first time the elementary teacher schools were under the university system and not administered and controlled by the ministry of national education any

more (Akyuz, 1993, p. 332). In the following table 8, the name of courses of two-year education institutes are given in 1980 (Akyuz, 1993, p. 333).

In two-year education institutes for elementary school teachers, there was no required science course but only science teaching course as a core course. If an elementary school teacher candidate wants to take a science course, he/she could take a selective science course. When the science teaching course is classified under science course section, the minimum ratio of science course is 2.8% (3/104). This is one of the lowest ratios of science courses in elementary teacher education. One of the reasons for this ratio of science course would be that elementary school teacher candidates graduated from a high school were assumed to have had enough science background. Therefore, it

**Table 8. The name of courses of two-year education institutes or education high schools (Junior Education Colleges)**

Courses	1 <sup>st</sup> Year		2 <sup>nd</sup> Year	
	Fall	Spring	Fall	Spring
<b>General Culture Courses</b>				
Turkish and Composition	2	2		
The history of Thinking		3		
Introduction to the Economy		3		
The History of Revolution			2	2
Foreign Language	2	2	2	2
Research				3
<b>Elementary Education Courses</b>				
Teaching of Life Science				2
Teaching of Turkish			2	2
Teaching of Social Science				3
<b>Teaching of Science</b>				
Teaching of Mathematics	3		3	
Teaching of Religious				2
Music and Teaching	2	2	2	
Teaching of Physical Education and Play	2	2	2	
Teaching of Art, Drawing, and Fine Writing	2	2	2	
Student Teaching*				
<b>General Education Courses</b>				
Introduction to Education	2			
Educational Psychology		3		
Educational Sociology			2	
Curriculum and Methods	3			
Educational Administration				2
Assessing and Evaluation			3	
Guidance				2
Pre-school Education or Special Education		2	4	3
A Working and Technical Education Course (Handcraft, Agriculture, Health, Electric, etc.)	2	2	2	2
A selective course (Mathematics, Turkish, etc.)	3	3	3	
<b>Total</b>	<b>24</b>	<b>26</b>	<b>29</b>	<b>25</b>

\*Approximately 15 days in the fourth semester as a student teacher in an elementary school

was assumed that there was no need for these courses again. On the other hand, these two-year education institutes, later renamed “the two-year education high schools” under universities in 1982 (Yilman, 1999, p. 33 and 61, Basaran, 1994, p. 111) as a junior college accepted high school graduate students who had, mostly, very weak science background and low achievement.

In 1989, with a decision of Turkish Higher Education Council (THEC), for the first time elementary schoolteachers would be graduated with a bachelor’s degree from a college of education (Turan, 1995, p. 13). This change was another turning point in the history of elementary school teacher education in Turkey because for first time an elementary school teacher was going to graduate from a four-year college

of university with a bachelor’s degree. In the following table 9, the name of courses and credit hours of a four-year elementary teacher education department was listed as an example in 1994 and 1998.

Despite some differences based on the names and credit hours of courses of some elementary education departments, generally their curricula were close to each other in 1994, 1998 and 2006. The total number of the credit hours of courses of the college of Usak Education’s elementary education department was 166 credit/hours. Only 16 credit-hours courses belong to science courses including solid science as well as science teaching method courses and their ratio is 10% (16/160). When science teaching method courses are not included, the ratio is 6.25% (10/160).

**Table 9. The name of courses and their credit hours of a four-year elementary teacher education department of College (Faculty) of Usak Education, Afyon Kocatepe University in 1994 and 1998**

The Name of Courses	1 <sup>st</sup> Year		2 <sup>nd</sup> Year		3 <sup>rd</sup> Year		4 <sup>th</sup> Year	
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
Principles of Atatürk and the History of Turkish Rev.	3	2						
General Geography-I/ Introduction to Geography*	2							
Basic Mathematics I and II	2	2						
Teaching of Art, Drawing, and Writing I-II-III-IV	2	2	2	2				
Statistics	2							
Introduction to Education	2							
Computer Using I and II, Computer Assisted Teaching	2	2	2					
Turkish Literature I and II	2	3						
History I and II	2	2						
Teaching of Physical Education and Play I, II and III	2	2				3		
Foreign Language	3	3						
Turkish History		2						
Development Psychology		2						
Geography of Turkey		2						
Geography of Countries			2					
<b>Basic Chemistry*/General Chemistry**</b>			<b>2*/3**</b>					
<b>General Biology I-II*/ Living **/</b>	<b>3**</b>		<b>2*</b>	<b>2*</b>				
<b>Basic Physics I-II*/Basic Physics**/</b>			<b>2*/3**</b>	<b>2*</b>				
Culture of Religion and Conscience and Teaching			2	2				
Principles and Methods of Teaching I-II			2	2				
Teaching of Music I-II-III			2	2	3			
Turkish Culture				2				
Children Literature				2		2		
<b>Science Lab*</b>				<b>3**/2**</b>				
Learning Psychology				2				
<b>Environmental Science*</b>				<b>2**</b>				
Planning and Evaluation in Education I-II					4			
Teaching of Primary writing and reading					3			
Teaching of Mathematics I-II					3	3		
<b>Teaching of Science I-II</b>					<b>3</b>	<b>3</b>		
Teaching of Turkish						3		
Teaching of Social Science I-II					3	3		
Development and Techniques of Educational Materials					3			
Classroom Management						3		
An area of Course Book Critics							3	
Civics							2	
Drama in Primary Education							3	
An Elementary School Experience							3	
Turkish Literature in Republican Era							3	
Health and First Aid								2
Teaching in combined classrooms								2
Traffic Education								2
Guidance								3
Student Teacher/ School Experience I and II		5						5
Selective Course I-II-III-IV					2	2	2	2

\* The science related courses before 1998 revision in an elementary teaching area of a four-year college in Turkey.

\*\*Main Changes happened in the 1998 elementary education program science related courses and science teaching areas.

Note: The remaining courses had some minor changes but the name of courses and weekly credit hours not changed too much. That is why; those changes are not mentioned in this table.

**Table 10. The name of courses and their credit hours of a four-year elementary teacher education department of College (Faculty) of Education, Usak University in 2006**

Courses	Area	1 <sup>st</sup> Year		2 <sup>nd</sup> Year		3 <sup>rd</sup> Year		4 <sup>th</sup> Year	
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
Principles of Atatürk and the History of Turkish Rev.	A	2	2						
General Geography	A		2						
Basic Mathematics I and II	A	2	2						
History of Civilization	A	2							
Turkish I (Written and Spoken)	GC	2	2						
Educational Psychology	TA		3						
Introduction to Education	TA	3							
Computer I and II,	GC	3	3						
Turkish History and Civilization	A		2						
Foreign Language	GC	3	3						
<b>General Biology**</b>	A	<b>2**</b>							
<b>General Chemistry**</b>	A		<b>2**</b>						
Physical Education and Sport Culture	A			2					
Teaching Methods and Principles	TA			3					
Sociology*	GC			2					
Introduction to Philosophy*	GC			2					
<b>Turkish Language I (Syntax and Structure)</b>	A			<b>2</b>	<b>2</b>				
Music	A			2					
<b>Basic Physics **</b>	A			<b>2**</b>					
Environmental Education*	A			2					
<b>Science and Technology Lab Applications I- II</b>	<b>A</b>			<b>1**</b>	<b>1**</b>				
Geography and Geopolitics of Turkey	A				3				
Teaching Music	A				2				
Children Literature	A				2		2		
Art Culture and Teaching	A				2				
Physical Education and Game Teaching	A				2				
Fine Writing Techniques*	A				2				
Teaching Techniques and Material Design	TA				3				
Scientific Research Methods*	GC				2				
Teaching of Mathematics I-II	A					3	3		
<b>Teaching of Science and Technology I-II</b>	A					<b>3**</b>	<b>3**</b>		
Teaching of Reading and Writing	A					3			
Teaching of Civic / Social Science	A					3	3		
Drama in Primary Schools	A					3			
Assessment and Evaluation	TA					3			
Classroom Management	TA					2			
Teaching Turkish	A						3		
Early Childhood Education	A						2		
Public Service Applications**	GC						2		
School Experience I	A						3		
Art Teaching	A							2	
Religion Culture and Conscience Education	A							2	
Traffics and First Aid	A							2	
School Experience II	A							3	
Turkish Literature in Republican Era*	A							2	
Statistics*	GC							2	
Teaching in combined classrooms	A								2
Special Education	TA							3	
Guidance	TA							3	
History Turkish Education*	GC								2
Selective Course I*	TA								2
Student Teacher	TA								5
Selective Course I*	A								2
Turkish Education System and School Management	TA								2
Students with Learning Disabilities	GC								2
<b>Total Weekly Credit Hours</b>		<b>19</b>	<b>21</b>	<b>18</b>	<b>21</b>	<b>20</b>	<b>19</b>	<b>19</b>	<b>17</b>

A: Major Area Courses, GC: General Cultural Courses, TA: Teaching Area Courses (Total in four years is 154 credit/hours)

\* Elective Courses suggested by Higher Education Council

\*\* Science related courses in the latest revision of 2006 elementary education program.

In 1998, with a decision of THEC, the colleges of education in nationwide were reorganized and curriculum of elementary teacher education department became unique so that some minor differences between the colleges of education were ended in the elementary teacher programs (Yilman, 1999, p. 62). With this reorganization, some of courses were renamed, credit hours were changed, and some of them were added and dropped from the elementary teacher education program. These changes would be summarized as the following; the total number of credit hours is 156 credit hours, two new science courses were added as Environmental Science and Science Lab, the total number of credit hours of science courses including science teaching method courses is 19 credit hours and without including them, it is 13 credit hours. The ratio of credit hours of science courses including science teaching method courses are 12.1% (19/156). Almost, behalf of science courses there is approximately 2% increase. The other area courses had the minor changes but these changes seem to be not so important.

The latest revision in the elementary teacher education programs was made in 2006. According to the THEC, the need for this change is some problems arisen from the application of 1998 program and also some necessary updates had to be done after the eight years. The 2006 program could be seen in table 10.

However, the latest program change has shown that the weekly credit hours of science related courses were declined from 19 hours credit to 14 hours credit when it was compared with the 1998 program. This decline could be seen when the ratio and percentage of science related courses within the whole program (9.09%, 14 hours credit science related courses including science teaching courses in 154 hours credit in four years). It is difficult to explain the reason why the ratio of science related course declined in the latest program change in elementary teacher education program of Turkey while the basic scientific literacy of elementary teachers seems to be a common problem in Turkey.

**Summary of the Historical Development of Elementary Teacher Education and the Percentage of Science Related Courses**

Since 1868, elementary teacher education programs, curriculum, duration of educational time have been constantly changed, reorganized, revised and updated in Turkey. The number of total major revisions or updates of elementary teacher education programs is around 12. These changes are mostly based on the duration of education of elementary teacher schools from a two-year middle school level to a four-year higher education level with a bachelor of classroom (elementary) teaching degree. In table 11, the summary of percentages of

science courses and the number of years of elementary teacher schools are given.

**DISCUSSION AND CONCLUSION**

Turkey has almost 135 years of elementary school teacher preparation history and experience from past to present as a formal and specially designed elementary teacher schools, institutes or colleges (faculties). In another word, approximately every 10 years there were changes based on the level of education as middle school, high school, two and four year colleges, the number of years of education, the name and weekly hours of courses.

The history of science, as a human endeavor and enterprise to explain the physical universe, could go back to the beginning of human kind. Historically, scientific activities have not had the same speed and progress throughout human history. Especially after the reform and renaissance movements in Europe, scientific studies got acceleration and many old and false scientific beliefs were changed by means of scientific studies conducted by the very well known scientists. Additionally, those scientific studies found the way of application in the new technological inventions. In the result, the world entered to the new era, called the industrial age. This era had enormous influences on humanity. In the agrarian societies, people mostly live in rural areas and show no need of education. However, with the following of industrial age, the number of people living in urban areas began to increase. Thus there was a need to educate people. People who lived in the industrial age had to be literate at least to survive and compete with the others. The way in which that was

**Table 11. Percentages of science courses and the number of years of elementary teacher schools in Turkey**

Year	Percentage	Duration (as a year)
1877	0	2*
1904	5.4	2*
1913	9.7	4*
1924	12.1	5*
1938	14-16	3**
1947	8.6	5*
1954	10.6	6*
1974	10.6	7*
1979	2.8	2***
1993	10	4***
1998	12.1	4***
2006	9.09	4***

\* After Elementary School  
 \*\* After Middle School,  
 \*\*\* After High School

possible was thorough education. Therefore, public school systems began to spread throughout many European countries around the second half of 18th century. However, it was difficult to find science or science related courses in early public school programs (Aikenhead, 2003). Similarly, in the Ottoman Empire under the western influence, the new public school systems beyond the traditional school systems began to be introduced in the second quarter of 1800s. Nevertheless, the school curricula of those western style schools at elementary and middle levels did not have any science or science related courses almost until at the end of 19th century (Table 1). Consequently, first western style teacher schools opened around the second half of 19th century. Those schools had none of science courses in their curricula. But towards the beginning of 20th century those elementary teacher schools put science courses on their curricula as one of their core courses.

The average percentage of science courses in the elementary teacher schools or college is around 9.69% with the exclusion of the first elementary teacher schools (Table 11). The highest percentage of science courses in the history of Turkish elementary teacher schools with the range of 12.1% and 16% belongs to the beginning of Republic area between 1923 and 1938 or the era of Atatürk. It should be thought that this would not be a coincident. Since one of the main aims of the Young Turkish Republic was to adapt the western values in every part of social life and made her citizens think scientifically, as mentioned previously. Additionally, it could be said that this would be an outcome of positivist influences of close friends of Atatürk as well as Atatürk himself at that time (Milliyet, a daily newspaper, www.milliyet.com.tr on the 29th of October, 2002). However, this trend seems to be not followed after the death of Atatürk. In the specially designed Village Institutes between 1940 and 1954 for the need of village elementary school teachers, the percentage of science courses was decreased because of many different courses from agriculture to health and child care courses (Table 6).

Until 1989, generally between 2.1 and 10% percent science courses are found in Turkish elementary teacher schools or institutes. Especially, after closure high school level elementary teacher schools, two-year elementary teacher institutes or junior colleges have the lowest percentage of science courses as 2.1% (Table 8). There should be different reasons, one of which would be that the students of two-year elementary teacher institutes or junior colleges already high school graduate so that they were assumed to have enough science course backgrounds and the other was the duration of education as two years. However, during this time period generally students placed to the two-year elementary teacher institutes or junior colleges had low

achievement levels and poor science course backgrounds. In the result, the graduates of two-year elementary teacher institutes or junior colleges as elementary school teachers would be considered that they could not have enough science content knowledge or background. This consequence would influence their attitudes toward science and science teaching in elementary schools, as well.

In 1989 with a decision of THEC, the duration of years of elementary teacher was increased from two years to four years. This decision would be a turning point in the history of Turkish elementary teacher preparation because of the history of more than 100 years of elementary teacher schools becoming four-year college level schools in Turkey. Later with a revision, elementary teacher schools became a department under the four-year teacher (education) colleges instead of different four-year college level schools (in Turkey, four-year higher education institutes is classified into two parts as four-year higher schools and four-year colleges or faculties) in 1992. It was thought that with this revision elementary teacher schools got the real place where they deserved in Turkey. In spite of wide range of curriculum and courses in four-year elementary teacher departments under four-year teacher or education colleges, science courses were a crucial part of curriculum as the equivalent of 10% science course (Tables 10 and 11).

With the last changes happened in 1998 and 2006 teacher colleges in Turkey, every teacher's colleges' programs (the name of courses and academic structures of teacher colleges) and curricula (the content of courses) have become unique in the nation wide. Unfortunately, when the percentage of science courses of 1998 elementary teacher programs is compared with that of 2006, the percentage of science or science related courses has again declined from 12.1% to 9.09%. The contents of science courses given to elementary school teacher candidates mostly cover elementary science subjects, experiments, and teaching methods. It would be expected that a graduate from (the new elementary education program at) a four-year teacher college(s) should have enough science content and science teaching method knowledge as well as positive attitudes toward science and science teaching. The next step would be encouraging elementary school teachers or candidates to get master level education in Turkey.

Finally, since the opening of the first elementary teacher school in 1877, elementary teacher education in Turkey has showed change and progress but it seems that there is still no end to look for change.

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