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Transformation in primary school sciences education in the transition process from the empire to the republic: science education in 1924 primary school curriculum

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Abstract

Education and training in the first year of the Republic had been kept as it was in the period of Empire with its former structure and content. The educational system and programs could be designed after the "Canon for the Unity of Education and Training" in 1924. The first curriculums of the primary and secondary schools have formed by modification on the latest programs of primary and secondary schools of the Ottoman Empire. The object of the research is to determine what kind of transformation has become on the "science education for primary schools" For this purpose, both the last curriculum program for "Mekatib-i İbtidaiyye" (The primary schools in Ottoman Empire)and the latest curriculum program for "İlk Mektepler" (Primary Schools in the Republic of Turkey) are examined by comparison. It is proved that "science education in primary education" had gone into a transformation after commenting on the findings obtained from the comparison of the programs and assessments in the publications on the history of education. The curriculum for "science education" in the first program which was approved by the Republic of Turkey is given by transliteration to the Latin alphabet The study has a feature that has important contribution for the future researches on "science education" in the Era of the Empire and The Era of the Republic with this aspect.

Keywords: Science Education in Primary Schools, Science Education in the Ottoman Empire, the First Science Curriculum of the Republic, History of the Turkish Education.

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1. Introduction

Including science education to the schools and studying as a lesson in the Ottoman Empire was happened through the modern military schools which were established for training the military-technical personnel. Medical School and Engineering School were one of the first schools where the lessons for sciences had been educated. The science lessons were given as a basis for medical and engineering lessons and vocational courses in the classes of the high schools (Aslan & Akçiçek, 2015). However, the science courses were not placed in the curriculum of the schools at the primary school level except this kind of vocational school. Science education has included the schools in primary education with the "Regulation for General Education" in 1869 in the Ottoman Empire for the first time. In the curriculum of the "Schools for the children (Mekâtib-i Sıbyaniye)" there was a course named as "Practical Information (Malûmat-ı Nafiayı Cami Risale)" under the "First Part" chapter of the Regulation (Unat, 1964: 97). Although this lesson as Practical Information was identified as an introduction to the science education in many publications (Baymur, 1935; Türkyılmaz, 1962; Okan, 1983; Binbaşıoğlu, 2005), there were not any knowledge or comment on the science courses in the booklet for "Practical Information" lessons which was written by Ahmet Cevdet Pasha through the recommendation of Kemal Efendi the Minister. It is noticed that Islam, the sects of Islam, dispersion, and the population of the religions on earth, the situation of the Muslims all over the world were the subjects of the booklet mentioned above (Ahmet Cevdet, 1286). Also, it is revealed that the course named "Practical Information" couldn't put into practice but stayed on the paper besides not included science education according to the data obtained from the archive documents on the era, a few sources and researches done based on those mentioned below. It has needed to wait a little more to reach the course of "Practical Information" placed in "Regulation for General Education" dated 1869 to a similar content of science education with the curriculum of primary schools of French and the other European countries.

However some regulations have made on education in the Ministry of Münif Pasha in 1892, it has seen that there were not any course placed science education in the schools for three years in Istanbul also both in the primary schools and schools for four years in the villages (Mahmud Cevad, 2002: 233; Baymur, 1936; Akyüz, 2010: 227;). Contrary to this the education period of the schools contains both primary and secondary schools for preparation the children to the "Teacher Schools for Girls (Dar'ül Muallimat)", education period was determined as six years and the course of *"Course for the Instruments and the Practical Information"* for 2 hours per a week for 1st, 2nd and 3rd classes; for 1 hour per a week for 4th, 5th and 6th classes (Mahmud Cevad, 2002: 233). There was also a course named as "verbal information" for first classes in the curriculum of that school. Topics of this lesson were included major parts of human body, names of the animals and plants which were grown on the land, some basic knowledge on health science, things those the children have seen every day and the functions of these materials, colors, day and night, time measurements (minute, quarter, hour, day, week, month, year), weather and the seasons and some information for training of five senses. It was demanded by the teachers that being refrain from memorization, narrating the topics in a tale or story and demonstrating the related things to the children (Baymur, 1936). The curriculum for the "Primary School (Mekâtib-i Sıbyaniyye)" which was made in the Ministry of Saffet Pasha, was kept in the Sultan Abdulhamid Era with a few modifications and was abided to the regulation which was made by Saffet Pasha (Baymur, 1936). On the other hand, however, the course for science was placed in the curriculum of the secondary schools there wasn't any course for teaching the science topics in the curriculum of the "primary schools" which were giving education in the elementary level. For a long time, science education has remained as an area for special purposes, which is the basis of vocational

training in schools providing training for the necessary occupations in certain fields, mainly military technicians and especially military training institutions.

When the relevant literature is examined it is noteworthy that there has not been a sufficient examination of science education in primary and secondary education after the transition from the Ottoman Empire to the Republic of Turkey. In the early years of the Republic, it is seen that the subject of science education was handled very limitedly, and a direct programmatic review has not been carried out. This is because the programs are written in Ottoman alphabet. This research is aimed to eliminate this gap.

1.1. Object and Contribution

The purpose of this research is to determine how the "elementary science education" has changed in the first curriculum with the transition from the Ottoman Empire to the Republic of Turkey. The research aims to provide how the "science education" in "primary schools" was affected from the educational reforms by the transition to the Republic regime, changes, and continuities after the establishment of the Republic of Turkey by comparison between the programs of the era of the "Empire" and the "Republic". The researches that examine the education of science on curriculum level and treat in the scope of the historical development are rare (Gücüm & Kaptan, 1992; Aykaç, Küçük, Kartal Tilkibaş & Keskin, 2011; Ünal, Coştu & Karataş, 2004). However, there is not any research that examines the education of science on the 1924 Curriculum Program for Primary Schools in these rare researches which were examined the education of science on the level of primary and secondary schools from the Ottoman Empire to the Republic of Turkey.

This research could contribute for the researches on "History of Education" or "History of Science Education" for it is the first research on the first curriculum of "science education" and giving the curriculum as an appendix in Latin alphabet also could make possible to evaluate the science educations of both periods comparatively.

The purpose of this research is to determine how the "elementary science education" has changed in the first curriculum with the transition from the Ottoman Empire to the Republic of Turkey. When the relevant literature is examined it is noteworthy that there has not been a sufficient examination of science education in primary and secondary education after the transition from the Ottoman Empire to the Republic of Turkey. In the early years of the Republic, it is seen that the subject of science education was handled very limitedly, and a direct programmatic review has not been carried out. This is because the programs are written in Ottoman alphabet. This research is aimed to eliminate this gap.

The aim of the research is to reveal the structure, reason, and characteristics of science education programs in primary school curricula in 1914 and 1924. For this purpose, answers were searched for to the following sub-goals.

1- The features of the 1914 and 1924 programs are discussed for the following sub-goals:
   -Structure of the program
   -Duration of science education in programs
   -Aims of science educations in programs
   -Contents of programs
   - Textbooks
   -Teaching methods
   -Course tools
2- When the history of science education is examined, no research has been found on this subject. This research is expected to be a guide for the future science education programs.

2. Method

2.1. Research Model

In this research document examination and literature scanning method which are the most used methods in the historical studies (Yıldırım & Şimşek, 2013) are used. Descriptive analyses are provided by analyzing the data which were obtained from the historical data resources of the research and related literature.

2.2. Data Collection and Analyzing of Data

The documents that form the basis of the research were provided from the İzmir National Library and the private collection of the first author of the research. The main resources of the research has consisted from the last curriculum of the Ottoman Empire "Curriculum of the Primary Schools: Proper for the six, five, four and three classrooms with teachers (1330)" and the "Curriculum of the Primary Schools (1340)" of the first curriculum for primary schools of the Republic of Turkey. The contents of both curricula on science education were compared and commented on by analyzing the findings from the related literature. The documents obtained in the research were treated following the approach of "developing of the categories and determining of the analyze unit" recommended by Yıldırım and Şimşek (2013: 227). Developing the categories was determined before according to the object of the research. According to Yıldırım and Şimşek (2013: 228) researchers can start from a theory on the field or categories which they developed before the beginning of the research. These determined categories are "purpose, period, content, method and schoolbooks" directed to sciences education "Content with the sentence or paragraph" is defined as analyzing unit in this research (Şimşek & Yıldırım, 2013: 230).

3. Findings and Comments

The findings obtained from the basic resources and examinations from the related literature have shown that there was an important change in "science education in primary education" that was regulated again after the transition from the Monarchy to Republic. It is understood when the content of science courses in the curriculum program of "Primary Schools" was compared with the content of the course mentioned above in the "1924 Primary School Curriculum" that a comprehensive program was prepared at the first time. Topics related to the "science education" dispersed into the curriculum of the different courses were combined as a whole with the "1924 Primary School Curriculum". The developments in education for science were reflected in the new programs both in Europe and in Turkey. The addition of the new topics which were not included in the former curriculums provided a more comprehensive and integrated "science education" program. The "science education" was given under the title of "Examination of Nature, Health and Agriculture" in the "Primary Schools". The topics which would be taught in the courses were determined considering the development and learning levels of the children, social environment, "location of the school" and the needs of the daily life of the children. With the first curriculums of the Republic regime the changing and transformation of the "science education" will be treated under the titles as the object of the lessons, teaching methods, teaching materials and school books in the light of the obtained findings.

3.1. Duration of the Science Education both in the Empire and Republic Era

In the last curriculum program, it is stated that "science education" was taught under the three courses. The "Course for Instruments" had been started in the first year of the "Primary Period" for 4 hours a week. The course was taught 2 hours in the second year of the "Primary Period". Hours given by 2 hours for a week for "Course for Instruments" in the remaining four years which was the two years of *"The Secondary Period"* and two years for *"The Highest Period"* consisted from the first and second classes of the periods. *"Training of body, Health, Military Training, Stratagem and Target" course* was given 12 hours that means 2 hours for a week in the first and second years of both "*Secondary Period"* and *"Highest Period"* terms for the first and second schools of the periods during the 6 years. This course consisted of the theoretic information, games and physical exercises for protection of the physical and psychological health of the children (Maârif Nezareti, 1330: 77-107). Another course had great importance for the "science education" was "agriculture". This course was planned for totally 12 hours of duration during the six years, two hours per a week in the first and second classes of the "Primary Period*", "Secondary"* and *"High Period" (*Maârif Nezareti, 1330: 54-68). The total duration of these courses has reached to 38 hours on the 12 half years of education.

This period is equal to 3, 16 hours for a week.

In the curriculum of the primary schools which was the curriculum prepared by Republic of Turkey for the primary schools, physical exercises for the physical and psychological health of the children were kept their places as "Training of Body" the "Instruments, Agriculture and Healthcare" Courses were combined as a one course in the title of "*Examining of the Nature, Healthcare and Agriculture*". "*Examining of Nature, Healthcare and Agriculture*" were determined 3 hours for a week for first and second classes; 2 hours for a week for third, fourth and five classes those mean 12 hours for this course. Courses of *"Training of Body"* were appointed as 3 hours for a week during the first three years and 2 hours for a week for the last two years that is a total of 13 hours.

It is found that there is a significantly decreasing on the total course time in the "1924 Primary School Curriculum" which is the first curriculum of the Republic Era when the total course periods which are comprising the "science education" topics compared with the last curriculum of the Ottoman Empire.

3.2. The Objects of the Science Education in the First Curriculums of the Republic of Turkey

However, there were some brief explanations on the objects of some courses in the programs of the Ottoman Empire there was not any explanation on the courses related to the "science education". The objects of the science courses were included with the curriculum of 1924 which was prepared by the Ministry of National education of The Turkish Republic. The object of the Course of the "Examination of Nature, Healthcare and Agriculture" in the "1924 Primary School Curriculum" was stated in the premise of the curriculum as: *"The object of the Examination of Nature is to make examined the animals, plants and related products which were having directly involved with our foods, clothes, residences and general life in their habitats as they were alive". It* can be listed the objects of the "*science education"* basis on the topics of the contents and explanations:

1. To provide children with problem-solving and thinking skills that will enable them to adapt to the environment they live and to overcome the problems they may encounter.

2. To give information to the children on the plants, animals, mines, instruments and nature events where they live in and make them aware of the effects of them on their lives.

3. To give children the awareness and habit of living a healthy life by informing about the organs that make up the human body and their functions in human life, their functioning and what are the conditions that are necessary for them to work smoothly.

4. To provide the children with natural events and their effects on human life and giving nature awareness by enlightening them for the development of their adaptation skills.

5. To inform them about the aboveground and underground richness offered by the natural environment in which they live and to help them make maximum use by making them think through examples about the possibilities of using them.

6. To raise their awareness about possibilities of benefiting from the richness of their natural environments and increasing the precision to nature and clarification the features of the relationships between the human life with the natural environment, industry, technological development.

7. To gain skills of analytic problem-solving habits which is based on observation and experiments for solving the problems in real life.

3.3. Content of the Program:

There is a necessity to comparatively examine the curriculum contents of both eras to comprehend the transformation in the "science education" in primary schools with the transition from the Ottoman Empire to the Republic of Turkey. In the "*Primary Schools"* of the Empire the topics were dispersed into the programs of the different courses as *"Course of Instruments", "Agriculture and Training of the Body", "Healthcare", "Military Practices", "Stratagem and Taking Sight"*. As it is known, the education period of the "*Primary Schools"* was six years. This period was divided for 3 terms as "*Primary Term", "Secondary Term", "The Highest Term*" [Ministry of Education, 1330 (Maârif Nezareti, 1330)]. It would be informative to check on the programs of these "*Course for Instruments", "Agriculture" and "Training of Body, Healthcare, Military Practices, Stratagem and Taking Sights"* courses placed into the program for comprehension of the transformation on the science education with the transition to the Republic of Turkey from the Ottoman Empire.

3.4. Course for Instruments:

This was the lesson that includes the most important part of "*science education*" in the period of the empire, therefore it will be discussed in a little more detail than the other two lessons. The contents and duration of the topics placed into the "*Course for Instruments*" which was introduced into the every term of the "*Primary Schools (Mekâtib-i İptidaiyye)"* as "*Primary Term",* "*Secondary Term*" and "*the Highest Term"* (Maârif Nezareti, 1330: 49-54) could be summarized from the main topics as below:

3.4.1. Primary Term:

The First Grade: Four hours for a week was given to this course in the first grade. The topics were determined as "parts of the external organs of the body", "school and the classroom", "house", "plants", "Animals" and "Foods" which were the issues "examined and discussed" lessons with brief information. However, there was not any emphasis on providing these topics in the program by using the examples from the environment where the school placed as in the 1924 curriculum.

The Second Grade: 3 hours for a week was given to this course in the second grade. The topics for this course in this grade were determined as "examining and discussing" on "Plants", "Animals", "Mines", "Industry", "Natural Events", "Location and Region" this grade.

3.4.2. The Secondary Term

The First Grade: 2 hours was given for a week. The main topics of the courses would be given in this grade were determined as: "Habitations", "Lighting Instruments", "Heating Instruments", "Farming", "Mining" and "Hunting".

The Second Grade: 2 hours was given for a week for this course. The topics would be given in this course are: *"Analogies between the Plants, Animals, and Mines", "Forms of the Objects", "Habitations and type of constructions", "Lighting and Heating Instruments" and "The Foods"*.

3.4.3. The Highest Term

The First Grade: 2 hours for a week was given for this course. The topics in the scope of this course were divided into the units as: *"Clothes", "Paper and Book", "Means of Transportation", "Minings, Animals and Plants", "Human", "How Do We Feed?", "How Do We Inhale?", "How Do We Sense"*.

The Second Grade: 2 hours for a week was given for this course. This year was also the last year of the "Primary Schools" and the topics of the "Course for Instruments" were determined as: *"Examination of Animals", "Examination on the Plants", "Principles of the Natural", "Wind Power", "Heat", "Light", "Electricity".*

It can be understood from the main topics of the course, "Course of the Instruments" seems as a comprehensive course contains the topic on different issues related with the different dimensions of the human life similar to the topics which were placed into the curriculum of the courses of "life sciences", "Science" and "Agriculture" in the curriculum of the Republic era. The course was the frame of all of these courses in the era of the Empire with this feature.

3.5. The Course of Agriculture:

Another course which has had great importance in terms of "science education" was the course of "Agriculture". It was determined that this course would be given in the first and second grades of the *Primary Term*, *Secondary Term* and *The Highest Term* - during the six years of *Primary Schools* of the Empire for 2 hours a week (Ministry of Education, 1330, p. 54-68). Agriculture course was divided into three parts as "*Theories*", "*Operating*" and "*Journal of the Museums and Samples*". Theoretical knowledge on plants and animals which are indispensable for human life were taught in the courses of "*Theories*", the courses of "*Operation*" has given place to practical studies and applications for growing of plants and animals which were taught in the curses of "*Theories*". It was aimed to give the skills for working in the laboratory environments with the plants and animals which were tackled in the courses. Practices were performed in the "*Journals of Museum and Samples*" courses to consolidate and internalize the skills gained in "*Theories*" and "*Operation*". Students could have skills to make observations and experiments related to the theoretic knowledge and to record them by obtaining a sample of a plant or an animal which was tackled in the lesson in the scope of the "*Journals of Museum and Samples*". It was aimed to increase productivity by managing agricultural and zoological activities with knowledge. It was targeting to obtain maximum productivity in the agricultural activities for giving a maximum contribution to both regional and national economies by the well-educated children who were the adults of the future.

3.6. The Course for Training of Body, Healthcare, Military Practices, Stratagem and Sight Target:

This course was given in the curriculums of the first and second grades of the *Primary Term, Secondary Term and The Highest Terms of the Primary Schools of the Empire* (Ministry of Education

1330: 77-107) as 2 lessons for a week during the six years. In these courses which were aimed to maintenance and development of the both physical and psychological wellness of the students, the topics related with the "*science education*" were placed in an important topic under the title of "*Healthcare*" The important knowledge on human anatomy and the organs forming up the human body related with the protection of the physical health were taught in this course. These topics were included in the curriculum of the course "*Examination of Nature, Healthcare and Agriculture*" in "*Primary Schools Curriculum, 1924*".

3.7. The Courses for Examination of Nature, Healthcare, and Agriculture:

The term "*Primary Schools*" in the new educational system of the Republic of Turkey was appointed as a whole for five years. Therefore, programs of all of the courses were planned for five years. The topics related to the "science education" were combined under the title of "*Examination of Nature, Healthcare and Agriculture*" in the "*Curriculum of the Primary Schools, 1924*" of the Republic of Turkey (Ministry of Education, 1340: 38-44). The topics figured to be taught for each grade can be given on the main section titles in summary as below:

The First and Second Grades: In these grades, the course is divided to the "*Flowers of the Season", "Trees", "Vegetables", "Grains, Domestic and Tameless Animals", "Insects", "Birds", "Aquatic Plants and Animals", "Examinations on Our Foods, Clothes, and Habitats", "Examination of the Land Forms", "Examination of Natural Events"* sections. The topics given under these main titles were assigned for teaching them growing of the animals and plans, mainly growing stages of them, their relationships with human, their importance according to the life of human and their economic values on the examples of plants and animals according to the developing and learning levels of the children.

Third Grade: In the third grade it was adopted to reinforce the examinations on flowers, trees, vegetables, animals, domestic and tameless animals, insects, birds, etc. which were growing and living in the environment of the school and continuing some simple agricultural experiences which were taught in the first and second grades. Additional to these the new topics as "*Examinations on local handcrafts*", "*Examinations on Natural Events*", "*Examinations on the Construction of the School*", "*Examinations on Lighting and Heating*" were included to the course.

Fourth Grade: It was appointed to continue to the examinations on animals, plants and natural events with simple agricultural experiences. Also, in addition to these topics as below: "*Knowledge of Human Body – How do we move?*", "*How Do We Feed? -How Do We Sense?*" "*Healthcare Rules and Suggestions: Microbes; Waters; Clean and Dirty Waters; Prevention from the infectious diseases as Measles, Variola, Tuberculosis, Typhus, Cholera, Dysentery, Malaria*", were included to the course. It was also aimed to teach the anatomy of the human body and certain organs with their functions and the main illness could be seen on these organs and the prevention of this illness. It was strongly emphasized to give comprehensive information on human anatomy but being away from the theoretical explanation during performing the topics in the program of this class.

Fifth Grade: It was preferred to continue the examinations on animals, plants and natural events and simple agricultural experiments. The topics were as below: "*Simple and practical technical information and examinations: How Do the Fountains Squirt? How Does the Water Reach to the Top of the High Buildings? How does the Hydraulic Press Work? How do the Ships Swim? How do the Kites, Balloons, Planes, Barometers, Water Pumps, Scales and Bascules Benefit from the Levers? Steam Power and its Simple Application. How do the Boats Swim? How Does the Locomotive Works? How Do We Measure the Heat?", "Simple Observations and Examinations About the Facts of the Image- Simple Experiences and Observations About Glasses, Loupes, Binoculars. Lightning and lightning rods*".

However, the term of primary education was shortened for one year in the Republic Era, it is seen when the content of the topics in the courses related to the "science education was expanded according to the comparison between both curriculums of the Empire Era and Republic Era. While the topics related with the "Science education" were dispersed into the different courses as "Course of the Instruments", "Agriculture" and "Training of Body, Military Practices, Stratagems, and Sight Target", they were combined under the one course as "Examination of Nature, Healthcare and Agriculture", also the new topics which were not in the course were included into the program of the curriculum of the Republic.

The major new topics were "Aquatic plants and animals", "Insects", "Birds", "Flowers of the Seasons", "Trees", "Vegetables", "Domestic and Tameless Animals", "Examinations on Local Handcrafts", those were presented between the related topics "Plants" and "Animals" which were placed in the first and second grades. But the most important innovation in the "1924 Primary School Curriculum" for "science education" was that including the Healthcare topics to the "science education" by taking from the "Training of Body, Sanitary, Military Practice, Stratagem and Sight Target" course. Especially the topics of the fourth grade are interesting. It was placed the anatomical features of the human body, organs and their functions, major disease and illness, teaching the preventing of the illness, developing the awareness to the healthy life for the children were promoted under the titles of "Information on the Human Body" and "Healthcare Rules and the Suggestions". The courses which adding into the program of the fifth class consisted of main physics. The new topics added to the fourth and fifth grades were chosen from the courses studied in the levels of the *secondary schools* and *high schools* by considering the needs and developing and learning levels of the students.

There are two significant differences between these two programs according to Baymur. The first one that is in the 1914 program, the Course of the Instruments were not integrated organically by the comprehension level of the children. The second significant difference is that this curriculum didn't have a function to focus on the instruments and events. The curriculum does not have a function that centers on the things and events in the child's world for the whole education. These two deficiencies were removed largely in the 1924's curriculum (Baymur, 1936). The content of the "Course of the Instruments" in "1924 Primary School Curriculum" has a more proper structure and contents for the children's world and necessities with all of these features.

3.8. School Books

The school books prepared conveniently to the last primary education curriculum of the Ottoman Empire that is "1913 Primary School Curriculum (1913 Mekatib-i İptidaiye Curriculum)" and reflected the contents of the science education topics were written by the authors who were well known and famous persons of the era (even of the History of the Turkish Education) in their fields. The school books which were written for use by the teachers and students in the schools and approved by the Ministry of Education were also the last school books that were used for the science education in the primary schools of the Ottoman Empire. The authors, names and the publishers of these books are listed as below:

Secondary Term (Devre-i Mutavassıta) The 1st Grade

Ebulmuhsin Kemal Bey, *Course of the Instruments in New Style (Yeni Usul-i Eşya Dersleri),* Tefeyyüz,
Fuad Münir, *Course of the Instruments (Eşya Dersleri),* İslâm,
Mustafa Fehmi Efendi, *Course of the Agriculture in New Style,* (*Yeni Usul-i Ziraat Dersleri),* Tefeyyüz,
Hüseyin Kâzım Bey, *Operative and Practical Agriculture* (*Ameli ve Tatbiki Ziraat),* İslâm,

Secondary Term (Devre-i Mutavassıta), The 2nd Grade
Ebulmuhsin Kemal Bey, *Course of the Instruments in New Style (Yeni Usul-i Eşya Dersleri),* Tefeyyüz,
Fuad Münir, *Course of the Instruments* (*Eşya Dersleri),* İslâm,
Mustafa Fehmi Efendi, *Course of Agriculture in New Style* (*Yeni Usul-i Ziraat Dersleri),* Tefeyyüz,
Hüseyin Kâzım Bey, *Operative and Practical Agriculture* (Ameli ve Tatbikî Ziraat), İslâm,

The Highest Term (Devre-i Âliyye), The 1st Grade
Ebulmuhsin Kemal Bey, *Course of Instruments in New Style* (*Yeni Usul-i Eşya Dersleri),* Tefeyyüz,
Fuad Münir, *Course of Instruments* (*Eşya Dersleri),* İslâm,
Mustafa Fehmi Efendi, *Course of Agriculture in New Style* (*Yeni Usul-i Ziraat Dersleri)*, Tefeyyüz,
Hüseyin Kâzım Bey*, Operative and Practical Agriculture (Ameli ve Tatbiki Ziraat),* İslâm,

The Highest Term (Devre-i Âliyye), The 2nd Grade
Ebulmuhsin Kemal Bey, *Course of Instruments in New Style* (*Yeni Usul-i Eşya Dersleri),* Tefeyyüz
Fuad Münir, *Course of Instruments* (*Eşya Dersleri),* İslâm,
Mustafa Fehmi Efendi, *Course of Agriculture in New Syle* (*Yeni Usul-i Ziraat Dersleri),* Tefeyyüz,
Hüseyin Kâzım Bey, *Operative and Practical Agriculture* (Ameli ve Tatbiki Ziraat), İslâm,

The Sample Schools (Numune Mektepleri) 4th Grade
Naime Halid Hanım, *Examination of Nature-(Tabiat Tetkiki* (The First Volume) *,*
Fuad Münir, *Course of Instruments* (*Eşya Dersleri) (Âliyye Birinci),*
Ebulmüslim Kemal, *Course of Instruments* (*Eşya Dersleri) (Âliyye Birinci),*
Mahmud Ekrem Bey, *The New Course of Instruments* (*Yeni Dürus-u Eşya Dersleri) (Âliyye Birinci),*

The Sample Schools (Numune Mektepleri) 5th Grade
Naime Halid Hanım, *Examination of Nature* (*Tabiat Tetkiki)* (The Second Volume),
Fuad Münir, *Course of Instruments* (*Eşya Dersleri) (Âliyye İkinci)*,
Ebulmüslim Kemal, Course of Instruments (*Eşya Dersleri) (Âliyye Second),*
Mahmud Ekrem Bey, *The New Course of Instruments (Yeni Dürus-u Eşya Dersleri) (Âliyye First)*,

Following the proclamation of the Republic, an impetuous reform period has started in this field with the approving of the Law on the unification of the Education (*Tevhid-i Tedrisat Kanunu)* which was arranged to forming the structure and content of the educational system. The curriculum of the courses was determined and accepted school books of these courses were chosen in the 2nd Scientific Committee Meeting. In this process, the most important limitations in the education field were the lack of a sufficient number of schools and teachers and also providing adequate school books under the content of the new programs. The present school books were used until the new school books would be published therefore there were not school books proper to the new curriculum. Those books informed all of the schools by a circular letter by the Ministry of Education. Principles regarding the provision and use of textbooks are also determined in the circular. The school books allowed to be studied by the circular in the "Examination of Nature, Healthcare and Agriculture" Courses were as in the list below (Aslan, 2010: 221-228). Those books are also the first science books that were studied in the schools after establishing the Republic of Turkey.

The 4th Grade
Naime Halid Hanım*, Examination of Nature (Tabiat Tetkiki) (The First Volume),* Tefeyyüz,

Fuad Münir Bey*, Courses of Instruments (Eşya Dersleri) (Aliyye Birinci),* İslâm,
Ebulmuhsin Kemal, *Course of Instruments (Eşya Dersleri) (Aliyye Birinci),* Tefeyyüz,
Mahmud Ekrem Bey*, The New Course of Instruments (Yeni Dürus-u Eşya) (Aliyye Birinci),* Kanaat

The 5th Grade
Naime Halid Hanım*, Examination of Nature (Tabiat Tetkiki) (The Second Volume),* Tefeyyüz,
Mahmud Ekrem Bey, *the New Course of Instruments (Yeni Dürüs-u Eşya) (Aliyye İkinci),* Islâm,
Ebulmuhsin Kemal, *Course of Instruments (Eşya Dersleri) (Aliyye İkinci),* Tefeyyüz,
Fuad Münir Bey, *Course of Instruments (Eşya Dersleri) (Aliyye İkinci),* Kanaat,

However, *"Examination of Nature, Healthcare and Agriculture"* courses placed in the curriculum beginning of the first grade, the school books were determined for the fourth and fifth grades, but any school books for science education appointed for the first, second and third grades. Therefore, the decision was taken that some of the course would be performed without books, in the *2nd Scientific Committee" and* the "1924 Primary School Curriculum" any book name of these courses was not given. Some "Guide Books" to these courses for teachers were prepared. It is seen that except the books of "*Examination of Nature*" by Naime Halid Hanim, all of the other books were the books written for "*Course of the Instruments*". There are very significant differences between the contents of the "Course of Instruments*"* with the "*Examination of Nature, Healthcare and Agriculture"*. Some topics in "*Agriculture*" and "*Training of Body*" courses from the former curriculum of the Empire Era were included into the Curriculum of the Course of "*Examination of Nature, Healthcare and Agriculture*". It is seen that any school book including these topics wasn't chosen in the list of the school books. The most important reason for this situation is that the topics in the curriculum which were determined for the first three grades were related to the plants, animals, professions and daily instruments of the periphery of the school.

3.9. The Teaching Methods

The content of the courses related to "*science education*" has very remarkable features for teaching methods. There is a special emphasis on avoiding mere memorizing and abstract explanations. Also, there was a warning to start to teach from the intermediate circle of the children to achieve success and productivity in the courses. It was demanded that children to learn by direct observation and experiments, and teaching should be based on nature review. With this purpose organizing examination tours with the students in different seasons and times, performing experiments and observations out of the schools, on the streets, rural area, in the garden, in the fields; examining the plants, animals and natural events that they would meet in these environments by the developing and learning levels of the students. It was also demanded that children grow the plants, vegetables, fruits and the other agricultural products as possible as in the garden of the schools or the pots; if it would not possible by bringing them to the places where these products have grown up and had classes in there. It was recommended to examine the animals alive and if it was possible to raise them in poultry houses or aquariums in the garden of the school, it was not possible to examine the living areas by visiting their locations. According to the program, the agricultural knowledge should be given practically as a result of the examination; observation should be made on the lives of the plants and the different stages of the natural events in different seasons. This study was explained in the program with these statements: *"The features of the flowers that will interest the children, examined stage by stage changing by the season. Seasonal flowers – examination of the flowers which we met at home, in the pots, in the gardens or fields (as Wedding Flower, Hibiscus Flower, Poppy, Daisy, Rose,*

Hyacinth, Lilac, Geranium, Tulip). The features of the flowers that will interest the children would be examined stage by stage in every season. Flowers are grown in the garden. What to do to protect the flowers in every season should be taught to the children. The relationship between the children with the flowers, how the flowers live, what are the useful aspect of the flowers etc. (Ministry of Education (Maârif Vekâleti), 1924: 39)". *"The trees bear fruit and trees fruitless (Willow, Sycamore, Poplar, White Bunch, Cherry, Pear, Plum, Apple) in the region where the school is, should be examined in different seasons. Benefiting from trees, beneficial and harmful actions to trees, economic values of trees, duties against trees" (Ministry of Education* (Maârif Vekâleti), 1924: 39-40). *"Examination and cultivation of various vegetables grown in the region of the school (cabbage, beans, broad beans, eggplant, zucchini) in various seasons"* (Ministry of Education, Maârif Vekâleti, 1924: 40). The children will be provided to record with simple pictures, sketches, brief notes and writing on their notebooks the results of the examinations in different issues; they will be provided to make collections related to the other examination subjects and appropriate ones would be kept in the museum of the school. There is no obligation to process the topics of the courses in the same alignment with the program. The alignment could be changed according to the opportunities. They will be planned in a way to do that some of them perform continuously and the others according to the season in a proper time. The subjects examined in the lessons are related to human life, the plants, animals, mines, and objects in the environment where the children live are examined, the plants, animals, mines, and belongings that are not found in the environment they live in are asked only to be mentioned and to be passed without attention.

3.10. Teaching Instruments

It is remarkable that the recommendation for using the living creatures or concrete samples from the real world in their natural environment for the teaching of the topics in the program of the "*Examination of Nature, Healthcare and Agriculture"*. It was demanded to make grown the samples in the proper environment in the school garden (vegetable garden, sera, aquarium, poultry house, stables) for necessary observation and examination, if it is not possible, to go out where they are and to teach in their natural environment. The children would collect plants, trees, stones, mines, etc. samples and plant, and animal collections would be made for this purpose and they would be kept in the museums of the schools. These collections would be used in the following lessons as teaching instruments. Factories, agricultural enterprises, vehicles to transport and other enterprises related to the topics covered in the lessons will be visited, and on-site inspections will be made in person. [Ministry of Education (Maarif Vekâleti), 1924: 38-44]. It is suggested that the natural events should be examined at the time of their emergence, and in the teaching of the subjects that cannot be observed on-site, the use of the related graphics, pictures, and plates.

4. Limitations

The results of this research are limited the last curriculum of the "Mekâtib-i İbtidaiyye", the primary education institutions of the Ottoman Empire and first curriculum prepared for "Primary Schools" of the Republic of Turkey.

5. Conclusion and Discussion

The most comprehensive regulation on primary education after the regularization of "Regulation on General Education" in 1899 has done five years later, in 1913. This regulation which was a copy of the

curriculum of the primary schools in France, was worked out in the period of the Ministry of Emrullah Efendi, but it couldn't pass through from the parliament, therefore, it was put into practice as a legislative decree (Baymur, 1936). The most important progression on the training of science topics on primary education level has emerged with this curriculum program. According to the "*Curriculum of the Primary Schools" of 1330 (1914)* which is the latest curriculum of The Ottoman Empire the primary schools were divided into three stages of two years as "*Primary Term*", "*Secondary Term*" and " *The Highest Term"* The curriculum which was prepared following the structure of the primary schools were designed in two different forms. The topics contained the science education was given in three different courses as *"courses of instruments", "agriculture" and "physical training, Healthcare, military training, stratagem and sighting"* [Ministry of National Education (Maârif-i Umûmîye Nezâreti), 1330].

It was aimed to equip the children with the necessary scientific information aimed being much more better agriculturalists for increasing the quality of the agricultural production which provides economic and sociological development by the courses of science in the 2nd Constitutionalism. The "Courses of instruments", "Account" and "Handcrafts" were the courses for teaching necessary information and skills to the children for commerce and industry. Minister of the National Education Şükrü Bey, has said that teaching and training should be given by practical way in his speech to the Sabah the journal after issuing the "Legislative Decree for the Primary Education" In his speech, Şükrü Bey told that "B*eginning from the Primary School, much more serious practical information would be taught and it would be worked to indoctrinate the knowledge which is the use for agriculture or commerce or industry to them. In our country, which has a very perfect farmer place, to serve the agriculture, the main wealth of which is the neighborhood, to give agriculture information to the farmers' sons, to show the exemption of this science to the children of the farmers who have too much interest in civil service; in particular, it has substantial determination. It is extremely important to serve the agriculture that constitutes the local wealth in our country, which has very favorable land for farming, and to inform the farmer children who are willing for civil service about agriculture and to show the beginning of this science."* Şükrü Bey emphasized the importance of the purpose and importance of the agriculture and instruments courses in the curriculum of the Primary Schools (Ayas, 1948: 195-196).In the era of the Republic, given importance to the presentation of the basic sciences and innovations and developments on technology and as a result of this approach the interest to the courses for science and technology which contain the basic principles, rules and theories here the science and technology based on is increased. It was aimed to educate the experts who provide the national development and the citizens who lead a life more conscious and productive.

Along with the establishment of the Republic of Turkey, a necessity has emerged for reorganization of the structure and content of the educational system for building up the provisioned political and social order of the new state as it was for all of the other fields. During the *"Turkish War of Independence"* all of the efforts were focused on saving the Anatolia from the invasion of the enemies, the reforms and regulations on the education field couldn't be reached to the end. Education and training activities have continued on the programs and books of the era of the Empire and could not be changed for not to be failed in providing educational services. Education and instruction were kept as it was in the first year of the Republic. After enacting the Law of Unity of Education on the 3rd of March 1924, the education system and curriculums were regulated according to the new political and social understanding of the Republic of Turkey. Also, important transformations realized in the expectation directed to the education related to the structure of the new regime and understanding of citizenship and individuals by the new regime. One of the courses which have exposed important changes was the "*course of science*" for "*primary schools*". In the publications on History of Turkish Education and Educational reform, the common approach is that changes in the curriculum were limited with the courses of History, Geography, Turkish, Turkish Literature, Citizenship Knowledge and

Religion (Akyüz, 2004; Cicioğlu, 1985; Ergun, 1982; Ulusu and Aytan, 2018; Aslan, 2019). But neither there is research include a comprehensive assessment on changes in the education of the "science" curriculum for "primary education" and "secondary education" nor an extensive assessment in the literature for Turkish educational history and education for science by the transition to the new regime of the Republic. It can claim as the main reason for the lack of literature that the resources were written by the former alphabet therefore the academicians of science couldn't examine them. This research aims to examine the changes on the field of "science education" linked to the educational understanding which was reconstructed according to the targets of the Turkish Republic by transition from the Empire to Republic by comparison of the last curriculum of the Ottoman Empire with first curriculum of the Republic of Turkey for "Primary Schools". By the way the effect of the transition from the Ottoman Empire to the Republic of Turkey on science education for "primary schools" would be analyzed on changes and continuity for mainly eliminating of the gap in this field. Also reflecting the last curriculum of the "Primary Schools" in the Empire Era and giving the first curriculum of the science education for the primary schools of the Republic of Turkey in Latin alphabet in an appendix can contribute fort he further research could be conduct on this topic.

"1330 (1914) Curriculum of the Primary Schools (Mekatib-i İptidaiye Ders Müfredatı)", remained in force until the preparing of the first curriculum of the Republic without changes because of the erupt of the First World War in 1914 and become a basis for the first curriculums for primary schools of the Turkish Republic (Ayas, 1948: 226; Antel, 1952; Unat, 1964: 40; Cicioğlu, 1985: 91; Ergun, 1996: 204-206; Aslan, 2010; Aslan, 2011: 723, Ulusu and Aytan, 2018; Aslan, 2019). "Science topics" which were determined to be educated in primary schools were under the different courses in the first curriculum of the Republic of Turkey "1924 Primary School Curriculum". To put an end to the confusion of this situation, "science topics" were collected under a lesson in an integrated program with the name of *"Examining of Nature, Health and Agriculture*". The lessons of *Examining of the Nature, Health and Agriculture*" was given for 3 hours of lesson for a week in first and second classes; 2 hours of lesson for a week in fourth and fifth classes in the "Primary Schools" which were organized for five years of education (Aslan, 2011; Maârif Vekâleti, 1340).

The curriculum of the teaching instruction program of the Republic of Turkey was kept as in the era of the Empire in the first year of the Republic. An important development that has been done on the "*science education*" with the first curriculum program was "1924 Primary School Curriculum". The different parts of the science education were given by dispersed in different courses in the "*Primary Schools"* which are the primary schools of the Empire Era. These courses are the "*Course of Instruments"*, "*Course of Agriculture*" and "*Training of body and Gymnastic*". The topics which should be taught in the courses were determined according to the development and learning levels, social environments (the region where the school placed) and the needs of daily life. The topics in the scope of the "*science education*" were gathered up under one course under the name of "*Examination of Nature, Healthcare, Agriculture*" by the "1924 Primary School Curriculum" Thus, with a holistic understanding, the nutrients, tools, and conditions, biological and environmental factors that are necessary for people to survive healthily have been taught together for the first time in a comprehensive way.

In this program, unlike the previous ones, the purpose, method and course tools of the course are mentioned in the form of short reminders even if they were not under a different title. The object of the curriculum of the *"Examination of Nature, Healthcare and Agriculture"* to provide adaptation of the children to the environment and give thinking and problem-solving skills to overcome the problems they would be met. The main principle was stated that the topics that would be processed in the courses should be determined based on the living creatures where the children live and their natural environmental features. The names of plants and animals that are not in the "neighborhood"

of the children are said to be mentioned and not addressed, whereas the plants and animals in the "neighborhood" of the children are processed in all stages in detail. Thus, it is aimed to raise awareness about the effects of these plants on their lives by observing the plants, animals, mines, objects and natural events in the natural environment in which children live.

One of the most important goals of the "*Science education*" is to provide children to live a healthier life beginning from their lives. Therefore, these courses are prepared for raising awareness by informing children about organs and their functions and working in human life and the conditions for their smooth functioning. It is emphasized that a healthy life depends on healthy nutrition, providing hygienically conditions in houses, keeping the environment clean, and protecting the environment. It is the principle to inform the children about the disease that could emerge and the dangers could affect human health in case of the lack of hygienically care.

To make maximum use of the environment in their adult life, the content has been determined for children to recognize plants, trees, fruits, animals, precious metals and their areas of use in their natural environment. Special emphasis has been placed on how they grow, ways to increase their efficiency without harming the natural environment, their economic values, and their meaning in terms of human life. Thus, it is aimed for children to make a conscious contribution to the family, region and country economy during their adulthood.

The programs are designed to enable children to acquire an analytical problem-solving habit based on observation and experiment in solving real-life problems and to learn about the aboveground and underground richness of the natural environment in which they live. The programs are organized in a way that leads to thinking about the possibilities of using them through examples and to develop a consciousness that will help them make maximum use of them. It is stated that to conduct experiments, observations and field examinations in the lessons, it will be beneficial to use herbarium, aquarium, poultry house, and suitable shelters for observation and examination in schools. The plants and animals to be examined in the lessons would thus be brought up directly by the students in the school. The establishment of plant and animal collections related to the subjects included in the program of *"Examination of Nature, Healthcare and Agriculture"*, preserving them in school museums and keeping the records related to them are considered as reinforcement for education. If it is not possible to meet these conditions, it is requested to examine the plants, animals or objects of the course where they are located, and if this is not possible, catalogs containing pictures, graphics, and plates belonging to them are requested. It is suggested that the tools and materials to be used in the experiments in the lessons should be prepared together by the students and teachers at the school, and especially the *"Painting"* and "*Handcrafts*" lessons should be used in this regard. Even today, it is still a very advanced stage in the conditions of the follow-up of such a teaching method, which is extremely difficult to follow. These innovations are still up-to-date as the aims to be achieved before today's science education. The principles observed in determining the content of the program have indispensable features that must be followed in determining the content of today's "science education". The holistic understanding of "*science education*" in educational institutes of Turkey entered with the "*Examination of Nature, Healthcare and Agriculture"* course placed into the "1924 Primary School Curriculum" for the first time. The core of the program is based on education in real life for a real-life principle. Theoretical information that children cannot use in their real life is not included and the environment they live in is based on. The understanding of learning by doing, by living on the work was determinative for appointing the content of the "*Examination of Nature, Healthcare and Agriculture*" just like all of the other courses in "1924 Primary School Curriculum". All of these characteristics were the framework of the transformation of the "*science education*" of the primary schools in the transition from the Empire to the Republic. However, this program remained in force until the primary school programs were reorganized in 1926 and started to be implemented in

1927. "*Nature*" and "*Course of the Instruments*" were included in the "*science of life*" which was the axis course for the first, second and third grades. On the other hand, for the fourth and the fifth classes, "*Course of the Instruments*" were in force again with the topics related to physics, chemistry, and biology. This course taught under this name until the 1936 program, after this the name of the course was changed as "Science of Nature". It may be suggested to consider these research results in the preparation of future science education programs.

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