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The First Assignment And Compulsory Service İn Turkey Since 1980

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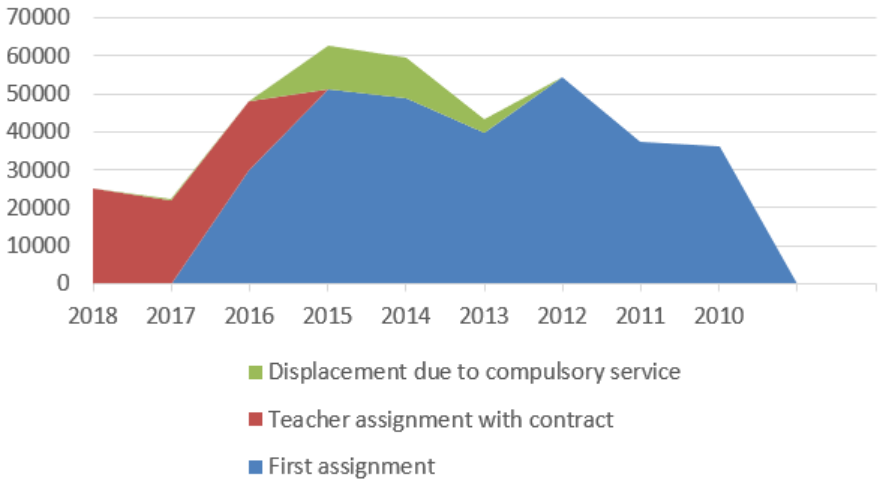
Graphical Abstract



Abstract

In this study, it is aimed to examine the recruitment and rotation practices of the employees working as teachers in the public sector within the framework of legal regulations and those which have been enacted since 1980 have been taken into consideration. This research is a type of document review. The first appointment and rotation clauses in the legal regulations of the teachers' appointment and displacement in Turkey between 1980-2015 were interpreted by comparing them in the study. The said regulations have been reached through the website of the Official Gazette. Even though the entrance of the teachers to the public is started with the exams especially after 2000, it is necessary to have the teaching certificate to be appointed to teaching before or after this date. In addition, teachers are not required to have a qualification. In legal regulations, those who started to work before 1978, before 2000 and before 2010 were exempted from the obligatory service. These exemptions can be assessable as the rules do not show continuity.

Keywords:Teacher, Compulsory service, First assignment, Official school

Highlights

1. How do the initial assignment priorities of teachers vary in legal regulations?
2. How does the rotation applied to teachers vary in legal regulations?

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Introduction

If people lived on a mountain or an island on their own, there would not be a concept called 'the division of labor'. People have begun to live collectively since it became impossible for them to meet their needs alone. This life has forced the division of labor, in a sense, to take part in the task of fulfilling a need of society rather than for each individual to do their own work. The same structure has entered the organization life with the popularity of classical management theory. When considered in this way, the organization can be defined as a coalition formed by its members (Bursalıoğlu, 2002: 15). Every employee has a role in this coalition. When each individual plays the best role in the organization, the efficiency of the organization increases.

Schools are also a kind of organization and the most important human resource is the teacher. The job of the school is teaching, and teachers do this. Therefore, the importance of the teacher is undeniable. Of course, in the school organization, the administrative unit, the support unit or the unit where the education work is carried out must work as a whole. When one of the units does not do its job, it will be difficult for the organization to achieve its purpose.

The teacher is the person who does the teaching work of the school. While a teacher is expected to contribute to the school and education system, educational organizations are expected to meet the teacher's needs (Hoy ve Miskel, 2010: 27). This point calls to mind the basic assumptions of human resources approaches. The first of these basic assumptions is that, organizations are established to serve the people, not to serve the organization. Secondly, the organizations and people need each other mutually. Third, if the harmony between the individual and the system is poor, both have problems. The individual is exploited, the organization is exploited or both become victims. A good fit is useful in both categories (Bolman ve Deal, 2013: 146).

One of the aims of human resources management is to strengthen the harmony between the individual and the organization. Human resources management should include talent, motivation and opportunity-enhancing practices. In schools, the desired outputs from the students can be obtained with the participation, strengthening and increasing motivation of the teachers (Runhaar, 20016: 639). Human resources are the most important source of wealth of the organization and organizations create special units to use these resources more effectively. Human resources unit has a significant impact on the continuous development of the organization (Liebowitz, 2010: 50). Human Resources Management deals with the effective and efficient use of human abilities. Thus, human resources management plays an important role in achieving the objectives of the organization (Omebe, 2014: 26; Mathis ve Jackson, 2008: 4).

Human Resources Management deals with issues such as recruitment, orientation, employment, welfare, training and development, job placement, promotion, job recognition, motivation, awards, performance management, staff turnover and discipline (Omebe, 2014: 26; Liebowitz, 2010: 51). Human Resources Management functions in organizations are divided into two parts: employee oriented and organizational oriented. Employee functions can be listed as training and development, planning, employee selection, performance evaluation, social assistance and assurance, rewarding, remuneration, employee safety and health, and raising. The functions related to the organization can be categorized as establishing relations with the environment and making organizational arrangements (Argon, 2015: 866). All functions of human resources management are not intended to be included in this study. This study will focus on recruitment and rotation of teachers in public institutions. The selection of staff to the organization is the process of placing individuals with the necessary qualifications to the jobs in an organization. Spending too much time on getting the right people to work makes it easy to manage employees. Poor staff selection cannot be compensated by a good education. The real goal of staff selection is to place the right person to the right job (Mathis ve Jackson, 2008: 226). For the recruitment of teachers in Turkey such methods as sortition, tests, and interviews are applied. The manner in which these situations are followed by the regulations is analyzed in details in other sections of this study.

Job rotation is one of the jobs of the human resources department. Job rotation does not mean setting a job description or wage (Ho vd., 2009: 2). Rotation can be defined as repositioning existing human resources where they work best. In other words, it is a vertical and horizontal staff movement. This situation becomes very successful if the institution has a strong career plan and business rotation systems (Itika, 2011: 65). In order to reduce business monotony, ensuring an employee work in different business units is commonly referred as job rotation. Thus, the different skills of the employee can be improved (Mathis ve Jackson, 2008:167).

The organization and the employee should gain mutual benefits from job rotation. The organization should provide assurance to employees of equal sharing, lifelong tasks and participation in decision-making when considering the rotation. This also contributes to the organization. For example, job rotation prevents lack of labor in firms that provide lifelong employment and enables them to be utilized more efficiently than employees working in decision-making organizations. It will be easier for employees to renew themselves with job rotation (Cosgel ve Miceli, 1998: 26). Even in the study which was published in Turkey in 1981 about the assignment and rotation of teachers, it is understood that the teachers are in the expectation of reassuring, closed to outside influences, effective, and economic employment (Açıkalın, 1981: 36). The teacher must be aware of that neither his nor his family's living standards will decrease because of the rotation. Moreover, he must see that the rotation is applied to everyone in a fair and orderly manner. Otherwise, it may cause to a decrease in confidence.

Job rotations offer different opportunities for employees, although there are reservations about job rotation such opportunities as developing new skills, the ability to use existing skills, a better overview of the internal work of other departments and roles, opportunities for the development of knowledge in the institution, reducing the burnout of lower-level personnel, and encouraging employee innovation. Employee rotation has a positive impact on organizational and individual productivity, career development, occupational safety, and organization (Ajusa ve Atambo, 2016: 1358; Dhanraj ve Parumasur, 2014: 682; Magnussen, 2017: 6; Sun, 2016: 1; Zin, Mohd-Shamsudin ve Subramanim, 2013:143). In addition, job rotation has a positive impact on the motivation of the employee while understanding the competence of the employee, increasing their effectiveness and contributing to the organization's creation of a candidate pool for future management positions (Al- Nashmi ve Almoayad, 2015; Zin, Mohd-Shamsudin ve Subramaniam, 2013: 137; Sugumar, 2009: 59; Kaymaz, 2010: 82).

In Turkey, when rotation is mentioned, known especially in the public sphere, a limited tenure, having few changes in the nature of the task, relocation of the employees to perform a similar or the same task in another region can be considered (Yörük ve Günbayı, 2015: 60). In Turkey, it is understood that the teachers working in public schools are included in rotation in terms of physical location rather than job rotation. It may be thought that the aim here is to eliminate the lack of teachers in the schools where certain teachers are needed. In the regulations on the displacement of teachers, it is understood that the compulsory service schools are located in settlements which are far behind in terms of development features (MEB, 2015a). The purpose of rotation applied to the teachers in Turkey could be to provide a more balanced distribution of teachers across the country. Eight years of work limitation in a school has been introduced in the same legal arrangement although it has not been applied (MEB, 2015a). This may be in order to eliminate the burnout of teachers because of working in the same school for a long time or to ensure each school benefit from the experiences of each teacher. In this rotation, it is seen that the rotation in terms of changing the schools that teachers work is applied, not the job rotation. However, that kind of rotation, that is to say changing the schools where the teachers work, has not always been applied because some of the teachers have been exempted and some have been given the opportunity to postpone. The reasons preventing the implementation of human resources management functions in educational institutions, such as rotation, are as follows: political factors to be effective in planning, centralization of planning, employee selection, staffing and in-service training, ignorance about planning, out-of-field employment, lack of resources, failure to establish a system for performance evaluation, the lack of experts and standards to be developed, lack of career planning, lack of standards in promotions, no performance-based remuneration (Argon, 2015: 866).

The compulsory displacement of teachers, that is the distribution of teachers who have been working in certain schools for years and this way the realization of equality between teachers may have some positive results such as ensuring that experienced teachers use their experiences in different schools. On the other hand, the assignment of the teachers to schools like Science, Anatolian and Social Sciences High Schools without having an exam may have some negative consequences such as the decrease in academic achievement in these schools, the partial disruption of the family union and financial loss (Memişoğlu vd., 2015). In addition, the psychology of parents, teachers, and students will be adversely affected by this new situation (Turan ve Sevim, 2017). This rotation applied to the teachers will neither have any contribution to the teachers' having different work experiences nor it will help teachers know different departments related to education or help them look at the system from a holistic perspective. From a systematic point of view, aiming the teachers work in different schools may perhaps contribute to the balanced distribution of teachers. However, changing the workplace disrupts the routines of daily life and causes changes in social relations. It may lead to the feelings of anxiety, uncertainty, loss of control, and challenge (Lu ve Cooper, 1990: 122).

With this study, it will be possible to understand the change of teachers' recruitment and compulsory displacement practices over the years. In this study, it is aimed to examine the recruitment and rotation practices of the employees working as teachers in the public sector within the framework of legal regulations and those which have been enacted since 1980 have been taken into consideration. The relevant articles of the regulations on the appointment and displacement of teachers, which have been published since 1980, have been compared. Previous legislation has not been included in the research. The reason for choosing especially the year 1980 is the hypothesis that there could be the effects of the military coup on the functioning of the public institutions in Turkey. The rotation and initial assignment included in these legal regulations are within the scope of the research. For example, optional displacements are not included in the study. The answers for two questions were sought in the study. First, how do the initial assignment priorities of teachers in the public sector vary in legal regulations? Second, how does the rotation applied to teachers in the public sector vary in legal regulations?

Methods

Research Goal

In this study, it is aimed to examine the recruitment and rotation practices of the employees working as teachers in the public sector within the framework of legal regulations and those which have been enacted since 1980 have been taken into consideration. The relevant articles of the regulations on the appointment and displacement of teachers, which have been published since 1980, have been compared. Previous legislation has not been included in the research. The reason for choosing especially the year 1980 is the hypothesis that there could be the effects of the military coup on the functioning of the public institutions in Turkey. The rotation and initial assignment included in these legal regulations are within the scope of the research. For example, optional displacements are not included in the study. The answers for two questions were sought in the study. First, how do the initial assignment priorities of teachers in the public sector vary in legal regulations? Second, how does the rotation applied to teachers in the public sector vary in legal regulations?

Research Model

This research is a type of document review. The document is any written material that provides information on the subject to be investigated. (Balcı, 2000: 205). Documents contain text and images saved without the intervention of the researchers. Both printed and electronic materials are used in document analysis. Agendas, participants and meeting minutes; guidelines; books and brochures; diaries and magazines; activity programs, letters and notepad; maps and charts; newspapers; press releases; program proposals, application forms and summaries; radio and television program scenarios; organizational or institutional reports; survey data and various public records are used in document review (Bowen, 2009; 27). Document review consists of steps such as accessing the document, checking the authenticity of the documents, analyzing and understanding the documents, analyzing the data in the documents, using the data (Şimşek, 2009: 43). For this purpose, first of all, the regulations concerning the assignment and displacement of teachers were reached via the website of the official newspaper. The relevant regulations were accepted as original because they were taken from the official newspaper. The regulation texts were read and comparisons were made regarding the changes of the texts in the regulations.

Scope and process of the research

The first appointment and rotation clauses in the legal regulations of the teachers' appointment and displacement in Turkey between 1980-2015 were interpreted by comparing them in the study (Meb, 1980; Meb, 1981; Meb, 1990; Meb, 2000; Meb, 2006; Meb, 2010; Meb, 2015a). In 1980, there was a military coup in Turkey and as a result of this coup there was a change in the functioning of public institutions. For this purpose, the year 1980 was taken as a starting date and the comparisons have continued until today.

Analyzing of Data

The said regulations have been reached through the website of the Official Gazette. The relevant regulations were accepted as original because they were taken from the official newspaper. In this study, the first assignment and rotation clauses were compared and interpreted in the legal regulations in force in Turkey between 1980-2015.

Results

Findings related to the first sub-problem

In this chapter, the answer was sought to the question "How do the first/initial assignment priorities of teachers in the public sector vary in legal regulations?"

Article 12 of the 1980 regulation sets out the priorities to be implemented in the appointment process (MEB, 1980). The first assignment in this legal arrangement is listed as follows; those with compulsory service obligations, judicial decisions, new graduates who do not have any problems related to health or compulsory, military or abroad service obligations, those who change their civil servant department/ employee class and those who resign or get retired.

The only change made in this section of the 1981 regulation (MEB, 1981) is the addition of the statement/expression "Those who are obliged to perform compulsory service must certify that they have completed their obligatory service to be reinstated when they resign for the second time".

In the 1990 regulation (MEB, 1990), priority is given to those who will be appointed by test/ an exam, those who are obliged to do compulsory service, those who resigned or who have a judicial sentence to be appointed. These are followed by those who have the necessary health conditions for teaching, those who have withdrawn or considered to be withdrawn from the teaching profession and who are retired but want to return to the profession. In this regulation, the ones who pass the exam have priority.

In the 2000 regulation (MEB, 2000) priority is listed as those who are obliged to do compulsory service, those who are dismissed or who have a judicial sentence to be appointed, those who have the necessary health conditions for teaching, those who have withdrawn or considered to be withdrawn from the teaching profession but want to return to the profession, those who want to be appointed for the first time and finally those who are retired but want to return to the profession. For those who will be appointed for the first time after this date, passing the exam has not been a priority but has been a necessity. In 2006 (MEB, 2006), these regulations are repeated. In the regulation issued in 2010 (MEB, 2010), the quota for the appointments is determined instead of the first assignment priorities. 7% of this quota is reserved for open and inter-institutional first assignment, 3% for open first assignment, internal and inter-institutional first assignment and 10% of the remaining 90% is reserved for the national athletes to be assigned as physical education teachers .7% of the quota is for open and the first assignment between institutions; 3% is allocated to open assignment, the internal and inter-agency first appointment. 10% of the remaining quota was reserved for the appointment of national athletes as physical education teachers. The remaining quota is allocated to the first appointment.

In the regulation issued in 2015 (MEB, 2015a), maximum 1% of the first assignment of teacher staff is used for the reappointment and reappointment between institutions. 10% of the remaining quota is reserved for the appointment of national athletes as physical education teachers. The remaining quota is allocated to the first appointment.

Table 1.
Numerical data on teacher assignment and displacement [1]

	First assignment	Disabled teacher assignment	Teacher assignment with contract	Open assignment, inter-institutional/inter-agency reassignment	Displacement due to an excuse	Optional displacement	Displacement due to compulsory service	National athletes appointment	Assignment of the retired	Reassignments of resigned teachers
2018	-	515	25001	6	35581	117.417	-	-	-	-
2017	-	1319	22026	-	55879	66302	147	-	-	-
2016	29699	498	18506	238	44705	50427	-	63	-	-
2015	51.326	723	-	535	8611	15381	11219	152	-	-
2014	49.002	671	-	1164	28397	17.130	10.329	83	-	-
2013	39.676	311	-	1487	30804	15.315	3555	106	4	-
2012	54507	1	-	1565	30.474	14388	0	74	3	84
2011	37.446	0	-	3238	25060	17121	0	61	-	-
2010	36193	1000	-	3667	19322	24305	-	62	-	-

While the priority of the assignment is mentioned in the regulations until 2010, after this date, a certain ratio has been allocated for those to be appointed. As shown in Table 1, both the first assignment and the contracted teachers are assigned in 2016. After this date, instead of the first appointment, contracted teachers are appointed. Quotas reserved for the appointment of national athletes and open assignment and reassignment of teachers between institutions are not always full. This may be due to the number of people applied for those positions. Due to the 4 + 4 + 4 system introduced in 2012, 84 people have been reassigned. Seven retired teachers were appointed in 2012 and 2013. Apart from these, teachers are also entitled to optional displacement. However, this situation has not been analysed/handled because it is outside the scope of the study.

In this chapter, the answer was sought to the question “How does the rotation applied to teachers working in the public sector change in legal regulations?”

According to the articles 6, 52, 53 and 54 of the 1980 regulation (MEB, 1980); Those appointed to the task for the first time should work for at least three years in a catchment area. However, at least (6) full year studies are mandatory in each catchment area. In addition, each teacher should work in all areas for the period specified in the regulation. The teacher who completes this obligatory service will be able to request the appointment to the place of his/her choice. However, these articles are applied to those who are appointed on 15 October 1978 and later, and it is understood that those who started to work before this date are exempt from obligatory service. In the articles related to the obligatory service of the regulation issued in 1981 (MEB, 1981); while the starting date of employment of the teachers for the obligatory service did not change, the six-year obligatory service fell to three years. In the articles related to obligatory service of the regulation issued in 1990 (MEB, 1990); obligatory service is carried out only in certain provinces. The obligation to work in each region has been abolished. In this regulation, teachers working in non-obligatory service provinces face the obligation to attend obligatory service provinces five years after the qualification to be a civil servant has been taken. In addition, the obligatory service of teachers who has the reason of studying at a higher education instute are postponed, including the duration of the thesis. In other apology groups, this period is limited to two years. The obligatory service start date is 1978. It is necessary to work for at least four years in the provinces which have obligatory service. In addition, teachers whose branches are not required in obligatory service provinces are not subject to obligatory service.

[1]Prepared using the Ministry of National Education activity reports (MEB 2012, MEB 2013, MEB 2014, MEB 2015b, MEB 2016, MEB 2017, MEB 2018)

In the items concerning obligatory service of the regulation published in 2000 (MEB, 2000); The Republic of Turkey is divided into three catchment regions, it is understood that there is three years of obligatory service in the third catchment area or four years in the second catchment area. Obligatory service of teachers with educational reasons are postponed, including the duration of the thesis. In other apology groups, this period is limited to three years. However, it is foreseen that the teachers who have marital status work in the D and E district service areas of the province for five years to complete their obligatory service. Furthermore, it is stated that those who started their duty before 11 June 2000 are exempt from obligatory service. In the regulation published in 2006, the date on which the teachers are included in the obligatory service, the three regions and the working time in these regions are not changed. However, the right to be exempted from obligatory service is given to all teachers working in the D and E districts for five years. In addition, physically disabled teachers and teachers whose spouses are martyrs are also exempted from obligatory service. Obligatory service of teachers would be postponed as long as they documented the continuing apology. However, it is stated that the obligatory service of the teachers who study in graduate programs will not be postponed.

In regulations issued in 2010 (MEB, 2010), Turkey is divided into three catchment regions and six sub-catchment areas. Of these, 4, 5 and 6 service catchment areas are defined as the places where teachers will fulfill their mandatory working obligations. The obligatory service duration of the 4, 5 and 6 catcment areas of the the third catchment region were determined as 5, 4, 3 years, respectively. The obligatory service working time of the 4, 5 and 6 catchment areas of the the second catchment region were determined as 6, 5, 4 years, respectively. The obligatory service working time of the 4, 5 and 6 catchment areas of the the first catchment region were determined as 7, 6, 5 years, respectively. However, this obligation has been introduced for those who began to work after May 6, 2010. In the previous regulation, the exemption for the physically disabled has been changed to those who are deprived of at least 40% of their working power with the physical disabilities. Teachers whose husbands are martyrs are also exempted from obligatory service. Obligatory service will be postponed as long as they certify that their excuses of related to martial status and health reasons are continuing. However, it is stated that the obligatory service of the teachers who study in graduate programs are not postponed. In addition, the obligatory services will be postponed until his and his wife's military service or candidacy is resolved. If the spouse is dead, their obligatory service will be postponed until the next appointment period.

Also in the regulation issued in 2015 (MEB, 2015a), Turkey is divided into six sub-catchment areas of the three catcment region. Of these, 4, 5 and 6 sub-catchment areas are defined as the places where teachers will fulfill their obligatory services. In addition, although the obligatory service is completed, the service points of the teachers who go on working in the obligatory service regions will be given incremental service points. The obligatory service times of the 4, 5 and 6 catchment areas of the the third catchment region are determined as 5, 4, 3 years, respectively. The obligatory service working times of the 4, 5 and 6 catchment areas of the the second catchment region are determined as 6, 5, 4 years, respectively. The obligatory service working times of the 4, 5 and 6 catchment areas of the first catchment region are determined as 7, 6, 5 years, respectively. However, this obligation has been introduced for those who began to work after May 6, 2010. While the obligation to work is postponed due to martial status and health reasons, it is not postponed for thosewho are studying in a graduate program. Those who are deprived of at least 40% of their working power are exempted from obligatory service in this regulation. In previous regulations, teachers whose husbands are martyrs are exempted from compulsory service. This exemption status has been extended to include the spouses, children and parents of public servants and soldiers who are martyred or in the disability due to terrorist acts.

As seen in Table 1, no catchment area transfer is made in 2010-2012 due to the obligatory service. The most important reason for this is that before May 6, 2010, teachers are exempted from catchment area transfer due to obligatory service. Between 2013 and 2015, catchment area transfer based on obligatory service was implemented. While it is 3555 in 2013, this number increases to 11219 in 2015. Considering the fact that the teachers who are employed until May 2010 are exempt from obligatory service and the working period in the first region is considered as three years, it can be assumed that the number of teachers to be subject to catchment area transfer due to compulsory service is low in 2013. When we look at the first assignment numbers of the teacher, in 2012 the first assignment of the teacher reaches 54507 due to the 4 + 4 + 4 system. Therefore, the number of catchment area transfer related to obligatory service increases in 2015 as well. In 2014, 49002 teachers enters the system through initial assignment, but in 2017, the number of teachers whose catchment areas are transfered due to obligatory service is only 147.

This may be due to the fact that the obligatory service can be made in the first catchmnet region, the obligatory service is postponed due to an apology and a group of teachers is exempted from being a relative of martyr and ghazi or having health reasons excuses. Since the number of teachers whose catchment areas are transfered due to the obligatory service for the years 2016 and 2018 could not be reached, no comments are made for these years. In article 48 of the regulation published in 2015, 8 years of work limitation is introduced in the same school. This may have been due to the increase in the number of optional catchment area transfer of 15381 in 2015 to 50427 in 2016, to 66302 in 2017 and to 117417 in 2018.

Discussions and Conclusions

In the 1980 and 1981 regulations (MEB, 1980; MEB, 1981), the first assignment order is listed as follows; those with obligatory service obligations, judicial decisions, health, military service, overseas, new graduates who do not have compulsory service obligation, changing office, dismissal, retirement. In the regulation issued in 1990 (MEB, 1990), priority was given to those appointed by the examination, whereas in 2000 and 2006 regulations (MEB, 2000; MEB, 2006) priority was given to those obliged to compulsory service. In the regulation issued in 2010 (MEB, 2010), the quota was determined instead of the first assignment priorities. Of these quotas, 7% was allocated to open-assignment and the first assignment between institutions; 3% was allocated to first open assignment, the internal and inter-agency first appointment. 10% of the remaining quota was reserved for the appointment of national athletes as physical education teachers. The remaining quota was allocated to the first appointment. In the regulation issued in 2015 (MEB, 2015a), maximum 1% of the first assignment teachers quotas were used for reappointment and reappointment at between institutions. 10% of the remaining quota was reserved for the appointment of national athletes as physical education teachers. The remaining quota was allocated to the first appointment. Until 2010, when the priority of the assignment is mentioned in the regulations, a certain ratio has been allocated for those to be appointed after this date. The rates other than the first assignment may not have been implemented due to the lack of applications.

Even though the entrance of the teachers to the public is started with the exams especially after 2000, it is necessary to have the teaching certificate to be appointed to teaching before or after this date. In addition, teachers are not required to have a qualification. Those who are graduates of department of education are taken written and oral exams. According to this exam, a qualification order is made. However, teaching should be considered as a profession that demands stage art or competences in different fields. For example, if a teacher plays an instrument, has a priority in different sports or mind games or has a drama ability, it does not matter in the first appointment.

The trainee teachers think that with the Public Personnel Selection Examination (KPSS), a qualified teacher cannot be selected, it should be taken into consideration in the factors other than the examination, and that the KPSS is insufficient to measure the teaching skills. However, according to a random selection, they perceive the assignment as a more reasonable way of making appointments (Atav ve Sönmez, 2013; Erdem ve Soylu, 2013; Memduhoğlu ve Kayan, 2017; Sezgin ve Duran, 2011). In addition, as in Japan, the time limitation of certificates can be provided to make teachers adapt themselves to the current conditions. In addition, prepared portfolios as applied in the Finlandia can be used in appointments (Gül, 2016: 70).

In legal regulations, those who started to work before 1978, before 2000 and before 2010 were exempted from the obligatory service. These exemptions can be assessable as the rules do not show continuity. In addition, exceptions such as this may adversely affect the trust of education workers in the organization. It is understood that the organizational trust level of the education managers who had to face catchment area transfer is negatively affected (Eroğlu, 2016) and even in 1981, teachers had the expectancy of faithful and free from external effects employmnet. (Açıkalın, 1981: 36).

While in the regulations published in 1980 and 1981 (MEB, 1980 and MEB, 1981) there was the obligation to work in all regions, in the regulationspuplished from 1990 to 2006 the obligation were issued in certain provinces (MEB, 1990; MEB, 2000). After 2006, the compulsory schools of each province were defined (MEB, 2006; MEB, 2010; MEB, 2015a). When rotation was mandatory in all regions in 1980, mandatory employment obligations were introduced in areas where there were difficulties in terms of teacher employment since 1990.

Teachers may evoke the idea of avoiding this practice because of the disruption of the rotation application from time to time and giving priority to those who start before certain dates. Teachers are able to use the conditions specified in the articles that defer the compulsory service to get rid of the compulsory service. In 1990 (MEB, 1990), it was possible to postpone educational excuses including the duration of the thesis, while in other excuse groups this period was limited to two years. In the regulation issued in 2000 (MEB, 2000), the mandatory services of those with educational excuses including the duration of the thesis were postponed, while in other excuse groups this period was limited to three years. In addition, it is foreseen that the compulsory services will be completed by working for five years in the D and E catchment areas of the province for those who have marital satatus reasons. In the regulation published in 2006 (MEB, 2006), the date on which the teachers were included in the compulsory service, the three regions and the working time in these regions were not changed. However, while the right to be exempted from compulsory service by working for five years in the D and E catchment areas of the first region is given only to those who have a spousal excuse in previous arrangements; this right has been granted to all teachers in this arrangement. Teachers with excuse situation will postpone their compulsory services as long as they document that they continue to be in a state of mentioned excuse. However, the excuse of education does not affect the postponement of compulsory service. The regulation issued in 2010 (MEB, 2010) imposes mandatory service exemptions for those who are deprived of at least 40% of their work force with physical disabilities. Teachers whose spouses are martyred are also exempted from compulsory service. The compulsory services will be postponed as long as the teachers document that their excuses and health reasons continue. However, the educational excuses does not affect the postponement of compulsory service. In addition, compulsory service of the taechers whose spouses are candidates of civil servant or doing their military services will be postponed until this situation changes. The compulsory services of the teachers whose spouses have been dead will be postponed until the next appointment period. In the regulation issued in 2015 (MEB, 2015a), the obligation to work is postponed due to spousal and health reasons and is not postponed for educational excuses. Those who are deprived of at least 40% of their working power are exempted from compulsory service in this regulation. In previous regulations, Teachers whose spouses were martyrs were exempted from compulsory service. This exemption status has been extended to include the spouses, children and parents of public servants and soldiers who are martyred or in the disability due to terrorist acts.

Rotation may become impractical as the number of regulation articles that grant an exemption to rotation application increases. There are some negative opinions related to rotation such as the disruption of the family, settled order and social structures of the employees, the appearance of the fragmented families, the change of the environment and colleagues, the emergence of communication and adaptation problems, the problems related to the education of children, delaying the formation of the spirit of being a team, harm to the organizational culture and the individual lives, anxiety, uncertainty, loss of control and the emergence of emotion (Arslan ve Direk, 2017; Kayıkçı, Yörük ve Özdemir, 2015; Lu ve Cooper, 1990; Tunçbilek ve Karakavuz, 2017; Yılmaz vd., 2012). However, there are also positive opinions that employees will create new environment, new experiences will be obtained, with a new source of motivation will bring new dynamism to institutions, institutional blindness can be prevented, information will be renewed and institutions will become more active and efficient (Arabacı ve Sağlam, 2012; Kayıkçı, Yörük ve Özdemir, 2015; Yörük ve Günbayı, 2015).

Ministry of National Education emphasizes that teacher rotation should be carried out for reasons such as filling of norm positions, accumulation of teachers in specific regions, teacher demands and equality in education (Şahin vd., 2016: 269). As it is seen in Table 1, it is understood that the exemption of compulsory service for teachers caused no change in place due to compulsory service between the years 2010-2012. Between 2013 and 2015, rotation based on compulsory service was implemented. In 2013, this number was 3555 and in 2015 this figure increased to 11219. When the system operates normally, teachers will be replaced by other teachers. In this application, the organizational trust will not be harmed. In 2017, the number of rotated teachers due to compulsory service is only 147. While this may be affected by the completion of compulsory service in the service areas of the first catchment region in 4, 5 and 6 sub-catchment areas, and the request to postpone the obligatory service because of the excuses, a group of teachers may be exempted due to reasons such as being a martyr, a veteran, or a health condition. In fact, these types of exemption may also prevent the functioning of the system. Instead of this system, having compulsory working schools in all provinces, it is possible to apply compulsory service at the provincial level rather than at the country level.
In addition, Article 48 of the regulation published in 2015 as a different rotation application, although not implemented, was brought to work limit of 8 years in the same school.

This may have been due to the increase in the number of optional displacements of 15381 in 2015 to 50427 in 2016, to 66302 in 2017 and to 117417 in 2018. Failure to implement the rules imposed, sometimes applied and sometimes not implemented, may constitute the idea that they are treated according to individuals and will adversely affect organizational trust.

Recommendations

In the first appointment of the teachers, not only the kpss exam, but also the art, sports or talents in different fields can be brought to the forefront. The obligatory service obligation of teachers should be bound by a rule, applied and should not be changed frequently. Rotation application should be converted from workplace rotation to work rotation. For example, units such as measurement and evaluation, curriculums, planning, experts and headteachers can be established in the education zones and rotation can be applied. Thus, teachers will protect themselves and their families from concerns that may arise due to ground rotation. For the places where teachers do not want to go due to their level of development, applications like wage increase can be brought.

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A Comparative Analysis of the Studies in the Field of Lifelong Learning in Turkey

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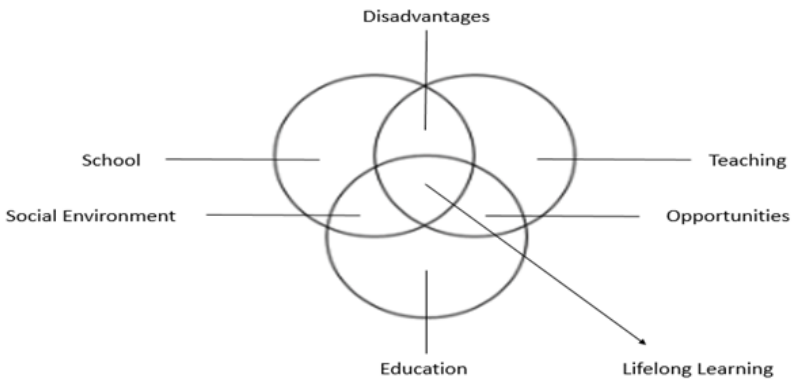
Graphical Abstract



Abstract

Lifelong learning has become very important in the 21st century. Technological developments, increasing literacy rate and easier access to information are among the factors affecting this situation. Our country is making great efforts in the process of entering the European Union. Within this scope, many projects are produced and courses are opened by non-governmental organizations. In this study, a comparative analysis of the studies carried out in the field of lifelong learning in our country since 2000 has been made. In this study, document analysis was used as a research method. 127 graduate theses were reached as research sample. The findings of the research were subjected to descriptive and inferential statistics. As a result of research, subject areas, sample types, research methods and so on. classifications and suggestions have been made for many areas.

Keywords:Lifelong learning, comparative analysis, document review.

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Introduction

Rapidly developing and changing technology and the resulting new information, not only in the social and cultural spheres, but also in the political sense is causing great changes (Aksoy, 2013). These changes naturally make it compulsory for individuals to receive education not only in their school life but throughout their lives. Because people need to prepare themselves for the society they live in and these rapid changes (Çatal, 2019). According to Knapper and Cropley (2000), the world is developing rapidly in economic, social and cultural fields. For this reason, having lifelong learning skills is to keep up with the changes brought about by the new information age. It is also important to increase living conditions to welfare levels (Adabaş, 2016; Özgür, 2016; Aydınlı & Avan, 2017).

With the effect of rapid changes and developments in every field, individuals can adapt to their new roles in society through education and adapt to change (Bağcı, 2007). As a natural consequence of this situation, the importance of education and learning is increasing day by day (Demirel, 2011). The fact that the basic information that people will need in their lives is not considered in place requires that the education systems update itself by constantly putting new ones on this information and that the educated individuals have the information required by the age (Poyraz, 2014). Otherwise, people will not be able to use the information they have acquired during their life (Çatal, 2019).

Lifelong learning is a concept that encompasses learning practices in the educational process. Lifelong learning is never an alternative to education offered in educational institutions (Samancı & Ocakcı, 2017). However, it can be argued that the information deficiencies experienced during this period have been completed and new accumulations have been added and contributed to the development of existing knowledge. Lifelong learning is a process that develops the learning capacity and skills of an individual throughout his or her life (Bulaç, 2019).

In this context, lifelong learning enhances not only sociality, personal development and active citizenship, but also competitiveness, the ability to use information communication technologies and workforce. Not every individual can achieve the level of self-realization. There are difficulties in this process and different factors affecting the learning process (Yılmaz & Ertuğrul Akyol, 2017; Bulaç, 2019). Learning environment, learning style, age, motivation for learning, cultural structure of the society and teacher as a role model are considered among the factors affecting lifelong learning during formal and non-formal education (Syslo, 2004; Yılmaz, Gülgün & Çağlar, 2017). Lifelong learning has begun to attract great interest all over the world, and has become an element that people seek in the new millennium. Continuity of learning is becoming more and more difficult due to new information. The competence required in the information society today is to develop the ability to follow the information that is growing much faster than the previous years and to use this information more effectively (Avan, Akbaş & Gülgün, 2019).

Undoubtedly, as a role model, teacher variable, helping learners to determine their own goals and evaluate their own processes, preparing environments to create awareness about how to access and use the information they need, being the source of motivation in the learning-lifelong learning process it has vital importance compared to other factors depending on having responsibilities such as role model by exhibiting behaviors that show learning needs (Oral & Yazar, 2015; Yılmaz, 2018). In this context, in order to be prepared for the results of the change process in a globalized information society and to prepare individuals for the future as lifelong learners to cope with change, prospective teachers who will be teachers of the future should be lifelong learners (Şahan & Yasa, 2017). The aim of this study within the scope of lifelong learning: since 2000 in Turkey is to analyze the work done since the examination and comparison of the different variables.

Within the scope of this study, the following questions were sought:

1. What are the rates of graduate studies in the field of lifelong learning?
2. What issues have been studied in the field of lifelong learning?
3. What are the sample types in the field of lifelong learning?
4. What kind of work has been done in the field of lifelong learning?
5. Which methods have been preferred in the studies conducted in the field of lifelong learning?
6. What have been found as a result of studies in the field of lifelong learning?

Methods

Document analysis method was used in this study in which studies conducted in the field of lifelong learning were examined. Document analysis is mainly used in studies that adopt qualitative approach. Document analysis is intended to make a general evaluation and conclude by reaching a large number of data (McMillan & Schumacher, 2006). In this study, 127 postgraduate thesis studies conducted from 2000 to today have been examined. The findings of the research were subjected to various classifications. In making these classifications, the evaluators first worked separately, then the classifications were discussed and combined.

Results

In this study where the studies conducted in the field of lifelong learning were examined, firstly the graduate education rates were examined. Table 1 shows the rates of graduate studies.

Table 1. Graduate study rates

Year	Master's Degree	f (%)	Doctorate	f (%)
2006	1	0,90	-	-
2008	6	5,41	-	-
2009	1	0,90	1	6,25
2010	1	0,90	1	6,25
2011	2	1,80	1	6,25
2012	4	3,60	1	6,25
2013	2	1,80	-	-
2014	8	7,21	1	6,25
2015	6	5,41	4	25,0
2016	10	9,01	2	12,50
2017	20	18,02	2	12,50
2018	15	13,51	2	12,50
2019	35	31,53	1	6,25
Total	111	100	16	100

A total of 127 studies have been conducted in the field of lifelong learning since 2000. Of this study, 16 were doctoral studies and 111 were postgraduate studies.

Table 2. Topics covered in the field of lifelong learning

Year	Topics	
	Master's Degree	Doctorate
2006	• Lifelong sports	-
2008	• Behavior change • Communication in a foreign language • Introduction to lifelong learning • European Union membership • Public education centers • PISA results	-
2009	• Public libraries	• Opinions of prospective teachers
2010	• Basic competence areas	• Adult education policies
2011	• Teachers' perception of competence • Vocational and technical education	• Foreign language education
2012	• LLP Comenius programs • Lifelong value • Information technologies • Professional development of art educators	• Interactive e-workshop applications

Continued Table 2

Year	Topics	
	Master's Degree	**Doctorate**
2013	• Cognitive robots experiential learning • Opinions of public education center managers	-
2014	• Use of open course materials • Factors affecting lifelong learning • Examination of public education centers • Opinions of the executives • Learning skills of prospective English teachers • Teachers' lifelong learning trends • Status of teachers supported by their institutions • Technology self-efficacy of classroom teachers	• Factors affecting lifelong learning
2015	• "Let Schools Get Life" project • Individual innovative skills of teachers • Lifelong learning trends of teachers • Lifelong learning competencies of classroom teachers • Lifelong learning trends of university students • Lifelong learning and technology addiction	• Selection of wastewater treatment systems • Awareness of vocational high school students • Problem solving skills and lifelong learning • Lifelong learning policies
2016	• Lifelong learning trends of teachers • Social emotional learning • Key competences of graduate students • Prison institutions Lifelong learning trainings • Women's struggle against poverty • Autonomous learning and Lifelong learning • Opinions of public education center managers	• Teacher training programs and lifelong learning • Lifelong learning trends of teachers
2017	• European Union comparison of lifelong learning policies • Lifelong learning status of employees • Flexible employment and Lifelong learning Opportunities • Lifelong learning skills of primary school students • İSMEK lifelong learning center activities • Comparison of classical and integrated education model • Technological leadership of school principals and lifelong skills • Lifelong learning in historical series • Lifelong learning services in universities • Lifelong learning skills of people in local governments	• European Union Lifelong learning policies

Continued Table 2

Year	Topics	
	Master's Degree	**Doctorate**
2018	• Career development desires of classroom teachers • Individual proficiency levels of physical education students • ISMEK lifelong learning activities • Effective lifelong learning activities • Lifelong learning results with social network analysis • Evaluating the relationship between lifelong learning tendencies of teacher trainees and information literacy skills • The relationship between teachers' scientific epistemological beliefs and lifelong learning competencies • Investigation of teachers' lifelong learning competencies and innovation levels • Lifelong learning competencies of trainees in adult education	• Perceptions of middle age and elderly individuals about the age and assessment of lifelong learning needs
2019	• Relationship between lifelong learning and family support levels of families • Examining the personality types and lifelong learning competency perceptions of social studies teacher candidates • The tendency of teachers working in public and private schools towards lifelong learning • From past to present lifelong learning in Turkey • The contribution of family participation studies implemented in preschool education institutions to lifelong learning skills of parents • The effect of pre-service teachers' perception of digital citizenship on lifelong learning attitudes • Examination of life-long learning tendencies of prospective teachers • The use of libraries as a place of socialization in lifelong learning	• Serious and indifferent leisure participant university students' curiosity and lifelong learning tendency

Table 3. Classification results by sample type

Year	Master's Degree	n	f (%)	Doctorate	n	f (%)
2006	• Adult (Individual)	1	0,90	-	-	-
2008	•University Student •Document review •Adult (Individual)	1 4 1	5,41	-	-	-
2009	• Prospective teachers	1	0,90	• Manager and staff	1	6,25
2010	• Document review	1	0,90	• Document review	1	6,25
2011	• Students • Teachers	2	1,80	• Document review	1	6,25
2012	• Document review • Teachers	3 1	3,60	• University Student	1	6,25

Continued Table 3

Year	Master's Degree	n	f (%)	Doctorate	n	f (%)
2013	• Document review • Manager and staff	2	1,80	-	-	-
2014	• Document review • Adult (Individual) • Manager and staff • Prospective teachers • Teachers	1 1 2 1 3	7,21	• Prospective teachers	1	6,25
2015	• Document review • Teachers • University Student	2 3 1	5,41	• Document review • University Student • Prospective teachers	2 1 1	25,0
2016	• University Student • Teacher • Adult (Individual) • Prospective teachers	2 2 2 4	9,01	• Manager and staff •Document review	2	12,5
2017	• Document review • Teachers • University Student • Manager and staff • Adult (Individual)	4 5 5 2 4	18,02	• Teachers • University Student	1 1	12,5
2018	• Document review • Adult (Individual) • Manager and staff • Prospective teachers • Teachers	3 3 2 5 2	13,51	• Prospective teachers • Teachers	1 1	12,5
2019	• Adult (Individual) • University Student • Document review • Teachers • Manager and staff • Prospective teachers • Students	6 11 7 4 2 3 2	31,53	• University Student	1	6,25
Total	-	111	100	-	16	100

When Table 3 is examined, it is seen that different samples were determined in the studies. The sample preferences of the researchers were intense; adults, prospective teachers, teachers, university students, managers and staffs and document review. Table 4 gives information about what kind of studies are carried out in the name of lifelong learning

Table 4. Types of studies in the field of lifelong learning

Year	Topics	
	Master's Degree	**Doctorate**
2006	• Sports and health	
2008	• Literature review • European Union activities • Survey and analysis • Studies on academic and country achievement	
2009	• Professional qualifications • Teacher opinions	• Foreign language education • Adult programs
2010		
2011		
2012	• Information technologies and vocational training	• Digital evaluation applications
2013	• Cognitive robots and public education	
2014	• Education materials • Factors affecting lifelong learning • Teachers opinion Technology self-efficacy of classroom teachers	• Factors affecting lifelong learning
2015	• Individual innovative skills • Lifelong learning trends • Lifelong learning and technology addiction	• Problem solving skills • Lifelong learning policies
2016	• Social emotional learning • Women's struggle against poverty	• Lifelong learning trends of teachers
2017	• European Union comparison • Flexible employment Comparison of classical and integrated education model • Lifelong learning services in universities	• European Union Lifelong learning policies
2018	• Same studies	• Trends and Innovations
2019	• Same studies	

Table 5. Methods used in research

Year	**Research Methods**	**f**	**%**
Quantitative	Experimental	5	3,94
	Descriptive	18	14,17
	Survey	8	6,30
	Comparison	11	8,66
	Correlational	6	4,72
Qualitative	Descriptive	40	31,50
	Case Study	7	5,51
	Critical Studies	5	3,94
	Case Science	11	8,66
	Historical Analysis	5	3,94
	Meta Analysis	8	6,30
	Compilation	3	2,36
Total		127	100

When Table 5 is examined, it is seen that the researches are conducted intensively considering qualitative approaches. In addition, descriptive and document-based studies are often preferred.

Table 6. Decisions made as a result of research

Research Results	f	%
For lifelong learning, the community needs to be informed.	15	11,81
There should be economic support and project assistance for lifelong learning.	39	30,71
There are many obstacles in the lifelong learning process.	9	7,09
Lifelong learning should be supported to bring individuals into society.	26	20,47
Private organizations and public institutions should offer more opportunities for lifelong learning.	12	9,45
Teachers and prospective teachers need more training in lifelong learning.	7	5,51
Lifelong learning should not be limited to the school. Society should be able to reach all segments.	8	6,30
In terms of lifelong learning, more countries should be compared with our country. In this way, similarities and differences can be revealed more easily.	5	3,94
The basis of lifelong learning is to ensure the development of individuals in every aspect.	6	4,72
Total	127	100

Discussions, Conclusions and Recommendations

In this study, where the studies conducted in the field of lifelong learning were examined comparatively, the answers to six different research questions were sought. Firstly, the rates of the studies conducted at the graduate level were examined. When Table 1 is examined, it is seen that the studies conducted are mostly at the master's level (n = 111) and very few studies are performed at the doctoral level (n = 16). The studies conducted at the graduate level did not receive much interest until 2015. After 2015, there was a big increase. It can be said that the reasons of this situation are the activities of our country in the process of entering the European Union and the projects and grants provided in the field of lifelong learning. The studies carried out at the doctoral level remained at low levels. Because the study of lifelong learning at the doctoral level requires a good scientific background.

When Table 2 is examined for the research subjects, it is seen that the study subjects are grouped under the following headings. These include: Lifelong sport, behavior change, Information on lifelong learning, European Union membership, public education centers, PISA results, public libraries, core competency areas, views of teachers and prospective teachers, approaches to trends, LLP programs, lifelong learning values, interactive workshops, vocational and technical education, professional development and career planning, use of open course materials, factors affecting lifelong learning, programs that support lifelong learning, projects that enable schools to participate in life, individual innovation skills, attitudes of classroom teachers, activities of public education centers, comparison of educational models and classroom environments.

When the results of the research were analyzed by sample type; It is seen that adults, university students, prospective teachers, teachers, managers and staffs are frequently preferred to examine documents. Considering the fact that lifelong learning activities are developing especially in our country, it is natural that there are more studies on document analysis. The fact that harmonization and accreditation activities are intense during the transition to the European Union is another factor explaining this situation.

When the methods used in studies conducted in the field of lifelong learning are examined, it is seen that qualitative and quantitative studies are mainly used. The studies carried out considering quantitative approaches; experimental, descriptive, survey, comparison and correlational studies. The studies carried out considering qualitative approaches; descriptive, case study, critical studies, case science, historical analysis, meta-analysis and compilation studies. When Table 5 is analyzed, it is natural that the number of descriptive studies is high as a result of the high number of qualitative studies. Within the framework of the research results, the following recommendations can be made:

1. Conducting studies with wider sample and larger stakeholders,
2. Extending the research process to employees in lifelong learning institutions,
3. In our country, it may be suggested to carry out analytical studies in order to determine the situation of lifelong learning.

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Use of Technology in Measurement and Evaluation: Electronic Portfolios

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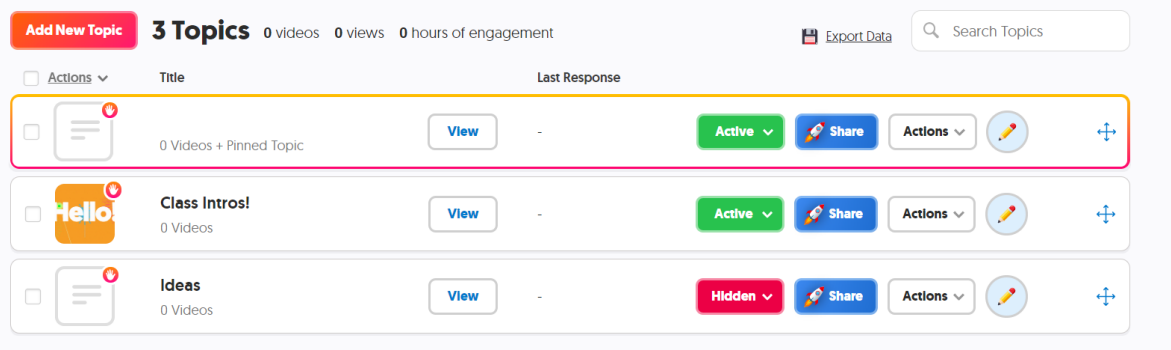
Graphical Abstract



Abstract

The rapid increase of scientific knowledge makes it diffucult to keep pace with. At this point, technology has become to guide us. Using technology for our needs and to access scientific knowledege has been adopted by all segments of society. Thus, it is easier to understand the rapidly developing and changing world. One of the areas where technology is effective is education. Technology reshapes both traditional relationships between teachers and students and the educational environment. The use of technology in education comes up with different examples in each part of the lessons. Traditional assessment and evaluation approaches are far from measuring high-level thinking skills. Alternative measurement and assessments are process-based methods which place students on center, help them express their ideas,and allow them to involve actively in all processes of learning. It is a known fact that alternative measurement and assessment techniques are insufficient in Turkey and the world. Technological pedagogical field knowledge research has emphasized the gap in this field in recent years. Portfolios are important tools in a process-oriented assessment. Electronic portfolios offer a lot of convenience for both the learner and the evaluator compared to traditional portfolios. In addition, the evaluator can reach full and realistic results about the learner .The study was carried out with 48 students with different socio-economic characteristics who participated in the project “I learn about nature by exploring from Microworld to Macroworld in the Ilgaz Mountain National Park- 3, which was realized within the scope of TÜBİTAK 4004 Nature Education and Science schools support program in 2016-2017 academic year. 30 students actively participated in the study and were able to create an electronic portfolio via the flip grid site during the training period. The students recorded 60-90 seconds of videos about the education and recorded them in the system. Project practitioners actively evaluated the training process and provided feedback using multimedia environments. In this way, whether the participants can achieve the related gains and the missing aspects of the training process were examined from a different perspective.

Keywords:Flip grid, technology, measurement and evaluation, electronic portfolio.

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INTRODUCTION

Today, the rapid increase of scientific knowledge makes it difficult to follow. The rapidly changing world and developments in information technologies force changes in all areas of life and people to adapt to the change. Especially education is one of the most affected areas of technology. During education process; it is possible to see the traces of information technologies in all areas from pre-class preparation to evaluation.

Measurement and evaluation is an indispensable part of education (Heritage, 2007). Traditionally, measurement and evaluation has been considered as a process that begins with the end of teaching (Graue, 1993). Traditional measurement and evaluation approaches are inadequate to measure knowledge and comprehension levels in Bloom taxonomy and to measure high level cognitive skills. This only meets the level of remembering and directs the students by heart (Sönmez, 1992; Ataman, 1992; Torrance, 1968; Rıza, 1999; Sungur, 1992; Tezci et al, 2003). Measurement and evaluation is carried out in order to determine the success of students and education in the teaching and learning process, to identify deficiencies, to reveal weaknesses and strengths of the curriculum and to monitor the development of the student (Toptaş, 2011). However, measurement and evaluation are often used as a complement. (Türnüklü, 2003).

Educational reforms in the world have brought about some changes in our country. The main aim of the new curricula has been to train individuals who are the center of the learning with the skills of 21st century and come up with solutions to the problems around them. In most of the new approaches, individual differences and the meaning of each student's knowledge come to the forefront (Yetkin & Daşçan, 2006). In order to meet these expectations, the educational environment should be rearranged, the measurement and evaluation should be shaped to measure the process. The aim of the process, called as an alternative measurement and evaluation in the literature, is not only to give grades to the students but to monitor the progress and determine the deficiencies of the students in a timely manner (Eren Yavuz, 2005). In order for the measurement and evaluation to be meaningful for both the student and the teacher, it is necessary to make the student and the teacher a part of the process. Thus, a full evaluation can be made about the process (Akkoç, 2012). If the student establishes an emotional connection with his / her learning, the probability of failure is very low. At the same time, every student needs to be successful. Alternative measurement and evaluation approaches allow the student to actively participate and to express clearly what they think. In this way, students' motivation to the course is provided and high-level cognitive and affective skills are measured (Yıldız and Uyanık, 2004; Hodges and Ark, 2005; Stiggins, 2007; Kuran and Kanatlı, 2009).

Portfolio and e-portfolio which are not used commonly in Turkey have been in use in primary, secondary, high schools, universities even at master and doctorate levels for the purpose of measuring and evaluating. Electronic portfolios are tools designed for presentation purposes in order to determine the development of an individual or group over time. Electronic portfolios provide information not only about the learner's development but also how he / she performs the learning. E-portfolios allow the student to create new knowledge based on his / her experience and to develop himself / herself by creating new relationships between unrelated topics in the learning process. (MacDonald et al., 2004; Özyeğiner, 2006). Electronic portfolios are a good evaluation tool and are used as a kind of self-evaluation tool using the reflective feature of the system. (Yılmaz et al., 2018; Karaoğlan and Ertaul, 2010; Dipace, 2009).

Technology is a product of creativity. Effective and creative thinking can be developed by using technology. It is a fact that there is not enough work on the use of technology measurement and evaluation. (Karamustafaoğlu et al., 2012). With the introduction of smart boards in the classroom, the use of technology in measurement and evaluation has started to increase but it is often used only for results-oriented evaluation(Adıgüzel et al.., 2011). Due to the rapid advances in information technologies. there is a trend towards the use of the alternative measurement tools such as electronic portfolios . It will also facilitate the teacher's assessment as it will include the results of successful learning and provide the student with feedback and correction in the process. (Davis ve Ponnamperuma, 2005). However, the negative thoughts about the use of information technologies in our country make the use of electronic portfolios difficult. Due to insufficient technological infrastructure in our country, problems are experienced in practice. Therefore, it is not widely used in our country (Yaşar, 2010; Höçük, 2012; Polat ve Köse, 2013).

Social networking sites are the most popular means of communication and correspondence today. People can log in to social networks with their own username and share pictures, videos, audio or text.

Social networks can be used by people for promotion and friendship purposes, as well as for educational purposes. Most of the students use the internet every day and Access social media. Research on the use of social media in education has shown that students support active, creative, collaborative, questioning and problem-solving skills called 21st century skills (Gülbahar et al., 2010; Brady et al., 2010). However, age is an important element in the use of social media for educational purposes. Users over the age of 45 use social media only for communication (Tiryakioglu and Erzurum, 2011; Baris and Tosun, 2013).

In this study, the education period of a project is aimed to assessed through electronic portfolios. The Project's name is " I learn about nature by exploring from Microworld to Macroworld in the Ilgaz Mountain National Park- 3". It is within the scope of 4004 nature and science schools supported by TUBITAK, For this purpose, social media applications Flip Grid and Kahoot were used. One of these applications, Flip Grid allowed students to create electronic portfolios. Kahoot enabled students to answer test questions online.

METHOD

As a research method, , one-group posttest ,one of the experimental designs ,model was used. The project was implemented in 2016-2017 academic year with 48 students with different socio-economic characteristics. 30 students actively participated in the study and were able to create an electronic portfolio with the flipgrid website during the training. The students recorded 60-90 seconds of videos about the education and recorded them in the system. Project practitioners actively evaluated the training process and provided feedback using multimedia environments. Furthermore, the activities performed at the end of each day during the project implementation process were assessed with kahoot application. The opinions of students and teachers were taken.

Study Group

The study group was determined by stratified sampling method (Kılıç, 2013). In this context, 48 students were selected in the 2015-2016 academic year. 24 students from the regional boarding schools in Kastamonu province, 4 students from the Child Care Houses affiliated to the Ministry of Family Social Policies, 10 students from the central district and 5 students from the villages in the the central district, were selected in terms of their academic success. In the data, the students selected from the Care Houses were evaluated among the Central district students.

Table 1: Distribution of sample by school type and gender

		Girl	Boy
School Type	Boarding school	14	9
	City center	11	9
	Village schools	3	2

When the demographic characteristics of the participants were examined, the 58.3% are girls, 41.7% are boys, 47.9% are from Regional Boarding Schools, 41.7% are from Central district students and 10.42% were from village schools.

Table 2: Distribution of parents by educational status

	Primary	Secondary	High School	University
Level of Father Education	16	10	10	11
Level of Mother Education	25	8	6	8

As can be seen in Table 2, 35.4% of the fathers of the students are graduates of primary school, 20.8% are graduates of secondary school, 20.8% are graduates of high school and 22.9% are faculty or college graduate. 54.2% of the mothers are from primary school, 16.7% are from secondary school, 12.5% are from high school or equivalent schools and 16.7% from faculty or college.

Data collection tool

The qualitative data used in this study were collected by using the flipgrid application, which is one of the multimedia products that the participants recorded online using videocast technologies, which is one of the Web 2.0 tools. With this application, all kinds of feelings and thoughts of the students participating in the nature camp can be recorded and shared on the internet.

Data analysis

Content analysis method was used in the analysis of qualitative data. Two different analyzes were performed in the study of Flipgrid application. These are students' use of computer technologies and teachers' views on the evaluation process.

RESULTS

Only 63% of the participants were able to participate in the process. The most important reason for this is students' inability to use technology and lack of technological equipment. 80% of the students who created the portfolio said that the electronic portfolio application was very entertaining and enabled them to express themselves freely. Teachers stated that electronic portfolios provide convenience for evaluation. With the Kahoot application, the participants divided into three groups were provided to reinforce the knowledge they learned.

When the electronic portfolios were analyzed, the results were explained within the themes; (1) The most interesting activities and (2) The benefits of the camp.

1. Most interesting events
It was determined that the activities that attracted the most attention of the students participating in the nature education camp were field trips, art workshop activities and telescope observation of the sky.

2. Benefits of the camp
2 a. Entertaining
The students who participated in the nature camp stated that the activities were appropriate and instructive for their own levels and that they learned by having fun in all activities.

The colorful bird houses we built for the little birds were a very entertaining activity. All living things have a right to life. # Ö3

It was very exciting to try to find wild animal footprints in the field. Biodiversity and wildlife activity was very enjoyable. # Ö21

Ö3 and Ö21 emphasized that nature education is very impressive for them in terms of their answers. In addition, the students' involvement in the process and the search for wild animals found in nature are very important for them in terms of their personal development and their perspective on life.

2.b Increasing environmental awareness
As I joined this camp, my respect for the environment increased. I got more conscious. # Ö11

I learned in this camp that we should take only pictures from nature and leave our footprints. We live together on this Earth with other all living things. We should not pollute our environment and remember that other living things have the right to live. # Ö12

All living things are like a ring of a chain. The order will continue as long as all the rings are together. # Ö1

I will share the information I have learned in this camp with my family, friends and teachers. # Ö9

The students of Ö11, Ö12 and Ö1 mentioned that their views on the environment have changed through camp and it made possible for them to realize that many living things survive in the forests. As the students emphasize in their portfolios, it was found that their sensitivity to the environment increased

3. Improving friendship and communication skills
I have made new friendships with people from many schools. I made good friends. # Ö27
The entire project team involved in the camp took care of us. University professors chatted with us. They answered questions we were curious about. # T18

Ö27 and Ö18 students emphasize that these activities are important for making new friends. It was also found that students increased their communication skills, which are considered among 21st century skills.

CONCLUSION AND DISCUSSION

According to the data obtained, electronic portfolios were found to be useful tools for education. When used effectively during the training, it is possible to examine the participants' achievements and their missing aspects from a different perspective.

In order for assessment to be meaningful for both the student and the teacher, it is necessary to make the student and the teacher a part of the process. Thus, a full evaluation can be made about the process (Akkoç, 2012). In this study, 63% of the students were able to participate in electronic portfolio and kahoot activities. Although most of the individuals participated in the evaluation process, an important part has not been participated yet. This is an indication that our country is still inadequate in terms of technology. Many of the advantages of the technological age are still difficult to achieve and are insufficient in terms of use. The most important reason for this may be the insufficiency of the information infrastructure given in schools.

Thanks to their portfolio, students can demonstrate their knowledge, emotions and behaviors. Therefore, learning and evaluation of the process have different importance in many respects. Alternative assessment approaches allow the student to actively participate in the center and to express clearly what they think. In this way, students' motivation to the course by providing high-level cognitive and affective skills are measured (Yıldız and Uyanık, 2004; Hodges and Ark, 2005; Stiggins, 2007; Kuran and Kanatlı, 2009; Avan et al., 2019).

In this study, the responses of students through electronic portfolios are examined and measures are taken to organize, develop and be more effective in the activities in nature education. Thus, a self-improving system emerges with an innovative approach.

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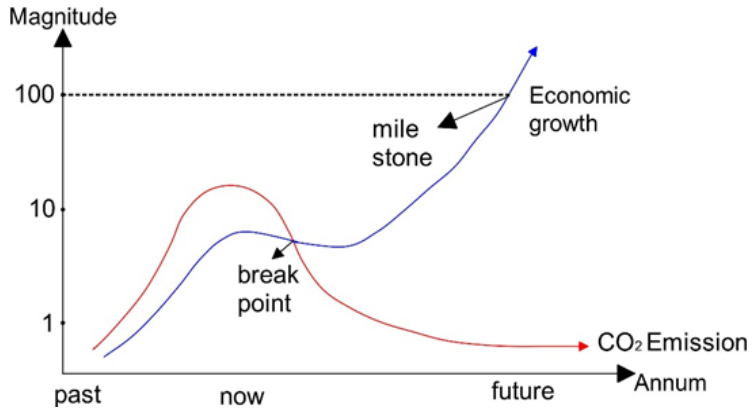
Do population and economic growth really effects pollution?

[1.] **Bahattin AYDINLI**

Graphical Abstract



Abstract

Sustainable development, protection of environment, struggling against starvation and poverty, inhibition of terrorism and anarchy, and efficient supply of energy are the main topics of modern world and society as declared in United Nations General Assembly for multiple times. And these political discussions are generally based on developmental conditions of countries, cultures and religions in historic perspective and protection of possible environmental disasters. Generally, population and economic growth have been mentioned together with accumulation of wastes. The basic variables and indexes are Gross Domestic Products (GDP) is a purchasing power parities and CO2 emission values. The two variables are correlated to forecast the future trends. In this study, a broad perspective has been tried to be constructed in the politics of renewable energy resources by linking the economy, ecology and energy terms which are called 3 E's in literature. Sometimes instead of energy, equity is used. A connection was supplied from the most general ones to least specials by warp and weft style. Here, starting from sustainability, socio-scientific issues, production, wastes, ecology, sociology, energy are connected and interrelated in holistic manner by considering economy and industy. By this way, new insights can be obtained and deduced for better inhabitable world peacefully.

Keywords:Economy; Emissions, Energy, Environment

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INTRODUCTION

Environment, energy and economy; 3 E's

Environment, energy and economy are three interacting terms along with society to reach sustainability. These are called 3 E's of sustainability (Mangla et al., 2020) . Environment is sometimes called nature and surroundings to identification of its importance. Both non-living and living things are continuous interaction with each other. The flora and fauna i.e. plants and animals along with intimate objects forms the environment. Energy is also a broad term that it can be defined as autonomous power. Economy sometimes takes the prime importance. The interaction of these broad subject has been shown as interacting circles. Sometimes the fourth cycle resembling the society can be added to these threes to reach sustainable development. Sustainable development is a state of endurance without harming future generations. In this instance, the recycling should be added to discussion (Nousheen et al., 2019). Because without considering the recycling process, the environmental pollution become the major issue and outburst the other topics. Recycling is also a broad term and comes as third after the 'do not consume' and 'consume less' stages. Today, economic development is not evenly distributed across the World (Şeker & Aydınlı, 2016). Moreover, the gap between the top rich and lowest poor become broadened. Now top riches earn 50 times more than the lowest ones. Also, north hemisphere consumes overwhelmingly more than south one. This does not seem sustainable if we do not find new living and production style.

The increase in population and consumption which triggers high production is another fundamental issue. And generally, the criteria for this economic labels. The need of society and protection of environment comes later. The technological development also fosters the production. At this point, the recycling process and environmental protection again take reconsideration. Today, environmental pollution reaches interstellar dimension (Sammarco et al., 2017) . The wastes accumulated during production and consumption have been tried to launched to space. If they come back, what type of disaster they will lead is unknown. There are various types of wastes. In broad sense, they can be industrial and home based. In other classification, they can be solid, liquid gas wastes. In other dimensions, they can be radioactive and nonradioactive. Also they can metallic, ceramic, polymeric and organic.

The intensive consumption to natural resources (coal, oil and natural gas) is expected of grow on a yearly rate that 1.6 % in the after two decades (Liu et al., 2014). Concedes petroleum fuel sources as a valued supply in finite natural energy, its present depletion rate is whence in volume higher from its corresponding replenish cycle. The huge use to petroleum fuel sources rises the releases of damaging pollutants (as nitrogen oxides, sulfur dioxide and carbon dioxide), leading a chain of environmental problems (Kalogirou 2004). Carbon dioxide, as a powerful greenhouse gas emitted into the thermosphere at combustion of oil sources, contributes in global warming [Serrano-Ruiz and Dumesic 2011).

Despite a species of environmental issues resultant on the use for petroleum fuel sources, petroleum-derived liquid hydrocarbons still acted as the more attractive and doable transportation fuels, where they include gasoline and airplane fuel (Zhou et all 2011). For instance, 7 billion drums on petroleum fuel The United States in 2010; where 71% of petroleum fuel (5.2 billion drums) went throughout meeting the combined request for gasoline, oil, and diesel fuel (Bond et all. 2014). On this context, petroleum sources will be expended worldwide after 21. century without considering the predictable growing for consumption to petroleum fuels.

The energy and matter

The concept of energy is not only difficult to understand but also is secret which arises from perception differences of its potentials to do work which can be observed and its interpretation and symbolization on paper. The challenging thermodynamic laws of zeroth, first, second and third make the situation more cumbersome. The bodies more than one connected to each other assume the equal temperature that compromises the zeroth low which underestimates the variable of time. The first law declares the conservation energy i.e., energy cannot be created or destroyed but it transforms into another forms that it is fully contradictory to the energy deficiency in post-cosmopolitan modern World. The second law can be considered as the key which can explain the execution of work and depletion of energy under the concepts probability, entropy and Gibbs free energy. It explains the universe from the most heterogeneous to the most homogenous one. Of course border conditions and times i.e., the very initial and end points are invalid in our explanations.

The third law may be perceived the simplest one but which is also powerful in explanation of the driving force in universe again which is very similar to second law in context with changing from the most ordered phase in lowest temperature to the most disordered phase at probable highest temperature which is guessed to be 4 K. The aforementioned discussions are valid if the universe is really isolated systems. If all the things are resumed it implies that universe itself recycled and renewed in total because lots of sample cycles are occurring before our eyes. In this perspective, science perception of universe must be reconsolidated.

The material is a dantela screen over the energetic world. All the materials have its complementary electromagnetic wave. According to De Broglie as the materials goes to nulls, accompanying wavelength of the wave goes to infinity (Wesson and Overduin 2015). If the material is somehow constant in the universe then what lessens in it.

Wastes of any natural and synthetic is very broad subject due to entanglement of human into nature its management become complicated. There are lots of definitions and differentiation in broad title such as 1-reduce, re-use and recycle 2-hazardous and non-hazardous, 3- inorganic and organic, 4-municipal 5- solid, liquid and gas, 6- pure and mixture etc… in the perspective of physicochemical nature of waste management. Each of these can be title of many books and have their handling logic and processing technology which converges into sustainable energy supply without harming environment.

Economy Based on Wastes

Today, human being is called Homo Economicus. Money is main object in people's opinion first of all. Perception of person can be affected with profit at decision phase. With increased educational knowledge, financial investments change to social investments. The definitions of social investments are aimed to release emissions lower for global warming and pollutions down (Russ 2016) . So, environmentally educated investors are headed to markets that are based on carbon and natural factors something like weather, rain…

By the deficiency of environmental knowledge, administrations must take cautions to prevent the pollution and global warming. These cautions are named as Environment regulations in law terminology (Sharon 2018). Environment law regulations are composed to track pattern to decrease pollution. Proposals about the revising process from various protocols to up to date are highlighted the insufficient applications as noticed.

By the definition of environmental law regulations, the changed opinion by environmental education and the induced profit perception with efficient carbon markets, individuals will change their behavior. They become more protective and careful to stabilize the nature conditions. Their all behaviors include careful use of natural sources. These actions retrieval the environment and reduce the effects of global warming and pollutions.

Environment consciousness is low in all over the world, so mayors and individuals overlook to be harmed the nature. Last word is that common actions can make big difference to save the planet. Consciousness of environment must be set into people's mind to keep the harm minimum to nature. By education effect, velocity of nature conditions change can be decrease, otherwise conditions like weather temperature, sea temperature or weather pollution will become worse. Education can bring in environment literacy ability to individuals (Xu 2019) . This ability generates environment literalists who bear wellness of nature in their minds. They focus nature in behavior. For example; an investor has an environment literalist ability whose financial decisions are firstly headed to social investment. Education make the generations more sensible to nature.

Global warming affects the financial applications due to increased carbon emission which leads concept of carbon finance. The aim of carbon finance is to transfer the pollution components into profit along with reaching the sustainable environment.

This is the duty of ecological citizens. By environmental education the people gain environmental literacy ability. They exist a life style form in conscious of nature. Then the society which becomes of these people harms minimal damage to the nature by using renewable energy sources. So: contribution for curing the earth is done. Predicted lower limits aimed that firms, citizens and administrations must be obeyed under the framework of environmental law, decelerates the environmental corruption and minimize the pollutions effect. Definition of ecological citizenship on the environmental law provides that to be settled down of public consciousness (Asilsoy and Oktay 2018). To provide this obligation, increasing of ecological citizenship level has to be achieved by individuals in public.

METHOD and METHODOLOGY

In brief, the frontier of this subject points that there is no enough existing environmental system in compounded with education, law regulation or finance yet in World. So, it concludes that being theoretical idea transforms into practice.

Here; the relationship between GDP, CO2 emission and population is investigated and the cause of increasing CO2 emission can be modeled and forecasted. Firstly we have to introduce these terms; Gross Domestic Products (GDP): This is the accumulation of consumption, investment, government spending, import-export values of the year. It is obvious that GDP is occurred by investors, consumers and government so includes everyone in a country. It consumes the goods and services which are produced in country. The final product is based for valuing this term. At this work we used the GDP (purchasing power parities) of OECD Countries for modeling Emission Values.

CO2 emission; (tones CO2) these values are based from International Energy Agency (2011 edition handbook) (https 1, 2011) is evaluated by assumption of Fuel Combustion data.

Emission per capita is determined with total emission proportioned with OECD countries populations (https 2. 2019). This gives the released CO2 tones for one person.

RESULTS

Correlation of economy and emission

The idea is that GDP affects CO2 emissions to move upward. The figure 1 shows that GDP and Emissions moves together and aims to air pollution are increased by industrializationed of country or global. To analysis the relationship between them; needs to determine statistical structures of parameters, in a word moments. Especially third and fourth moments of these distributions are needs to be identified. Hence first and second moment mean and variance does not illuminate the bound between them. Third and fourth moments are skewness and kurtosis explains the similarity between distributions.

Skewness values of distributions are positive that shows curves of distributions headed to right side. The distributions of GDP and CO2 emissions are not normally distributed. So: warped right side of distribution means that parameter values are increasing and includes of deterministic trend which have a positive slope.

Kurtosis values of distributions are under limit value ‘three’ that shows the distributions spread tightly around mean. The distribution looks like a uniform structure. That’s why the quantify of observation for analysis is 20, instead of this is not preferred under 30.

So the brief of statistical structure of GDP and Emission parameters; these variables are closely similar and carry same impact on them (Table 1). This similarity gives a chance us to prove the main idea that developed economy make the nature be polluted and defiled.

The table of backward shows the chosen moments and Jarque-Bera Test which is normality test. Test values establish the visual inference that can be seen in Figure 1.

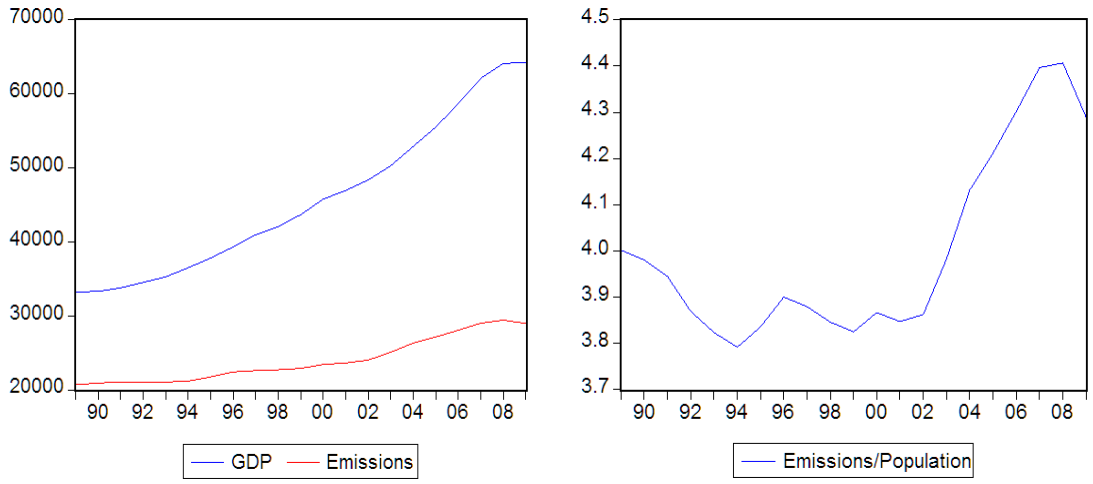

Figure 1. GDP (purchasing power parities), CO2 Emission (released tonnes CO2 per year) and Emission per capita (proportion of emission with population) time series

If there is such similarity, can GDP parameter be used to explain Emission or pollution factor? Can we model pollution or waste accumulation with economic growth? These questions are more important than answer, and the answers include just the results but the questions contain the salvation of nature. By the way, the correlation between these parameters should be checked. The correlation term means the behavior of variables in time series form is similar. Pearson correlation matrice between GDP and Emission is listed in Table 2.

Table 1. Statistical properties of GDP and Emission series

	GDP	**Emission**
Skewness	0.483492	0.659353
Kurtosis	1.957674	2.006985
Jarque-Bera	1.768812	2.384434
Probability	0.412959	0.303548
Observations	21	21

Table 2. Correlation Matrice of GDP with Emission

	GDP	Emission
GDP	1.000000	0.991750
Emission	0.991750	1.000000

The correlation value shows that these parameter acts more common. This is so high value and one of their lagged value time serie can be used to explain other one. The behavior of these series is nearly matched and can be accepted as similar. Emission can be modeled 0.991750 percent by GDP. The result of this similarity can be brief as the economic growth can explain the pollution. At the hand, we can model or forecast pollution by using economic parameters. This is horrible to remind that the Money defiles to reshape the nature until worst.

At the beginning, in visual analysis, we suspect that these variables carries the same effect on them. This situation is called cointegration. Cointagrated series are highly correlated and their behaviour is similar. This effect can be interpreted as there is a deterministic or stochastick (random) trend by the time. Under same effect variables can react as common. The reaction can be tricky to cheat us they are obviously explain each other at excellent level. To prove obligation of cointegration effect; Maximum Eigenvalue and Trace tests should be used. These tests let us to determine if similarity between variables can be observed after removing trend effect and memory element. At visual evaluation phase we realized that variables contains trend on their time values which are not randomly but also contains in a short memory perception.

By removing this trend effect, the real behavior of variables can be generated. Table 3 shows the results of Trace and Maximum Eigenvalue tests.

Table 3. Cointegration Test Results

Trace Test				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**Critical Value**	**Probability**
None	0.482162	21.02171	18.39771	0.0210
At most 1	0.361295	8.517945	3.841466	0.0035
Maximum Eigenvalue Test				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**Critical Value**	**Probability**
None	0.482162	12.50376	17.14769	0.2091
At most 1	0.361295	8.517945	3.841466	0.0035

Table 4. Granger Causality Test Results

Granger Causality Tests		
Null Hypothesis:	**F-Statistic**	**Probability**
Emission does not Granger Cause DPG	4.44934	0.06352
DPG does not Granger Cause Emission	1.36375	0.37092

Trace Test and Maximum Eigen value test results shows there is a cointegration between GDP and Emission by concluding if they have an intercept and quadratic trend which affects their value. The result can be explained by the null hypothesis of test are same as they have no cointegration under these circumstances. Comparing the test result can be obtained by probabilities (Table 3.) which are lower than 0.05 the confidence interval. So there at least one connection and solidarity between these parameters by sending away trend effect.

Proving that there is strong and unbiased relationship between variables is achieved. The other question is which of variables causes the other one make change. At the beginning, we consider that GDP direct Emission. Basic logic of human mind let us think first industrialized growth causes the accelerating of consumption and savings. In financial literacy, saving means construction and activates more factories. Factory can be counted as a pollution factor in the front line. That's why increased GDP generates more waste and emissions. So, we have to decide our logic idea is true or not How our perceptions are twisted by green lovers like Greenpeace. Granger causality test proves that which variable affect the other to move along by time.

Causality Test results points if confidence interval bring up to 10% that Emission does not cause DPG hypothesis can be accepted (Table 4). This means Emissions does not affect the DPG. Other ''DPG does not cause Emission'' hypothesis should not be accepted. In brief; DPG may help the nature be polluted. The other viewpoint is that emission cannot make the DPG increase or decrease. (Maybe decreasing can occur by the health bill goes longer.). Other important point is there are used 5 lagged variables to prove the situation. This means Pollution at the time t can be generated by DPG at the time t-5. Lagged DPG can react the pollution.

Hence; we achieve to get relationship between pollution and economic factors DPG, there is not any working model have been built. Until this step we gather some information about these variables. There are:

• Emission and DPG distributions are similar
• Emission can be explained with satisfied by DPG.
• Emission and DPG are highly correlated variables. This correlation does not belie, because of cointegration of series.

At last step; we could model positing Pollution factor as Emission by using DPG. The linear model is established to forecast pollution can be seen in Table 5.

Table 5. Linear modeling of integrated Emission.

Variable	Coefficient	Standart Error	t-Statistic	Probability
I(1)DPG	41.80923	8.260964	5.061060	0.0001
TREND	-2096043	1246308.	-1.681802	0.1109
MA(1)	0.712970	0.180428	3.951538	0.0010
		Model Statistics		
R-squared	0.768005	Mean dependent var	41332285	
Adjusted R-squared	0.740712	S.D. dependent var	42761273	
S.E. of regression	21774181	Akaike info criterion	36.76783	
Sum squared residuals	8.06E+15	Schwarz criterion	36.91719	
Log likelihood	-364.6783	Durbin-Watson stat	2.140876	

The first differented Emission (Emission Change) variable is determined by using Differented DPG, trend element and lagged residual term in success. Using differented Emission and DPG terms cannot be suprising. As noticed the variables have same trend effect and it must be removed. If it does not removed, there will be false regression model.

Model contains lineer and deterministic trend, this can be analysed by view. After all the original time serie have a quadratic trend, then we differented it. Quadratic trend transforms lineer one and can be added into model. In addition Unit root test shows us differented Emission variable stil have a trend. (Unit root test, corelograms and portmentau tests are used upto these stage, but this chapter is not about statistics!)

Determining of Differented Emission variable, lagged residual term (MA(1)) is added to model. This shows model has a short term memory and contains events that happened one term ago. Model is accepted as satisfying one to forecast Emission Changes then Emission itself. Instead of model is accepted satisfying one, but Forecasting analysis statistics are not eligible to trust them. So this model can be used for known DGP and short time intervals. (for example to examine the one term later emission)

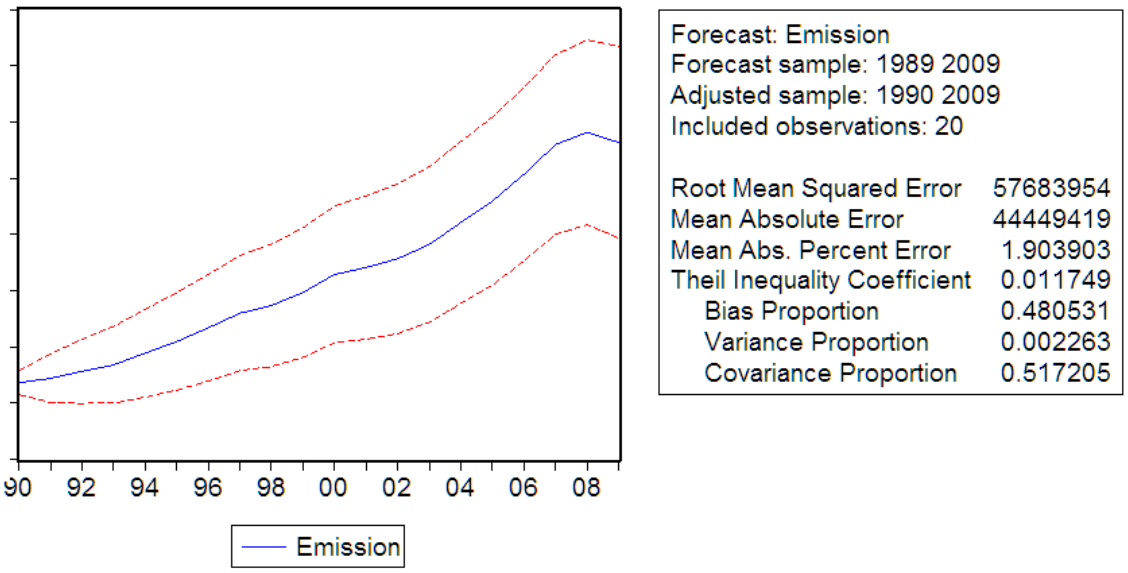

Figure 2. Forecasting of Emission serie and model forecasting statistics

Then introducing pollution by using Economic parameters, there is still important question in our minds. How does population affect the pollution? Logically it can be thought that population can be positively correlated with pollution. In brief, when population increases, pollution will increase too.

We focus into Pollution ratio for one person that can be calculated as proportion total pollution to population. This ratio can be related our first model standard deviation serie by time. The point is explaining the deviation of Emission changes by pollution per capita. To investigate it, we should use the Granger causality test. Test result can be seen in Table 6.

Table 6. Causality test results between Pollution per capita with standard deviation of pollution serie

Pairwise Granger Causality Tests		
Null Hypothesis:	**F-Statistic**	**Probability**
Population Ratio does not Granger Cause Standart Deviation	21.7307	0.00026
Standart Deviation does not Granger Cause Population Ratio	6.30653	0.02314

Granger test results show us these two hypotheses cannot be accepted. Neither population ratio does not cause standard deviation of Emission nor the reverse situation is not true. Population can not be related with pollution effect. This result is stunning, but can be acceptable. At the first, the time serie figure of pollution/ population the values are nearly constant. The reason of this stability the pollution grows at the ratio of population growth. This makes the ratio nearly constant. In brief, Standard deviation of emission change is already dependent with population growth. The deviation of pollution can be explaining Pollution per capita parameter as well as possible.

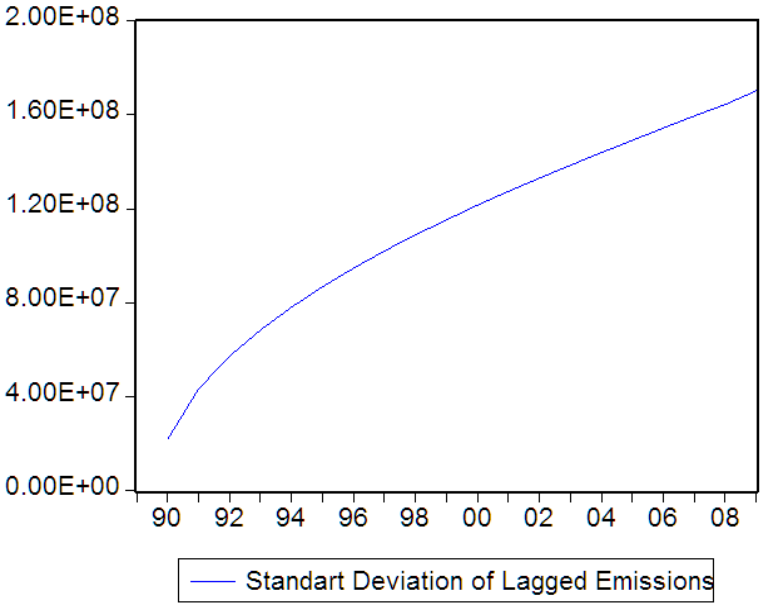

Figure 3. Standart deviation serie of Emission serie

CONCLUSION

Pollution, emission and waste concepts are only defined in multidisciplinary view. In economics; they are free products or services for now. Because there is no demand for getting them. In future these wastes will be refined and somehow get into the process. They will be evaluated to common goods. Then they will be valuing, trading, marketing, and also consuming. Until that day, wastes are accepted as trash and must be reduced to spread out of nature.

At this section, we choose CO2 Emission as a pollution agent for modeling it. Without positive or negative perception, GPD and Population variables used to explain pollution. The pollution modeling is achieved in satisfying conditions, but the forecasting pollution with this model seems not to work properly. Model is designed to work in short terms. Pollution is highly correlated with GPD and also has cointagration obligation between them.

The real problem is who is the killer? Attrition of nature gives you luxury and comfortable life style. We assume it but never calculate it before. The economy is a game that is still playing when the time start. The real monster is still us, instead of we pollute the earth. The population growth is harmless. Calculations show us; every person have same pollution ratio. The pollution is about the perception of humans. The consumption and investment affects the GDP value. We should improve our perception to decrease the consumption. It seems only way to decelerate the pollution of earth.

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Pre-School Teachers' Views About Lifting Force Of Water

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Abstract

The research was conducted to examine the opinions of preschool teachers about buoyancy of water. 16 preschool teachers participated in the study. Two semi-structured forms were used as data collection tools in the study which was conducted by using special case method. According to the research, the participants were not fully informed about the buoyancy force of the water or they were forgotten due to the fact that the information they learned was not used and they fell into generalizations and misconceptions.

Keywords:PRE-SCHOOL, force of water.

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INTRODUCTION

Preschool education, which is accepted as the first step of our education system, covers the years from the birth of the child to the day it starts primary education (Demiriz, Karadağ &Ulutaş, 2003).Preschool education involves many tasks such as managing, encouraging and developing a child who is motivated by the environment, learning and thinking(Senemoğlu, 1994).In this period, it is stated that basic science concepts are formed (Kalley ve Psillos, 2001).The aim of science teaching in preschool period is to gain basic life skills, to protect the child against dangerous situations, to gain skills to understand the environment can be expressed. Thus, it is aimed to gain the ability to bring solutions to the problems that will be faced in the following years (Şahin, 2000). For these reasons, science teaching is of great importance in preschool period. Again, in this period, while gaining the concepts of science, children gain various skills such as problem solving, scientific, critical and multi-faceted thinking (Güler ve Bıkmaz, 2002).Undoubtedly, the most important task in the acquisition of these and other gains and skills belongs to the preschool teachers. The person who is described as a teacher; knowledge, skills, attitudes and behaviors as a role model for children with many features and allows them to grow up as individuals who exhibit the behavior accepted. Ne The more qualified the teacher's behaviors in the classroom, the more qualified the student's behaviors will be. " (Parlakyıldız, 1998).It is undeniable that the level and quality of teachers' knowledge and various mental and behavioral capacities affect children's development. Teachers need to have the right information and the right concepts in order to present their knowledge and various concepts correctly and effectively. The main reason why pre-school teachers do not devote sufficient time to teach various scientific concepts is that they do not have sufficient field knowledge about scientific concepts(Cho, Kim ve Choi, 2003).According to the literature studies, it is stated that the teacher's inability to perform effective teaching while teaching the concept and reflecting the misconceptions he has on his students as the reason of misconceptions and misunderstandings about basic science concepts(Hadzigeorgiou, 2001).Concepts; entities, events, people and thoughts are divided into groups according to similar characteristics and are common names given to these groups (Kaptan, 1999).When the concept is mentioned, it refers to the abstract units that cover the entities in a certain group. Concepts are in our mental world. Concepts enable us to group the information we have and easily transfer it to someone else(Kaptan, 1999). It is stated that the studies about the concepts started by Piaget in 1920 (Meriç & Sarıkaya, 2002).Many concepts which are basic since childhood are gradually learned, classifications and groupings are made and relationships between them are discovered. This discovery and classification configuration continues throughout life. It can be said that people can make connections between a new concept and the other concept that they have previously classified.

It can be said that it causes people to form misconceptions and misconceptions. Such misleading is described differently by many researchers. For example, alternative concepts (misconceptions), misunderstandings, children science, preconceptions and naive conceptions are mentioned. An in-depth analysis reveals that each one is different(Hewson & Hewson, 1984; Palmer, 1999; Nakiboğlu, 2006; Skelly & Hall, 1993; Yağbasan & Gülçiçek, 2003). When the literature is examined, it is seen that the term "misconception sık has been frequently used recently. If the concepts cannot be taken into mind by coding correctly for various reasons, the brain cannot code correctly and as a result misconceptions arise. Misconceptions; It is expressed as a situation that arises as a result of individual experiences, does not comply with scientific facts and prevents the teaching of concepts (Yürük, Çakır & Geban, 2000).Again, misconception refers to the difference from the universally accepted scientific meaning of the way an individual perceives any concept (Yağbasan, 2003).

In this study, preschool teachers were explained with sinking surface test materials to determine whether there were misconceptions about the buoyancy force of water and their opinions about why sinking materials used in the experiment were sunk. Thus, it was tried to understand whether preschool teachers had misconceptions about the subject.

METHOD

This research has been carried out by using the special case method which enables to conduct in-depth detailed research on a subject that has been delimited (Cohen&Manion, 1994; Çepni, 2007).

Sample

The population of this research consists of pre-school teachers in Amasya, Taşova district center. The sample was composed of 16 preschool teachers from three schools in the district center.

Data Collection Tools

In the study, a semi-structured form consisting of two parts was used to determine the teachers' views on demographic characteristics and buoyancy of water. In the first part of the form, there is a section about gender and years of professional experience of the participating teachers. In the second part, there are experiments related to buoyancy of water, test materials, conducting the experiment and two questions. First question ; It is related to which materials sink in the test materials. The second question is the open-ended question about why these materials sink. The questions in the form are asked by the researcher and processed on an interview basis. The answers to the second question on a voluntary basis were also recorded as sound recording.

Analysis Of Data

The data obtained from the study regarding gender and years of professional experience were tabulated and presented as frequency (f) and percentage (%). The open-ended questions were grouped in a similar, common way.

RESULTS

The findings of the data collected in the research were examined under the following headings:

Findings Related to Sample Group

Table 1. Gender, Year of Professional Experience and Bachelor's Degree

Sex	**F**	**%**
Women	14	%87,5
Man	2	%12,5
Total	16	%100

Year of Professional Experience	**F**	**%**
1-3 year	3	%18,75
4-7 year	6	%37,5
7-11 year	4	%25
12- over year	3	%18,75
Total	16	%100

Bachelor's Degree	**F**	**%**
Preschool teaching(formal)	8	%50
Preschool teaching(open education)	6	%37,5
Child development (open education	2	%12,5

According to the study according to Table 1, 14 out of 16 preschool teachers were 87.5%,It is seen that 2 of them are male with 12,5%.Again according to Table 1, 18.75% with 3 to 3 years, 37.5% with 6 to 4-7 years, 25% with 4 to 7-11 years, 18.75% with 3 ' ü 12 years of professional experience.In addition, as of undergraduate graduation, it is seen that 8 participants with 50% are preschool teachers (formal), 37,5% with 6 participants Preschool teachers (Open education) and 12.5% with 2 participants Child Development (open education) graduates.

Findings Related to Lifting Force of Water

Table 2.Which of the materials used in the experiment do you think would sink in water?

Materials	F	%
ping-pong	0	%100
iron spoon	16	%100
coin	16	%100
Marble	16	%100
Plastic spoon	0	%100
Plasticplate	0	%100
Stone	16	%100
Board	0	%100
Abeslang (mouth stick)	0	%100
Paper ship	0	%100

According to Table 2, all the preschool teachers who participated in the research stated that iron spoon, coin, marble, stone would sink in water, the remaining ping-pong ball, plastic spoon, plastic plate, wood, abeslang (mouth stick) and paper ship would not sink in water.

Table 3.What do you think it sinks and why does it sink?

Cause of Stinging	Participant	Answers
Weight	4.Participant	Because weights are different
	5. Participant	Because they are not light
	7. Participant	Because they are heavier than other materials
	9. Participant	Others swam because they are lighter, they are heavier.
	10.Participant	Because they are heavier than others
	11. Participant	Because they are heavy and small objects
	15. Participant	Because they are heavy
	16. Participant	Most of them are heavy, so they sink.
Metal	2. Participant	Because they are metal
	16. Participant	Most of them are heavy, so they sink.
Density	1. Participant	Because their density is more
	13. Participant	Iron spoon, stone, coins and marbles sink. Because their density is higher than the density of water
Small and narrow water contact	6. Participant	Because the parts in contact with water are narrow
	14. Participant	Because the parts that touch the water are less
Small volume	8. Participant	Because they are small volume
Because there is no air in them	12. Participant	Because there is no air in them
Because they can't swim	3. Participant	Because they can't swim

According to Table 3, preschool teachers gave various answers about the sinking reasons of sinking materials in buoyancy test of water. One of the points that draw attention to the answers is to put forward the issues related to the weight of the sinking materials.Among the participants 4, 5.7., 9, 10, 11, 15, 16, the participants related the sinking reasons of the experimental materials with the weight; Participants 2. and 16. attribute the sinking of the materials to the fact that they are metal; 1. and 13. participants consider the density of the materials as a reason for sinking; 6. and 14. The participants attributed the sinking of the materials to the smaller and narrower portions of the water-contacting parts; 12. The participant stated that there is no air in the sinking materials; 8. Participant should have small volume materials; Finally, the 3. participant connects them to the fact that they cannot swim.

Table 3. When a child watches you do the floating floating experiment, when you ask the question, im Why doesn't my teacher sank the big ships but the little money sinks right away? Ne 'What is your answer?

Reason not to sink	Participant	Answers
because there is air in the ships	1.Participant	I say there's air in the ships.
	4. Participant	Air on the ships
	10. Participant	ships have air in them
	12. Participant	because there is air inside
	13. Participant	Ships are wide hull and hollow in shape
the air in these parts prevents the sinking	5. Participant	Shapes prevent ships from sinking
	7. Participant	Shapes prevent ships from sinking
	9. Participant	Ships do not sink due to their shape
Ships do not sink due to their shape	11. Participant	They have large bodies but their shape is suitable for swimming
	13. Participant	Ships are wide hull and hollow in shape
the air in these parts prevents the sinking	15. Participant	Ships are too heavy, but I'd say they wouldn't sink shapes.
	16. Participant	I say it doesn't sink because of their shape.
Large volume of ships	8. Participant	Because they have large volumes
	6. Participant	I say the parts that come into contact with water are more than money
large surface ships in contact with water	14. Participant	water contact surface large
Because they do not know	2. Participant	I don't know we can investigate together
	3. Participant	I wonder

According to Table 3, pre-school teachers, children, "My teacher does not sink big ships, but why is the small money sinking immediately?"Questions to; 1st, 4., 10., 12., 13., participants replied that there was air in them. 5., 7., 9., 11., 13., 15., 16., The participants responded to the obstacles of the sinking of the shapes of the ships.Participants 2, 3. stated that they did not know and wondered why the participating ships did not sink. The 8th participant stated that the ships did not sink due to their large volume. 6., 14. again. The participant sees the fact that the parts of the vessels that touch the water are too high as the reason for not sinking.

DISCUSSION, RESULT AND SUGGESTIONS

In this study, it is seen that preschool teachers who are interested in buoyancy force have misconceptions. The buoyancy of water has been clarified by a principle recognized and asserted by Archimedes. Water pushes the objects having density less than their density towards the surface. With the effect of pushing force resulting from density differences, the body starts to float "(URL-1).It can be said that the participants are not fully informed about the buoyancy force of the water, or that they are forgotten due to the fact that the information they have learned is not used.

When the graduation status of the participants in the study is examined, 4., 5.7., 9., 10., 15., Preschool teacher (Open Education with 37.5%) undergraduate degree, 1., 6., 8., 11., 12 ., 13., 14., 16., Preschool teacher (Formal education with 50%) language, 2nd and 3rd, the participants of the child development (12.5% Open education) graduates.

Participants 1 and 13 in the study linked the buoyancy force of water to the density. The other participants tried to explain the buoyancy force of the water in the experiment for different reasons. Therefore, it is seen that they have misconceptions.

Of the participants 4, 5.7, 9, 10, 11, 15, 16. Again, the 8th participant in the research has a generalization and lack of knowledge that small volume materials can sink.

The 6th and 14th participants attributed the sinking reasons of the experimental materials to the smaller and narrower portions of the water-contacting parts. The generalization of the participants (4., 5.7., 9., 10, 15, Preschool Teaching (Open Education)), weight, etc. It can be stated that they are caused. Therefore, it can be stated that various applied methods in misconceptions can reduce misconceptions compared to theoretical knowledge.

The 6th, 8th, 12th, 14th graduates of pre-school teaching (formal education) language, and the participants have insufficient knowledge about buoyancy. However, it is seen that the first, 13th, graduates of pre-school formal education graduates attributed the cause of the sting to the intensity. When all participants are taken into consideration, it is seen that teachers who are formal education graduates are misleading based on lack of knowledge according to their colleagues who are open education graduates, and teachers who are graduates of open education make generalized mistakes based on formal education graduates. In the 2nd and 3rd part, the participants are open education graduates of child development and they have general misconceptions.

In the study, it was seen that the children answered the question “My teacher, why do not the big ships sink, but why the little money sinks? In The participants 1, 4, 10, 12, 13. Replied that the ships did not sink because there was air in them; 5, 9, 11, 13, 15, 16. the participants responded that the shapes of the ships gave an obstacle response to sinking; second, third. stated that they did not know and wondered why the ships did not sink. The 8th participant responded that the ships did not sink due to their large volume, while the 14th participant responded to the children that the parts of the vessels touching the water were the reason for not sinking. Therefore, it is seen that teachers have difficulty in this curious question of children. One of the reasons for this is that the age group that the teachers are interested in can be thought to be more abstract in terms of density, volume and mass. Again, due to the lack of knowledge in the subject teachers, it can be thought that misconceptions in children can be prevented by showing that the same objects can float even if they are metal or heavy even with different applications. Causes of misconceptions; It is stated that the teachers are inadequate information, inadequacy of the textbooks, the language used in the subject expression, generalizations about the subject, symbols, diagrams and preliminary information (Ecevit, Özdemir Şimşek, 2017).Therefore, when the whole study is taken into consideration, the reason of the misconceptions of the participants can be stated as lack of information and having generalizations.

In this study, the floating floating experiment was designed to determine the opinions of preschool teachers about the buoyancy of water and the reasons for the sinking about the sinking objects were asked and whether there were misconceptions about the subject. In general, it is seen that teachers have misconceptions about buoyancy of water. In this context, the following suggestions can be made in order to eliminate the misconceptions of teachers about the subject;
Practical in-service trainings related to science applications in pre-school education can be given.
Activities like coterie teacher practice, different activity monitoring in different classroom can be done.

During the seminar periods, the issues with which teachers misconceptions are mostly dealt with can be addressed in an applied manner and the lack of topics can be eliminated.

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