INTEGRATING SUSTAINABILITY
INTO
EARLY CHILDHOOD EDUCATION
THROUGH IN-SERVICE TRAINING:
AN EFFORT TOWARDS TRANSFORMATIVE LEARNING

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ABSTRACT

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The aim of this study is twofold, first is to create an in-service training example that can be conducted with childhood education teachers in framework of transformative learning towards learning for sustainability and education for sustainable development. Second aim of study is to investigate effects and contributors of created transformative learning example on participants' perspective transformation. 24 teachers were involved as convenient sample in this research. Research methodology combined two basic data gathering and analysis methods. Sample group participated in seven half day in-service training, at the end of training initial inquiry was conducted by using Learning Activities Survey with all participants and it was continued with 6 follow-up interviews. Assessment tool and interview format were developed by Kathleen P. King (1997) and were translated in Turkish and adapted for the use of this research.

The results of this research revealed that 100% of participants experienced perspective transformation at varying degrees in relation to in-service training conducted.

The most telling findings indicate that: (a) perspective transformation learning experiences include major shifts in learner's understanding of his/her life and world, (b) journey of transformative learning differs among learners, (c) sampled population experienced some changes in their perspective of their beliefs, assumptions and points of view as well as they transitioned to a more differentiated frame of reference which is related with sustainability, (d) both classroom assignments and support were noted as important contributors of perspective transformation, (e) discussions, group projects, critical thinking activities, self-evaluation of participants and unconventional structure of training, support of trainer, support from others and challenge from trainer were evaluated as main contributors to perspective transformation.

Keywords: Transformative Learning, Education for Sustainability, Education for Sustainable Development, In-Service Training, Early Childhood Education

ÖZ

SÜRDÜRLEBİLİRLİĞİN
HİZMETİÇİ EĞİTİM İLE
OKUL ÖNCESİ EĞİTİME ENTEGRE EDİLMESİ:
DÖNÜŞTÜRÜCÜ ÖĞRENMEYE YÖNELİK BİR ÇABA

FERİVER GEZER, Şebnem

Yüksek Lisans: Erken Çocukluk Eğitimi

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Bu çalışmanın amacı iki kıvrım içermektedir. İlk amaç, erken çocukluk eğitimi öğretmenleriyle uygulanacak sürdürlebilirlik için öğrenme ve sürdürülebilir kalkınma için eğitim hedeflerine yönlendirilmiş dönüştürücü öğrenme çerçevesinde oluşturulmuş bir hizmetiçi eğitim örneği ortaya koymaktır. Çalışmanın ikinci amacı, oluşturulan dönüştürücü öğrenme örneğinin katılımcıların perspektif dönüşümlerine etkilerini ve bu dönüşüme nelerin katkı sağladığını araştırmaktır. Bu çalışma, uygun örnekleme yoluyla seçilen 24 okul öncesi öğretmeni ilegerçekleştirilmiştir. Araştırma metodu iki temel veri toplama ve analiz etme metodunu içermektedir. Katılımcılarla 7 yarım günlük bir hizmetiçi eğitim gerçekleştirilmiş, eğitimin sonunda Öğrenme Etkinlikleri Anketi tüm katılımcılarla uygulanmış, veri toplama süreci daha sonra 6 kişiyle yapılan mülakatlarda desteklenmiştir. Her iki değerlendirme aracı da Kathleen P. King (1997) tarafından geliştirilmiş olup bu çalışmanın amacı doğrultusunda Türkçe'ye çevirilmiştir; adaptasyon ve güvenirlik çalışmaları yapılmıştır.

Çalışmanın sonucunda katılımcıların tümünün (%100) uygulanan hizmetiçi eğitim dolayısıyla farklı seviyelerde perspektif dönüşümü yaşadığı ortaya konmuştur. Çalışmada elde edilen en önemli bulgular: (a) perspektif dönüşümü öğrenme deneyimleri, öğrenenin kendi hayatını ve dünyayı anlamlandırmasında önemli değişimleri içermektedir, (b) dönüştürücü öğrenme yolculuğunu her öğrenen farklı şekilde deneyimlemektedir, (c) çalışmanın örneklem grubu, sürdürülebilirlikle ilintili farklılaştırılmış referans iskeletine intikal ettikçe, kanaatlerinde, varsayımlarında ve bakış açılarında değişimler yaşamıştır, (d) destek ve hizmetiçi eğitimde yer alan sınıf içi görevleri perspektif dönüşümüne katkı yapan faktörler olarak bulunmuştur, (e) tartışmalar, grup projeleri, eleştirel düşünme etkinlikleri, katılımcıların özdeğerlendirmeleri, eğitimin geleneksel olmayan yapısı, eğitmenin desteği, diğer katılımcıların desteği ve eğitmenin katılımcıyı başa çıkması gereken durumlarla karşı karşıya bırakması perspektif dönüşümüne katkı sağlayan temel unsurlardır.

Anahtar Kelimeler: Dönüştürücü Öğrenme, Sürdürülebilirlik için Öğrenme, Sürdürülebilir Kalkınma için Eğitim, Hizmetiçi Eğitim, Erken Çocukluk Eğitimi

To Sustainable Future

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INTRODUCTION

1.1 Statement of the Problem

1.1.1 Current State of the Planet

At the beginning of 19th century income per capita in top 10 wealthy nations was 3-fold of income per capita in top 10 poor nations. At the beginning of 21st century, this proportion became as 50-fold (Maddison, 2003). Over the past millennium, world population rose 22–fold, income per capita increased 13–fold, world GDP nearly 300–fold (Maddison, 2001). The growth process was uneven in space as well as time. Economic development brought many advantages like greater life expectancy, more consumer choice, some extension of freedom and equality. However, both benefits and the costs are not shared equally. Economic instability, social exclusion, ecological loss, insecurity are some of the outcomes of the current system. We are seeing increasing health impairments (diabetes, heart disease, cancer, depression and anxiety etc.) as a result of modern ways of living. Impacts of unsustainable living are not evenly distributed. Children – the most vulnerable of humans – face the greatest risk of developing such health problems as well as while some humans are enjoying the benefits of the system while some others are disproportionately bearing the burden of it. As Stern (2006) explains, "the poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem."

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As Huckle (2000) explains, most of the world's people are living their lives ecologically, economically, socially, culturally and personally unsustainable. Indicators of this claim can be found in many global reports. According to the Human Development Report (1998) prepared by UN, global inequalities are worsening. 86% of global consumption is done by 20% of world population while among the 4.4 billion people in developing countries, one third has no safe drinking water, and one quarter has inadequate housing. According to the Living Planet Report prepared by World Wildlife Fund (WWF, 2008), since 1970, more than 30% of world's natural wealth destroyed by humans. Since 1960, carbon emissions have doubled, marine fish consumption has doubled, and half of accessible fresh water is used up. The Global Environmental Outlook report (GEO, 2000) from UNEP explains that 80% of the world's forest cover has been cleared, degraded and fragmented.

Towns are bigger in size, open spaces and green areas are diminishing. Accordingly, areas for children to play are decreasing as well as their lives are more organized by adults with activities to fit modern life styles (Hillman, 1999). Consequently, young children have less opportunity for outdoor play. People living in urban areas and living in developed countries are not familiar with land anymore. The result of this situation is inability to comprehend production mentality. Most of the children does not know that ice-cream they consume is made from products that come from a cow, or breads they consume is originated from fields and it's becoming harder to comprehend that these products do not simply come from supermarket. In addition to this, since materials we consume no longer come from our immediate places, but from places all around the world because of globalization, comprehension becomes more difficult. It is important to mention *about* the environment as well as how everybody's life is linked to another and to nature so that wise decisions and

choices can be made. As Tricia Herbert (2008) stated "this generation could make or break the Earth's future". As usual, it is important to approach this issue critically. Researches made in past thirty years points out that simply knowing about environmental issues does have minor effect on behavior (Gould, 1991; Orr, 2004; Rickinson et al, 2004).

1.1.2 Current State of Education and Teachers

Serious preoccupation with environmental problems is a relatively recent phenomenon in contemporary society. It is now recognized that many human activities, collectively, have destructive and possibly irreversible consequences. The sense of urgency about environmental problems expressed at the Stockholm Conference in 1972 still remains (UNESCO, 1977). We are moving towards unsustainability. Schumacher (1973, p.64) described education as the "greatest resource" for achieving a just and sustainable society. Characteristics of sustainable communities are provided in Table 1.1.

Table 1.1 13 general indicators of a sustainable community

1. Resources are used efficiently and waste is minimized by closing cycles
2. Pollution is limited to levels which natural ecosystems can cope with and without damage
3. The diversity of nature is valued and protected
4. Where possible local needs are met locally
5. Everyone has access to good food, water, shelter, and fuel at reasonable cost
6. Everyone has the opportunity to undertake satisfying work in a diverse economy; the value of unpaid work is recognized, whilst payment for work are fair and fairly distributed
7. People's good health is protected by clean, safe, pleasant environments and health services which emphasize prevention of illness as well as proper care for the sick
8. Access to facilities, services, goods and other people is not achieved at the expense of the environment or limited to those with cars
9. People live without fear of personal violence from crime or persecution because of their personal beliefs, race, gender or sexuality
10. Everyone has access to the skills, knowledge and information needed to enable them to play a full part in society

11. All sections of the community are empowered to participate in decision-making
12. Opportunities for culture, leisure and recreation are readily available to all
13. Places, spaces and objects combine meaning and beauty with utility. Settlements are 'human' in scale and form. Diversity and local distinctiveness are valued and protected.

Source: Local Government Management Board , 1997, p. 34

Now, let's look at the teacher's role in building sustainable societies. In the Brundtland Report (WCED, 1987) it is claimed that teachers have *"a crucial role to play in helping to bring about the extensive social changes"* (p. xiv). By being part of internationally agreed report on Earth Summit, Agenda 21 (UNCED, 1992), countries committed to promote environmental sustainability through education. Chapter 36 of the report is specifically on *"promoting education, public awareness and training"*. Commission of Sustainable Development, which was constituted by UN to monitor decisions taken in Earth Summit, concluded in the meeting held on May 1996 that: "*In order to change unsustainable production and consumption patterns and lifestyles, it (is) essential to give great emphasis to the role of education for sustainable development, including environmental economics as well as environmental awareness.*" (UNESCO-UNEP, 1996, pp.2-3)

In order to be able to mention about education for sustainability, what is meant by sustainability should be considered. The word sustainability comes from the Latin *sustinere* (*tenere*, to hold; *sus*, up) (Onions, 1964, p.2095). In 1980s, *sustainability* has been used more in the sense of human sustainability on planet Earth. Reflection of this approach was resulted in the most widely quoted definition of sustainability and sustainable development: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). The "three pillars" of sustainability (environmental, social and economic) and the need for

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reconciliation of them was mentioned at the 2005 World Summit. This view has been expressed as three overlapping ellipses (see Figure 1.1) indicating that the three pillars of sustainability are not mutually exclusive and can be mutually reinforcing.
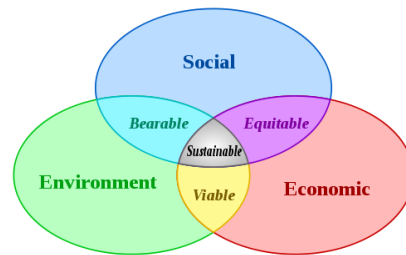
Figure 1.1 Representation of sustainability (Adams, 2006)

It seems that the UN definition is not accepted by all parties and various interpretations have emerged. This research is based on the approach that the economy is a subsystem of human society, which is itself a subsystem of the biosphere. According to this approach, a gain in one sector is a loss from another. This approach is illustrated as three concentric circles (See Figure1.2).
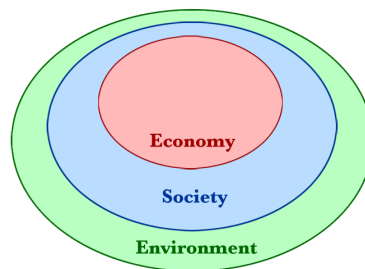
Figure 1.2 Alternative representation of sustainability (Ott, 2003)

1.1.3 Current State of Education for Sustainability in Early Childhood Years and Potential Role of Transformative Learning on Education for Sustainability

The term sustainability began part of educational vocabulary in early 1990s (Tilbury, Stevenson, Fien, & Schreuder, 2002). There is different terminology used by different entities. IUCN-The World Conservation Union uses "education for sustainable living", "education for sustainable development" is also being used (UNESCO-UNEP, 1996) and "education for sustainability" is another usage (National Forum on Partnerships Supporting Education about the Environment, USA 1996). "Environmental education for sustainability", "environmental education", "development education" are other attempts. It seems clarification of both the terminology and the meaning behind it is very complex. Details of debates will be provided in "Literature Review" of this research.

Education for sustainability is very closely related with early childhood education. Rationale behind previous statement grounds on many factors. In the early childhood period children develop their basic values, attitudes, skills, behaviors and habits (UNESCO, 2008). Since early childhood education (ECE) is about supporting intellectual, psychological, emotional, social and physical development and lifelong learning, ECE has great potential in fostering values, attitudes, skills and behaviours that support sustainability.

As a result, as quotes presented previously explain, education is both part and the solution of the unsustainability problem. While education is introduced as the key to more sustainable society, it also is a part of present unsustainable society. Hence, it is important to fulfill its potential towards change as well as the subject of change itself. According to Hohn (1998) there are four types of change:

- change by exception (it exists when an individual makes an exception to present belief system)

- incremental change (gradual change that an individual is not aware of it)

- pendulum change (change that results in dramatic shift is points of view)

- paradigm change (fundamental rethinking of premises and assumptions)

Teachers of education for sustainability can be considered as change agents due to fact that change agents deliberately try to bring about a change or innovation (Havelock & Zlotolow, 1995). Related literature mainly directs researchers to transformative learning when it is aimed to reach change process through adult education. As occurs in transformative learning, change necessitates questioning of premises and assumptions. As Mezirow (1990) indicated, transformative learning is a process in which learners critically question their assumptions, beliefs and values in the light of acquiring knowledge and start the personal and social change through "reframing" in perspective transformation.

Given all the facts above, change in education towards sustainability is needed. Progress towards a more sustainable future depends on learning. As European Parliament (2008, p.1) stated *"Whereas the quality of teacher training is reflected in educational practice and has a direct effect not only on pupils' level of knowledge but also on the formation of their personality, particularly during the first years of their school experience"*. Early childhood teachers have potential to become agents of change. They should be supported through transformative learning experiences so that their students will be members of more sustainable societies.

1.2 Purpose of the Study

The purpose of this study is twofold, first is to create an in-service training example that can be conducted with childhood education teachers in the framework of transformative learning towards learning for sustainability. Second aim of the study is to investigate the effects and contributors of created transformative learning example on participants' perspective transformation. It is expected that application of the content will inspire teacher training institutions aiming empowering teachers to become individuals who are more inclusive in their perceptions of the world, able to reformulate their perceptions, open to other points of view and new ways, able to integrate differing dimensions of their experiences into meaningful and holistic relationships through reflection, dialogue, critique, concernment, imagination and action targeting at fostering a sustainable vision of society (Mezirow, 1991).

In this research, by designing a transformative in-service learning training content, it is aimed to reach learning outcomes as follows:

1) Teacher will be able to perceive change in self and others

2) Teacher will be critical to current perceptions and assumptions about sustainability and development

3) Teacher will be able to identify three pillars of sustainability and relation among them

4) Teacher will explore options for new roles, relationships, and actions towards sustainability

5) Teacher will plan a course of action in terms of education for sustainability through acquired knowledge and skills

By gaining learning outcomes listed above, it is expected that ECE teachers will start acting as agents of change needed for more sustainable future. By applying transformative

learning theory into practice, in this study it was expected that both teachers and their approach to education will transform towards sustainability.

1.3 Hypotheses of the Study

In this study, two research questions of particular interest to transformative learning practice were answered:

a) What proportion of the sampled population of ECE teachers experienced a perspective transformation in terms of sustainability within the context of the training provided?

b) What could be the factors that facilitate perspective transformation among ECE teachers?

1.4 Significance of the Study

The ultimate aim of the education should be to equip children with knowledge, skills and opportunities to realize their potential and to participate in social and political life (Education for All Global Monitoring Report, 2009). Unfortunately, most of the education systems are standing very far from this aim. Children spend most of their times indoors, dealing with letters and numbers, classes have very basic equipment and materials are hardly available for children. Choices of children are not taken into consideration, while freedom of movement, contact with nature, exchange with peers and exploration are seen as secondary components of the education. Currently, classrooms are filled by millions of children who are malnourished and whose brains and their education potential permanently damaged by hunger and ill health (Education for All Global Monitoring Report, 2009). The only solution to this

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problem is being claimed as *more rapid economic growth* (CISCO, 2010). If more rapid economic growth alone would overcome these deficits, India would solve many problems due to fact that it has been among the world's fastest-growing economies over the past two decades. As a matter of fact, in India child health and nutrition conditions have been improving very slowly (Education for All Global Monitoring Report, 2009). Thus, this study argues that solution to this problem is integration sustainability into early childhood education system through professional development of early childhood education teachers. Main approach to ECE which was taken into account in this study is explained in the following paragraph.

The tendency towards entering compulsory school system at early ages and global system which empowers academic performance are the main factors bringing pressure for ECE to ensure readiness for school. As described in Starting Strong II (OECD, 2006) there are two approaches regarding that issue: readiness for school and social pedagogy tradition. 'Readiness for school' approach highly focuses on cognitive development, acquisition of knowledge as well as similarities as a result of classroom experiences. 'Social pedagogy tradition' deals with ECE as a tool for preparation for life and foundation stage of lifelong learning. ECE serves to broaden the developmental need of young children as well as holistic approach to learning is practiced and learning to live together is being emphasized. Sustainability questions the sufficiency of established goals and educational processes. It also challenges the traditional approach to education as schooling or formal provision (Sterling, 1996). Thus, in this study, 'social pedagogy tradition' was taken as a reference point in the discussion of ECE for sustainability due to fact that ECE for sustainability accepts that young children can be actively involved at the moment and in the future. Engagement with active

learning, emphasis on direct experiences and free exploration are characteristics of ECE for sustainability and the developmentally appropriate practices (Cohen, 1992).

It is vital to keep the sight of interconnectedness in all dimensions. In line with this perspective, since quality of teacher is seen as the leading actor on children's learning and development (Hanushek, Rivkin & Kaim, 2005), ECE teachers have the most important role on providing opportunities to children in the framework of sustainability. The Council of European Union (2009, p.5) recognizes that: *"No course of initial teacher education, however excellent, can equip teachers with all the competences they will require during their careers. Demands on the teaching profession are evolving rapidly, imposing the need for new approaches. To be fully effective in teaching, and capable of adjusting to the evolving needs of learners in a world of rapid social, cultural, economic and technological change, teachers themselves need to reflect on their own learning requirements in the context of their particular school environment, and to take greater responsibility for their own lifelong learning as a means of updating and developing their own knowledge and skills"*. Inadequate practices in teacher training were stated as causes of deficiencies in sustainability component in education and it was explained that environmental education should be obligatory part of both pre- and in-service teacher education (UNESCO, 2005a).

In Turkey, the importance of professional development of ECE teachers has not yet been recognized. Therefore, this study is considered to be significant contribution to focus decision-makers' attention on how to create training opportunities specifically for ECE teachers in order to provide them with support mechanisms as a means of encouraging them to assume education as a process of personal and social development, which focuses on the aesthetic, moral, physical and spiritual needs of the student as well as her cognitive

attainment, while she is viewed as a whole person. Transformative learning as a part of professional development in framework of sustainability may provide opportunities to educators, their students, colleagues and institutions to change the conventional approach of teaching and learning. Understanding sustainability may allow stakeholders to consider taken-for-granted frames of reference points such as perspectives and habits. This study is considered to help teachers to understand that all life on the planet is interconnected and interdependent and meaning is derived from understanding relationships, therefore individuals cannot act in isolation. This process has potential to meet with beliefs and opinions that will lead to more justified actions.

1.5 Definition of Terms

The following terms need to be defined for the purpose of this study.

Sustainability. In this research, researcher reached her own synthesis of the definition of sustainability as "a radical shift of world view that includes rethinking of most patterns of human activity, towards satisfaction and improvement of condition of ecosystem socially, economically and ecologically."

Transformative Learning. Transformative learning is a process in which learners critically question their assumptions, beliefs and values in the light of acquiring knowledge and start the personal and social change through "reframing" in perspective transformation (Mezirow, 1990).

Early Childhood Education. Early Childhood Education (ECE) is an educational interaction taking place in young children's different living environments, aimed at promoting their balanced growth, development and learning (Heinämäki, 2008).

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Early Childhood Years. The period of children from birth to age 8 (Makin, Diaz & McLachlan, 2007).

Early Childhood Program. As Bredekamp and Copple (1997) stated early childhood program is any group program in a center, school, or other facility that serves children from birth to age 8.

Teachers' Professional Development in Early Childhood Education. NAEYC (1993) defines professional development as learning experiences designed to improve the knowledge, skills/behaviors, and attitudes/values of the early childhood workforce.

Environmental Education. Environmental education is a tool for *"producing a citizenry that is knowledgeable concerning the biospherical environment and its associated problems, aware of how to help solve those problems, and motivated to work towards their solution"* (Stapp, 1969, p.30). In line with Stapp's definition Belgrade Charter (1975, p.3-4) approaches EE as follows: *"The goal of environmental education is: To develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones."*

Education for Sustainable Development (ESD). Sustainable Development Education Panel (1998, p. 30) defines ESD as: *'Education for sustainable development enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both globally and locally, that will improve the quality of life now and without damaging the planet for the future'.*

Education for Sustainability. Education for Sustainability (EFS) is learning that links knowledge, inquiry, and action to help learners build a sustainable future for their communities and the planet.

1.6 Limitations of the Study

Small size of the sample and the qualitative design of the study cause cautious generalization of results beyond the sampled group of learners. In addition to this, since the size of sample group is very small and demographic characteristics of participants were very similar, demographic information did not allow seeing the results of the study vary with different groups of people. In normal circumstances, the instrument allows researchers to analyze individual effects and correlations. Individual differences could be studied by cross tabulations and between chi squared test of significance between demographic groups and between PT-Index of 1 and 3 (King, 2009). PT-Index of the whole group was scored as 3, so it was impossible to grouping the sample according to PT-Index. Also, many categorization options were tried for the purpose of the study and each time there was too few respondents to be taken into account. In addition to sample size factor, it should be noted that it was not possible to study long-term effects of the study. This study does not cover measurement of implications on transformed beliefs, values, assumptions or expectations. Results and findings of study were based on perceptions of participants. Values, assumptipons, beliefs or expectations may be concepts that differ among individuals. And it's assumed that all participants were honest.

Research Bias: In this research, there are some areas that are open to research bias. During interviews, the interviewer might subconsciously give subtle clues in with body

language, or tone of voice. This could influence the subject into giving answers related with the interviewer's own opinions, prejudices and values (interviewer bias). Also, in this study response bias is another type possible bias occurence due to fact that subjects consciously, or subconsciously, might give responses that they think that the interviewer wants to hear.

This study attempted to approach the problem mentioned in the statement of the problem section with transformative learning to empower most crucial components of the education systems, the Early Childhood Education teachers, to increase the potential to reach more sustainable societies. In this chapter, within overview of theoretical framework, current state of the problem is explained. Furthermore, both purposes and educational significance of the study is discussed. In last parts of this chapter, research questions, definition of key terms and limitations of the study are provided.

CHAPTER 2

LITERATURE REVIEW

In this chapter, a review of relevant literature is presented. In the first section, sustainable development, environmental education, education for sustainable development and education for sustainability are discussed. Then, the next section examines early childhood education for sustainability. Third section which was entitled as "Building Capacities of Teachers: Priority of Priorities" mainly explores roles of teachers in the attempt of building sustainable societies. In this section mainly developments in the world and situation in Turkey are discussed. Both pre-service EE and ESD training at universities and in-service EE and ESD training in institutions are analyzed to realize the current state of educational approach to sustainability. In the fourth section, transformative learning is discussed in detail to support fundamentals of the study. Finally, a summary of this chapter is provided.

2.1 Sustainable Development, Environmental Education, Education for Sustainable Development, Education for Sustainability

One of the most well-known definitions of sustainable development is used in the Brundtland Commission Report, Our Common Future, 1987, as *"development that meets the need of the present without compromising the ability of future generations to meet their own needs"* (p.43). It can be also cited to United Nations Millennium Declaration (2000), in which the idea is that we must ensure that basic human needs may be satisfied for all human beings

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without damaging the life-sustaining system of our planet. In 1991, The World Conservation Union (IUCN), World Wildlife Fund (WWF) and United Nations Environment Programme (UNEP) defined sustainable development as "*improving the quality of human life while living within the carrying capacity of supporting ecosystems, which emphasizes improving the quality of human life while protecting the Earth's capacity for regeneration*" (IUCN, WWF, UNEP 1991, p. 10). In Johannesburg Summit which was held in 2002, dimensions of social justice and the fight against poverty had been added to the definition of sustainable development and sustainable development now covers three integrated dimensions: social, economic and ecological, for all questions of development. Helen Bergsten in Chalmers Annual Report (2006, p.31) discusses that *"sustainable development is a perspective or a vision rather than a definition and provides room for many different starting points"*. The common message behind this concept is that the time line encompasses several generations and there is always a global perspective. Taking responsibility and participating individually are integral parts of Sustainable Development. And the key principle is that economic, social and environmental processes are interrelated targeting to compose a whole as well as there are opportunities to approach this whole from different directions.

If sustainable development is considered as a perspective or a vision that can be embedded in every part of life, then its reflection on education should be one of the main areas to be explored. The word *education* comes from the Latin *e-ducere* meaning "to lead out" (Yero, 2001-2002). Education for young children should be able to stimulate their curiosity and interest in what's going on around them. Bloom (1979) emphasizes this statement by giving reference to Jean Jacques Rosseau as stated in his book Emile *"Teach your child to observe the phenomena of nature... Let him know nothing because you have told*

him but because he has learnt it himself. Let him not be taught science, let him discover it. ...

begin by showing him the real thing so that he may at least know what you are talking about"

(p. 142). However, current education settings are being far from stimulators of curiosity. As

Trant (1986) criticizes education of today *"schooling today is over-intellectual, it has become*

too abstract and too cognitive" (p.22).   This approach may lead to boredom and

disenchantments of later years as well as preoccupation with artificial things and alienation

from the sources of our strength (Carson, 1965). Current situation in educational environment

highly depends on the world-views affecting curriculum and instruction models. Educational

scholars have developed a variety of frameworks to illustrate and explain educational

approaches that apply to both formal and non-formal education. Greig, Selby and Pike (1989)

developed a chart (See Table 2.1) to display how world-views pan out in education.

Table 2.1 World-view impact on Education

world-view	theory of change	curriculum and instruction position
Fragmentalism Humankind is divorced from nature and can therefore exploit the environment; nature is made up of a series of building blocks; individuals are encouraged to compete in the market as free agents	*Traditional/conservative* Traditions must be maintained – Change needs to be checked and controlled; parts of a system can be changed if they don't work effectively; social change comes about through the efforts of successful individuals	*Transmission* Education is one-way top downward movement of certain knowledge, skills and values; its focus is the traditional school subjects taught in a traditional way; the student is seen as a passive recipient of convenienty packaged and programmed blocks of teaching
Pragmatism (modern scientific) Humankind can improve the environment through the use of rational planning; science and technology can solve the problems the planet faces; individual behavior is predictable and can be monitored through legislation.	*Intervention* Change needs to be introduced and managed in a rational and scientific manner; social improvement requires deliberate intervention by some individuals for the good of others	*Transaction* Education is a dialogue between the student and the curriculum; the focus is on teaching strategies which facilitate problem solving; the student is seen as rational and capable of solving problems if given the right tools
Holism (systems-thinking) All life on the planet is interconnected and	*Organicism* Change is an inevitable and natural function of a system;	*Transformation* Education is a process of personal and social

interdependent; meaning is derived from understanding relationships; individuals cannot act in isolation – the actions of any one impact on the system	change only has meaning in the context of the system; social improvement comes through dismantling the human-barriers to change	development; it focuses on the aesthetic, moral, physical and spiritual needs of the student as well as her cognitive attainment; the student is viewed as a whole person

Source: Greig, Selb and Pike (1989, p.45)

Russell (2001, p.52) presented different approaches to education together with several models of reflecting themes of educational instruction and curriculum (See Table 2.2).

Table 2.2 Curriculum and Instruction Models

Miller (1993a)	Transmission	Transaction	Transformation
Eisner (1979)	Technology	Cognition Personal Relevance Social Adaptation	Social Reconstruction
Prakash & Waks (1985)	Technical	Rational	Personal Social Responsibility
Greig, Pike & Selby (1989)	Fragmentalism	Pragmatism	Holism
Bowers & Flinders (1990)	Technocratic	Academic Rationalist	Critical Pedagogical
Berlak & Berlak (1983)	Knowledge as Content	Knowledge as Process	Personal and Public Knowledge

Source: Russell, 2001, p. 52

The three worldviews - fragmentalism, pragmatism, holism, - as identified by Greig, Pike and Selby (1989) overlaps well with the curriculum and instruction positions described by Miller (1993a). Theory of holistic education is not a recent phenomenon. Socrates, Plato, Rousseau, Froebel, Pestalozzi and Dewey are considered early scholars in the field of holistic education. Montessori (1916-1965), Steiner (1861-1925) and Malaguzzi (1920-1994) are often cited in literature as examples of holistic education theory and practice (Green, 2004). Many holistic education theorists including Froebel, Rousseau, Dewey, Orr, Moore and Hart insist on the importance of linking the environment with education and positive effects of this linkage (Alexander, 1987; Hart, 1997; Miller, 1993; Moore, 1995; Orr 1992; Rousseau, 1979).

In his book *Ecological Literacy*, Orr (1992) states the aim of the education as helping students to be able to make connections inherent in themselves and the world around them. In the second edition of his book *Holistic Curriculum* in 1996, Miller wrote that *"Holistic Curriculum is about connections"* (p.176). Miller explains that both personal growth and social change are main aims of holistic education. Miller (1996) developed a model representing three educational approaches or positions. The three positions- transmission, transaction, transformation- are described as being interrelated and cumulative as illustrated in Figure 2.1.
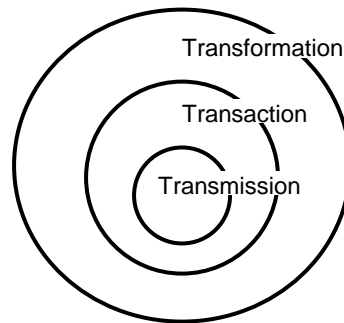
Figure 2.1 A Holistic Stance (Miller, 1996, p.8)

In the transmission position, knowledge is content, the educator is a powerful holder of knowledge and the learner is passive participant (Miller, 1996). Freire (1970) expresses this approach as "Banking". In the transaction position, knowledge is seen as a process and there is a room for the individual learner and the interaction between the learner, the educator and the environment. In this position humans are typically viewed apart from Nature (See Table 2.3). Facilitating problem-solving and cognitive growth are key objectives of the transaction position and the learner is viewed as the problem solver. Transaction position is being linked to Dewey's (1859-1952) pragmatic approach to education. Russell (2001) claims

that the transaction position is the most commonly used approach in environmental education and perhaps in education, in general.

A holistic approach to thinking is placed at the center in transformation position. Education is being considered as a process of personal and social development by focusing on individual's aesthetics, moral, physical, and spiritual Self, as well as the development of cognitive abilities. The learner is viewed as a whole person. Students, teachers and curriculum are connected (Miller, 1996). It can be concluded that, as represented by the Figure 2.1 and Table 2.3, the transformation position is the most inclusive of the three approaches to education.

Table 2.3 Approaches to Environmental Education from Curriculum Position Perspective

Curriculum Position (from Miller,1993)	Transmission	Transaction	Transformation
Approach to Nature	Nature as resource Nature as series of building blocks Humankind separate from and superior to nature, ie. anthropocentric Technical solutions to environmental problems	Nature as resource Nature as complicated system but manageable through rational planning and the use of science and technology Humankind separate from and superior to nature	Nature as more than a resource, nature as home All life interconnected and interdependent Biological and cultural diversity valued Relationships both among humans and between humans and other life important
Approach to Environmental Education	Banking Behavioural modification and technofix solutions Science dominant	Student-centered Problem-solving Skill development Action-oriented Other disciplines valued but science dominant	Student-centered Personal growth and social change Development of "whole" person Commitment to social and environmental justice Collaborative, participatory Interdisciplinary

Source: Russell, 2001, p. 53

So far, sustainable development, its reflection on education and world view's effect on educational models are discussed. In the following part of this chapter, focus of discussion is based on education for sustainable development, environmental education and education for sustainability. As presented in definition of the terms section of this study, Sustainable Development Education Panel (1998, p.30) defined Education for Sustainable Development (ESD) as: *"Education for sustainable development enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both globally and locally, that will improve the quality of life now and without damaging the planet for the future".* The pillars of education for sustainable development are (Pressoir, 2008-UNESCO, 2008, p.61):

- Learning to know: acquiring instruments of understanding.

- Learning to be: seeing oneself the main actor in defining positive outcomes for the future.

- Learning to live together: participate and co-operate with other people in all human activity.

- Learning to do: be able to react creatively and responsibly in all environments.

- Learning to transform oneself and society: develop respect for the environment, social solidarity and non-discrimination.

Hesselink, Kempen and Wals (2000) agree that there is some kind of a consensus about ESD, while less agreement can be found with regards to the relationship between ESD and Environmental Education (EE). Majority thinks that ESD is the next generation of EE. Some researchers support the statement that ESD should be a part of good EE. Again others

suggest that EE is a part of ESD. And also some think they have intersecting areas between two. Four main relationships stated so far between EE and ESD are displayed in Figure 2.2.
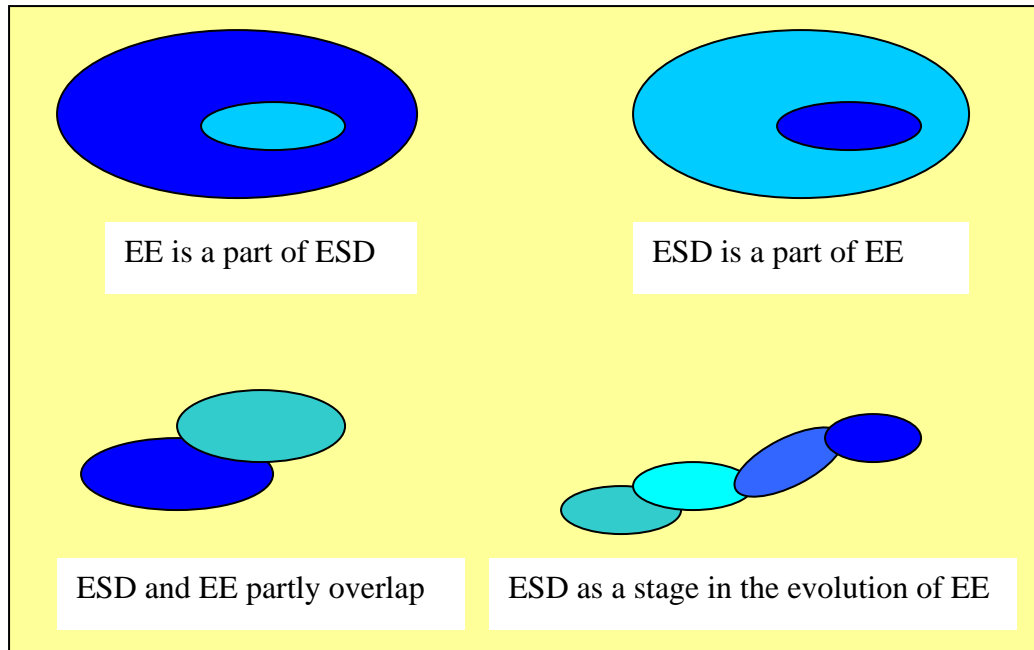
Figure 2.2 Four perspectives on the relationship between EE and ESD (Hesselink, Kempen & Wals, 2000, p.12)

Many environmental educationalists (e.g. Fien, 1993; Gough, 1992) agree that environmental education should apply a holistic approach known as education *about, in* and *for* the environment. Education *about* the environment involves environmental awareness and knowledge. Education *in* the environment promotes outdoor activities that allow personal experience with the environment by child-centered and activity based learning. And lastly, education *for* the environment encourages active participation in the process of solving environmental problems (Tilbury, 1995). Still, the term "environmental education" reflects a narrow understanding that can be explained as environmental education is about natural

environment as well as fostering positive attitudes, values and responsibility about the natural environment (Wilson, 1994).

ECE for sustainability is broader than simply taking children outdoors to enjoy the nature and mentioning about the natural environment. ECE for sustainability is about engagement of children in discussions about sustainability and in positive actions regarding the environment. It should also incorporate learning which includes respect to differences, notions of equality and fairness as the world is increasingly interdependent and inter-connected (UNESCO, 2008). Thus, in this study, main focus of the terminology is directed to ECE for sustainability and details are provided in the section 2.2.[1] Following figure (Figure 2.3) displays broad understanding of education for sustainability.

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[1] It is important to note that literature in this field uses EE, ESD and education for sustainability interchangeably. In addition to this, even though education for sustainability provides broadest aspect to the field, it is difficult to find studies specifically on education for sustainability. Thus, literature section includes many researches from EE, ESD and education for sustainability.
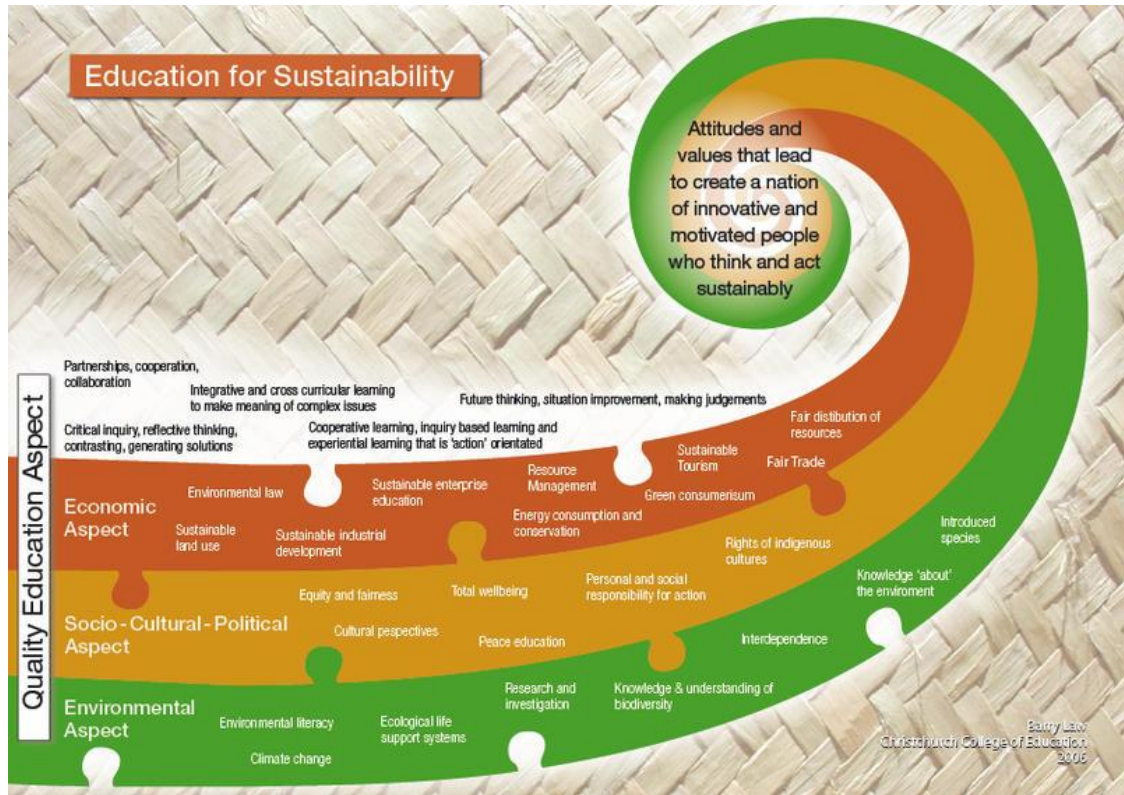
Figure 2.3 Education for sustainability swirl (Wikieducator, 2010)

So far, education is presented as the solution for unsustainability and this presentation contains some dilemmas. Even though it is stated that education is the best way to change human behaviour towards a sustainable society, people in the most educated countries leave the largest ecological footprints on Earth (Global Footprint Network, 2007). Larger ecological footprints mean larger pressure on Earth and larger consumption as well as waste production. Thus, there is an educational crisis that requires thinking out of the box and new priorities for education should be set; and starting from early childhood education would be a meaningful attempt.

2.2 Early Childhood Education for Sustainability

Sustainability is being added to ECE as a new dimension with the launch of the United Nations Decade of Education for Sustainable Development (2005-2014) (UNESCO, 2005a). ECE for sustainability accepts that (a) young children have capacities to be active agents of change *now*, as well as into the future (b) early exposure is important for shaping environmental attitudes, values, knowledge and actions (Davis, 2008). Early childhood is a period when the foundations of thinking, being, knowing and acting are established, while relationships with others and the environment are becoming composed. This period is also a time for establishment of fundamentals for adult activism around environmental issues (Chawla, 1998; Davis & Gibson, 2006; Wells & Lekies, 2006).

ECE is more closely related to the idea of sustainability than other levels of formal education (Haddad, 2008). It's important to review the relationship among ECE and sustainable society. Formal education systems are focused on the aspects of academic learning while other important issues related to human existence disappear. Sustainability touches upon all aspects of the existence, so it is vital to include sustainability in ECE.

As one characteristic of education for sustainability, positive interactions with natural environmental are an integral part of healthy child development (Sebba, 1991). Moreover, negative issues on environment catch children's sensitivity, emotions and cognitive interests. Since environmental problems are part of children's lives, they have the right to speak of, think and worry about them (Didonet, 2008). Every problem that affects the surroundings of the child affects the child too. The first principle of the Earth Charter (Earth Charter Initiative,

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p.72) is *"recognize that all beings are interdependent and every form of life has value regardless of its worth to human beings"*.

As explained by Bowlby (1969) in the framework of attachment theory, young child needs to develop a relationship with at least one primary caregiver for normal social and emotional development. Infants become attached to adults who are sensitive and responsive in social interactions with them, and who remain as consistent caregivers for some months. Just as young children need to remain positive relationship with primary adults in their lives to develop positive relationships with them, they also are in need to maintain positive experiences with natural environment if they are to develop a sensitive and loving relationship with the nature. This approach is parallel with the "Developmentally Appropriate Practices" (Bredekamp, 1987). Education for sustainability and developmentally appropriate practices has common characteristics such as engagement with active learning, emphasis on direct experiences and free exploration (Cohen, 1992). For example, contact with the natural environment helps children to use senses as well as it fosters observational and critical thinking (e.g. "why bats are upside down when they are sleeping"), provides opportunities for physical manipulation, imagination and sense of wonder (Wilson, 1994).

One of the most effective ways to support the "need for the conservation of nature" is to support the fact that children develop a sense of respect and caring for the natural environment during their early years. If they are not able to do it during their early years, they are at risk for never developing positive attitudes later in life (Stapp, 1978; Tilbury, 1994; Wilson, 1993, 1994). In the early years of life, the brain is particularly sensitive regarding the new experiences. At those times, negative experiences are more likely to have serious and sustained effects. This means that if children develop negative attitudes towards environment

during early childhood years, their attitudes are more likely to be permanent (Cohen, 1983). Living apart from nature may have the consequence of prejudice development against nature (Cohen, 1983) and once prejudices are formed it becomes harder to develop positive attitudes toward natural environment (Wilson, 1992).

Now, we know *why* early childhood education for sustainability is needed and now we would like to discuss *how* that is needed. In most countries, EE, ESD or education for sustainability are not fundamental parts of the education system; rather it is an optional and extra activity which has not yet 'come into the mainstream' (Benedict, 1999) due to fact that integrating aspects of sustainability necessitates thinking very critically about the restructuring of didactical arrangements (Wals, 2006).

When it comes to restructuring early years of children's education, early childhood education for sustainability approach is based on different principles. At the Goteborg 2005 meeting on ESD, Wals et al. (1999, p.120) identified eight criteria that could be taken into account:

- Total immersion: learning by doing

- Diversity in learning styles

- Active participation: developing discourse and ownership by utilizing the learners' knowledge and ideas

- The values of valuing: exposing the learner to alternative way of knowing and valuing through self-confrontation

- Balancing the far and near: the integration of environment and other global issues.

- A case-study approach

- The social dimension of learning

- Learning for action.

Another approach to early childhood education for sustainability is provided as follows: early childhood education for sustainability (a) is context sensitive and it covers culturally relevant content; (b) includes content that fosters caring attitudes and empathy vis-à-vis the natural environment, and people living in other parts of the world; (c) emphasizes learning about respect for diversity; (d) includes learning about gender issues and equal rights, opportunities and responsibilities of boys and girls; (e) is about learning of basic life skills, (f) takes the concept of learning for life into account (g) applies activities built around the 7Rs: reduce, reuse, repair, recycle, respect, reflect and refuse; etc. (UNESCO, 2008, p.15). The four pillars of learning proposed by the Delors Report (1998) – learning to be, learning to do, learning to learn, learning to live together – are also relevant in developing early childhood education in service of sustainability.

New ways of teaching and learning play key role for this re-orientation. It is important for teachers to re-learn their way of teaching and learning and to re-think and to re-shape their mutual relationships. This approach requires lifelong learning and constant paradigm shifts in educational orientation (Wals, 2006). According to Wals (2006, p.49), programming sustainability requires re-orientation as displayed in Table 2.4.

Table 2.4 Reorientation for Sustainability Programming

- Sustainability requires a focus on competencies and higher thinking skills
- Sustainability requires a foundational appreciation of holistic principles, critical system understandings, and practical systemic competencies
- Sustainability requires an early start, i.e. well before students enroll in universities (from kindergarten through high school)
- Sustainability requires critical reflection on one's own teaching
- Sustainability requires self-commitment and taking responsibility
- Sustainability requires empowerment of learners by enabling them to work on the resolution of real issues that they themselves have identified
- Sustainability requires appreciation and respect for differences
- Sustainability requires courage ('Dare to be different')
- Sustainability requires creativity as there are no recipes

Source: Wals, 2006, p.49

2.3 Building Capacities of Teachers: Priority of Priorities

Environmentally educated teachers' essential role is to provide their students opportunity to learn how their roles play vital role towards a sustainable environment. As UNESCO-UNEP International Environmental Education Programme (1990) has underlined, the teacher training is "the priority of priorities" on the way to improve the effectiveness of environmental education. UNESCO-UNEP International Environmental Education Programme can be considered as a well-prepared documentation on the role of teacher education in promoting environmental education. In the Tbilisi Intergovernmental Conference (UNESCO, 1977) the ability of teacher was emphasized while discussing environmental education curriculum. In addition to the Tbilisi Conference, teacher education has been referred in many conferences such as the International Union for the Conservation of Nature and Natural Resources (IUCN) "Environmental Education" Conference (1971), the

International Belgrade Workshop (1975) and the United Nations Conference on Environment and Development, the Earth Summit (1992).

It is important to realize the fact that a teacher won't be able to provide environmental education in a meaning way solely by obtaining information on environmental concerns or by studying environmental science. Special training which internalizes a new outlook that explores new and individualized behaviour based sustainability is needed.

Although there is an existence of many policy recommendations at international arena and the escalation of support for environmental education, environmental education within teacher education still remains as a deficiency as a practice (Williams, 1985). One of the main factor causing deficiencies in environmental education was announced in Tbilisi Conference as inadequate practices in teacher training, so it was agreed that environmental education should be obligatory part of both pre- and in-service teacher education (UNESCO-UNEP, 1990). It seems that this agreement remains important due to fact that not much has changed after the announcement of this agreement. A comprehensive national approach for implementing environmental education through teacher education was not achieved so far despite some pattern of ascending interest without coordination (Ballantine & Aston, 1990; NIER, 1993; Williams, 1985, 1988). Pre-service teacher training efforts in environmental education differ in structure, approaches, facilities and duration in different institutions within nations. Existing programmes are lacking a holistic understanding of environmental education as well as they are not sufficient to provide interdisciplinary techniques (Ballantine & Aston, 1990). As Stapp (1969) argued in the pre-service teacher training courses research, most of the institutions prefer domination of traditional discipline-oriented education approaches and most of those approaches don't aim to improve learner's problem-solving skills.

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It is generally discussed that school management and organization, leadership, expenditure per student, physical conditions and technological facilities play important role on the learning and development of the children. However, quality of teacher is seen as the leading actor on children's learning and development (Hanushek, Rivkin & Kaim, 2005). Reflection of this fact directed European Parliament (2008) to act towards development of teachers' capacities by accepting the resolution entitled as "Improving the quality of teacher education": *"...(European Parliament) recognizes the importance of the ongoing participation of teachers in working and discussion groups relating to their teaching activity; believes that this work should be backed up by mentors and educational authorities; considers that participation in critical reflection activities concerning the teaching process should generate greater interest in teachers' work and thus improve their performance..."* (p.4). European Commission (2009) considers that *"teachers play a vital role in enabling people to identify and develop their talents and to fulfill their potential for personal growth and well-being, as well as in helping them to acquire the complex range of knowledge, skills and key competences that they will need as citizens throughout their personal, social and professional lives."* (p.3). It's been emphasized that teacher education, support and continuous professional development provide opportunities to gain competencies explained in Table 2.5.

Table 2.5 Decision of European Council dated 26 October 2007

Promotion of initial teacher education, early career support and through continuous professional development and the acquisition of competences should enable teachers to:
– teach transversal competences such as those outlined in the recommendation on key competencies,
– create a safe and attractive school environment which is based on mutual respect and cooperation,
– teach effectively in heterogeneous classes of pupils from diverse social and cultural backgrounds and with a wide range of abilities and needs, including special education needs,
– work in close collaboration with colleagues, parents and the wider community,
– participate in the development of the school or training centre in which they are employed,
– develop new knowledge and be innovative through engagement in reflective practice and research,
– make use of ICT in their various tasks, as well as in their own continuing professional development,
– become autonomous learners in their own career-long professional development

Source: European Council, 2007, p.C300/9

2.3.1 Pre-service and In-service EE and/or ESD Teacher Training in Turkey

2.3.1.1 Pre-service EE and/or ESD Teacher Training at Universities in Turkey

There are courses about environmental issues in some various programs of the universities and high-tech institutes in Turkey to teach preferred behaviors and approaches to the students. These courses are given under various titles such as Ecology, Environmental Problems of Turkey, Environmental Law, Environmental Philosophy, Ecosystems, Environment and Human Being and Environmental Biology. Basically, functioning of the ecosystems, environmental problems emanating from human activities and solutions to them is taught in these lessons. Students in the departments of Agricultural Engineering, Forestry Engineering, Biology, Architecture, Environmental Engineering, Biology Teaching are obliged to take courses related to this subject. Students in the departments other than mentioned ones can take elective courses on environment. However, there are no widespread

environmental education courses being conducted in early childhood or preschool education departments at Turkish universities.

Although there are few courses related to environment in the post-graduate programs of universities, studies on the environmental education are distinctive despite their few numbers. One of these studies was conducted under the leadership of Sinan Erten and under the aegis of Hacettepe University, Education Faculty, and Primary Education Science Teaching Department in 2002. The scope of the study was to find how aware the students are in the 2nd level (6th, 7th and 8th classes) of primary school when the subject is the preservation of environment. The study was conducted with 671 students in the 13 Primary Schools in Ankara. The results of the study revealed that parents have little knowledge about the environmental pollution and they do not enlighten their children; students are interested in environmental issues but prefer the issues such as "world of animals or living things" generally shown on TV documentaries; and they have not developed recycling behaviors. However, both families and the students are quite aware on the subjects that have direct affect on them.

Another interesting study is conducted on university students. The objective of this study was to find out the awareness levels of the candidate teachers to teach environmental education in the future. Conceptual misunderstandings detected in all levels of education show that environmental education is not as effective as desired and memorization-based course methods should be deserted. This fact underlines that teachers who will integrate education for sustainability must be exposed to an education of high quality in the university years. Only aware and sensitive teachers can give students necessary awareness and responsibility. The study conducted with 23 biology and 29 elementary candidate teachers in KTÜ (Karadeniz

Technical University), Fatih Education Faculty. The aim of the study was to see whether the environmental education based on the presentation of subjects prepared by students by using their creativity and skills could be effective or not. The results showed that the lessons organized in a way to improve their cognitive and physical skills and to enable active student participation not only makes the learning enjoyable but also has positive effect on the success of the students. It is seen that students have a chance to look into the details of the subject with the help of some activities prepared by themselves and the information learned by the audience (other students) can be kept in mind for long terms.

Another research was conducted with candidate preschool teachers with respect to environmental awareness by investigating their behaviors related to the environmental protection by Sinan Erten (2005). 352 candidate preschool teachers were participated in the research. A survey with 60 questions (20 knowledge-level questions, 20 attitude-level questions, 20 behavior-level questions) was conducted and following results were revealed:

- Participants of the research have high awareness towards environmental issues, however, they have inadequacies regarding positive attitudes and behaviors to protect the environment. For example, 83.2% of the participants agreed that observing disposed papers in regular garbage makes them sad, at the same time only 16% of the participants declared that they collect used papers separately for recycling. This result was explained by Diekmann and Preisendörfer's (1992) low-cost/high-cost theory. Behaviors that don't necessitate too much effort or money are categorized as low-cost behaviors. Behaviors that require regular effort and financial support are explained as high-cost behaviors. So, results of this research reveal that candidate teachers' behavior choices are closer to low-cost behavior categorization.

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- As a result of this research, absence of basic environmental knowledge was also determined among candidate teachers. It can be summarized that knowledge and attitudes among candidate preschool teachers regarding environmental issues were not converted into positive behaviors.

2.1.3.2 In-Service EE and/or ESD Teacher Training in Turkey

In Turkey, every year, teachers are given regular in-service seminars. However, satisfactorily comprehensive trainings are not provided in these occasions and only a limited number of teachers were provided with this opportunity.

Ministry of National Education spent 17 TL (around USD 11,33) in 2009 per teacher for in-service training through the budget of In-Service Training Department (TED, 2009). Total amount of in-service trainings targeting pre-school teachers were collected and are summarized in Table 2.6 by searching the trainings planned by Ministry of National Education's In-service Training Department (Ankara) starting from the year 2002.

Table 2.6 In-service training amounts targeting pre-school teachers planned by Ministry of National Education

Year	Total Number of Planned In-Service Activities	Total Number of Planned In-Service Activities Targeting Preschool Teachers and Administrators	Total Number of Planned Participants for Whole In-Service Trainings	Total Number of Planned Participants for Preschool In-Service Trainings	Ratio
2002	348	4	41779	210	0,5%
2003	494	7	33924	500	1,5%
2004	547	11	37597	891	2,4%
2005	633	9	49004	922	1,9%
2006	608	21	53160	2636	5,0%
2007	842	17	52598	2032	3,9%
2008	930	12	59497	1085	1,8%
2009	826	10	52996	1040	2,0%
2010	678	7	42834	640	1,5%

Source: Ministry of National Education Statistics, www.hedb.meb.gov.tr

Table 2.6 clearly illustrates that the total amount of planned in-service trainings targeting pre-school teachers constitutes minority of whole planned in-service trainings. It is also important to review the content of the planned in-service trainings. First of all, none of the planned trainings have the content covering issues about environment, environmental education, education for sustainability. Secondly, contents of planned in-service trainings do not change dramatically from year to year. Rise in the amount of planned trainings and participants mainly resulted from the raise in participants quotas. So, it can be concluded that content of in-service trainings targeting pre-school teachers does not constitute major changes in time. Most repeated trainings are: multiple intelligence theory, drama, communication with children, parent involvement, art education, curriculum development, guidance, leadership, education for children with special needs.

2.4 Transformative Learning

Transformative learning is a particular vision of adult education as well as a conceptual approach for understanding how adults learn. Within instrumental view of adult education, learning process is being designed to foster change as a form for adaptation (Dirkx, 1998). This view emphasizes adult learning as a means of adapting to the needs and demands of the broader, socio-cultural context (Dirkx, 1998). It will be useful to consider four different perspectives of transformative learning to develop a deeper understanding of this notion as a whole. The work of Paulo Freire, Jack Mezirow, Larry Daloz and Robert Boyd present a basis to further the understanding of transformative learning.

2.4.1 Four Different Perspectives of Transformative Learning

Freire (1970) introduced a theory of transformative learning which is referred as *conscientization* or consiousness-raising. According to him, adult education targets to foster critical consciousness among individuals and groups. Critical consciousness is explained as a process in which learners develop the ability to analyze, pose questions as well as take actions on different contexts which influence and shape their lives. Learners develop awareness through dialog and problem-posing. Through learning, adults' ability to understand how social structures shape and influence the ways they think about themselves and the world. According to Freire, main mission of education is to urge freedom among learners by enabling them to reflect on their world and hence, change it. Transformative learning provides an opportunity to name the world and to construct the meaning of the world.

Even though Freire's influence can be observed on his work, Mezirow introduces different perspective of what transformation means. Mezirow (1991) developed a theory of

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adult learning based on cognitive and developmental psychology. According to him, meaning is made from our experiences through reflection, critical reflection and critical self-reflection. This process is named as *perspective transformation*. Perspectives are made of sets of beliefs, values and assumptions acquired through life experiences. How we perceive and understand ourselves and the world is affected by these perspectives. They both organize the information within our internal and external environments, and they also limit what we are able to perceive and understand. This means, meaning perspectives may direct us to faulty and constrictive information. Critical reflection, however, helps to identify, assess and reformulate key assumptions on which perspectives are based on.

Like Freire, Mezirow approaches knowledge as something that is constructed by the individual in relation with others. Mezirow (1991, 1997, 2000) developed his theory after examining variety of sources, theories and models (Cranton, 2002). Reflection and dialogue are key concepts of his theories. Mezirow adds psychological and cognitive characteristics to learning process. As Mezirow (1995) explains, process of rational and critical reflection on one's assumptions and beliefs are mediators of the learning process. It is easier to maintain state of mind rather than to change. Therefore, creativity and imagination play important role in transformative learning. Expected outcome of transformative learning is individuals who are more inclusive in their perceptions of the world, able to differentiate increasingly its various aspects, open to other points of view, able to integrate differing dimensions of their experiences into meaningful and holistic relationships (Mezirow, 1991). Transformative learning also helps to exchange ideas with others and to receive help from others.

Mezirow et. al (2000, p.22) introduced 10 phases of transformative learning process:

1. A disorienting dilemma

2. Self-examination with feelings of fear, anger, guilt, or shame

3. A critical assessment of assumptions

4. Recognition that one's discontent and the process of transformation are shared

5. Exploration of options for new roles, relationships, and actions

6. Planning a course of action

7. Acquiring knowledge and skills for implementing one's plans

8. Provisional trying of new roles

9. Building competence and self-confidence in new roles and relationships

10. A reintegration into one's life on the basis of conditions dictated by one's new perspective

According to Mezirow et. al (2000), adult learning is about formulating beliefs about experiences, assessing them, making meaning out of them and making decisions on implications. As mentioned by them transformative theory extends Bruner's (1996) four modes of meaning making: "(1) establishing, shaping, and maintaining intersubjectivity; (2) relating events, utterances, and behavior to the action taken; (3) construing of particulars in a normative context-deals with meaning relative to obligations, standards, conformities, and deviations; (4) making propositions-application of rules of the symbolic, syntactic, and conceptual systems used to achieve decontexualized meanings, including rules of inference and logic and such distinctions as whole-part, object-attribute, and identity-otherness." (p.4). The fifth mode was added by Mezirow et. al (2000) and explained as *"becoming critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation"* (p.4). This stage is highly individual and it

helps individual to look critically at him/herself to review assumptions. Accordingly, it can be inferred that transformative learning is a process by which the learner transforms taken-for-granted frames of reference points such as perspectives and habits to make them more comprehensive, open, flexible, emotionally capable of change and reflective. This process causes ending up with generation of beliefs and opinions that will prove truer or justified to guide action.

Taylor (1997) reviewed some empirical studies addressing to Mezirow's theory, consequently his framework didn't seem to be complete. Taylor brings extra-rational, emotional and spiritual dimensions which were not taken into account by Mezirow. There are more critiques and additional questions about Mezirow's framework. This situation indicates that there is a need to explore further this approach to understanding adult learning. The need for exploring more brings us to approach of Larry Daloz.

Like Mezirow and Freire, Daloz (1986) approaches to knowledge and learning from constructivist perspective. Unlike them, Daloz' theory of transformative learning bases less on rational, reflective acts and it depends on more on holistic and intuitive processes. As Daloz presents, transformative learning is more oriented to personal change than Mezirow's theory and less concerned with social structures of inequality and injustice as placed in Freire's view of transformation. Daloz emphasizes the need to find and construct meaning within our lives as a key factor that motivates adults to participate in learning experiences. Making sense of experiences is related with developmental movement of our lives. Participants of learning experiences are defined as "in between" phases of development, where the meaning structures are no longer relevant to their life experiences. Movement into new developmental phases necessitates the learner to construct new meaning structures to help understand the changing

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world. The developmental task requires replacement of old ways of meaning-making with the ones more appropriate to the demands at the specific point of learner's life.

Daloz (1986) adds the psychological and developmental context to adult learning. As Mezirow, Daloz is concerned with pedagogical implications of his point of view whereas he seems less focused on the development of transformative pedagogy. Daloz' work fosters learning within the metaphor of the mentor. Through his stories, metaphors can play an important role on disrupting old patterns of learners and enabling the learner to construct new ways of seeing the self and the world.

Last transformative theory is presented by Robert Boyd and it receives less attention from adult educators (Boyd, 1991; Boyd & Myers, 1988). Boyd shares developmental perspective of Daloz and Mezirow, and has a commitment to understand as well as facilitate personal transformation (Dirkx, 1998). In parallel with Freire, Boyd underlines the significance of consciousness in adult learning. Since he is approaching to the issue from Carl Jung's perspective, some concepts like *development*, *consciousness* and *transformation* have different meanings than other theorists. Boyd is more focused with expressive or emotional-spiritual dimensions of learning and how to integrate them more holistically and consciously within our daily experience of life. This is achieved by adults, according to Boyd, through making unconscious conscious. Adults became aware of things they are not conscious. Self-knowledge is fostered by symbols rather than directly through knowledge. At an unconscious levels, symbols represent deep-seated issues and concerns. Meaning-making is in this sense recognizing, naming and elaborating these symbols. All of these processes help adults to insight into those aspects of themselves remain unconscious as well as they serve as a tool to shape their sense of self, interpret their external world.

According to Boyd, the aim of transformative learning is to identify these symbols that appear within learning processes and to provide an intrapersonal dialogue with them. This dialogue takes place in between the conscious ego and less conscious aspect of the psyche of self. The transformative learning process involves an ongoing dialog within those structures. Carl Jung refers to this dialogue as *individuation* and it is claimed that this process is naturally ongoing within us all. Dirkx (2000) refers to Jung and his definition of individuation as a process in which persons are being formed and differentiated. The process helps human being to become whole through recognition and integration of conscious and unconscious elements of oneself. This shift is called by Jung as "being called awake". As Dirkx (2000, p.1) explains, *"individuation includes differentiating and becoming of the presence of the different selves operating within the psyche".* This operating of knowing is mediated through images which are representation of unconscious emotional and spiritual issues and concerns. Some researchers like Nelson (1997) do rely on the role of interpreting of autobiographies, ancient myths and contemporary studies to motivate activation of inner work. This expression is called as mytho-poetic perspective (Dirkx, 1998) and educators with this perspective do use myths, poetry, music, drawing, journaling, dance, rituals and performance in order to allow learners to become aware of the images as well as unconscious dynamics.

Despite sincere commitments to transformative learning, Boyd, Mezirow and Daloz miss a distinct and clearly explained pedagogical framework (Dirkx, 1998). Actualization of the individual and the society through liberation and freedom is in the center of transformative learning. Actualization is pushed through the compelling forces or factors within individual or socio-cultural contexts. All of these forces limit or shape our perception regarding who we are as persons and communities. Transformative learning targets to identify these forces as well

as liberating us through reflection, dialogue, critique, concernment, imagination and action (Dirkx, 1998). Transformative learning accepts adults as active and engaged participants in learning process who construct what they learn. Information becomes meaningful through learner's action within his/her particular life contexts. Hence, it can be claimed that transformative way of learning is a meaning-making process targeting at fostering a democratic vision of society and self-actualization of persons (Dirkx, 1998).

2.4.2 Main Terms and Concepts of Transformative Learning Theory

It is important to review some terms and concepts brought within transformative learning theory. *Reflective discourse* is our need to search for common understanding of an interpretation or belief. This attempt requires finding evidences and reviewing alternative perspectives. Mezirow et. al (2000) claim that effective participation in discourse can be realized by what Goleman (1998) calls as "emotional intelligence". In other words, empathy, self-regulation, listening to others are some of the necessary skills needed for reflective discourse. *Meaning structures* are "structure of assumptions and expectations through which we filter sense impressions" (p.16). *Frame of references* are generally results of cultural paradigms or personal perspectives affected by primary caregivers. This concept has two dimensions: a habit of mind (set of assumptions that filter for interpreting the meaning) and resulting points of view (clusters of meaning schemes).

During *transformations* structures are reformulated for making meaning, usually through reconstructing dominant narratives or stories. According to Mezirow et. al (2000) *"learning occurs in one of four ways: by elaborating existing frames of reference, by learning new frames of reference, by transforming points of view, or by transforming habits of mind."*

A transformation often uses some variation of 10 phases identified previously. There are two types of reframing: subjective and objective. Subjective reframing includes critical self-reflection of one's own assumptions about narrative (applying reflective insight from someone else's narrative to one's own experience), a system (economic, social or educational), an organization or workplace, feelings and interpersonal relations (counseling or psychotherapy) and the way we learn. Objective reframing involves *"critical reflection on assumptions of others encountered in a narrative or task oriented problem solving"* (Mezirow et. al, 2000, p. 23).

2.4.3 Attempt to Understand Transformative Learning Further

Learning can contribute to new ways of seeing and understanding our experiences. Questioning existing assumptions, beliefs, values of individual and the world is the core of transformative learning (King, 2007). Environment that allows learners to work together to construct visions plays critical role on engagement with individuals and the world (Cranton, 1994). Relation with community helps to display deeper sense of one's Self as a person. Hence, relationship of Self and society is mainly stressed in transformative learning experience (Dirkx, 1998). Transformative learning deals with question of meaning, values, quality as well as purpose. These questions are tools of discovering relationship amount the Self and the world. So, the idea of self-involvement to the learning process is not a surprise in this theoretical framework. The process lets the Self to be active, reflective, expressive, deeply emotional and spiritual that constructs itself through experiences of learning.

It is important to realize that full understanding of Self is related with deep understanding of social, political and cultural context in which one lives. When something is

being learnt, what that thing means to the learner and significance of the content will depend on characteristics of the learner and the learner's present social, political and economic context (Dirkx, 1998).

Relationship of the individual with his/her vocation plays important role regarding transformative learning. Vocation means "to be addressed by a voice" (Storr, 1984), in other words to have a sense of a life's calling (Cochran, 1990). In some cases, vocation is described as interconnection of personal motives with socially purposeful, meaningful and necessary (Hansen, 1995; Rehm, 1990).

Persons who are involved in social movements often learn new skill and information as well as they get the opportunity to review their beliefs, values and attitudes; this situation deepens their sense of self-identity (Boggs, 1986; Foley, 1991). If chosen so, vocation is not a passive road map through life. It's an ongoing learning work which includes active movement to inner and outer world. As Fox (1995) and Whyte (2001) agree, working brings intimate and deeper relation of the person with outer world; additionally it becomes an opportunity to form a deep learning and realization of inner meaning and change. Within framework of this study, "teaching profession" is an active road to the Self and the outer world. Hansen (1995) explains that people who has an evolving sense of vocation, self-doubt and commitment, they also live the process of reassessment of ideas, beliefs and thoughts continuously. And they have the potential to act as change agents mentioned in the first chapter of this study. Imel (2000) proposed four ways to support being a change agent:

- Pay attention to the context: It is important to understand the context and details of learners. Advance study towards understanding the context may help to direct the attempt to cause expected change within individuals.

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- Be prepared to be proactive: Change agent should be prepared to launch the change process by being role model.

- Attend to learning: It is essential to be part of the learning cycle of the learning process and at the same time it is important to follow-up the initiation of change.

- Build in action: Action is considered as proof that change has occurred. It involves others in learning about it, testing the outcome and receive reaction to it (Williams, 1992).

In parallel with previous claims, individuation is referred as "dark night of the soul" pointing emotional conflict of the self. As Palmer (2000) suggests, acceptance of both the darkness and light is needed to find wholeness. The whole process can be summarized as "a gradual unfolding of the self".

2.4.4 Using Groups in Adult Learning

Whose purposes the learning should serve: the individual's or the group's? The answer can be related with transformative learning theory and can be claimed that *"the emphasis of adult learning is on the group facilitating individual learning"* (Imel, 1996).

Learning in groups has historical background in adult education. Eduard Lindeman (1885-1953), who was inspired by Dewey, claimed that the group is the most significant tool that connects experience and the social action (Brookfield, 1987). As a part of his discussion, he promoted the use of facilitation and discussion in group learning. Lindeman's emphasis on group work was taken into account during 1940s and 1950s. Group dynamics, group learning, discussion, facilitation, use of circles, use of participatory methods were available during this period (Imel, 1999). Malcolm Knowles furthered the work of Lindeman with the influence of

Carl Rogers' work. Cranton (1996) explains that three types of group learning exists based on Habermas' (1971) domains of knowledge:

- Instrumental (scientific, cause-and-effect information)

- Communicative (mutual understanding and social knowledge)

- Emancipatory (increased self-awareness and transformation of experience)

Learning tasks affect the type of learning that takes place in groups. Acquisition of instrumental knowledge requires a group wok called *cooperative*. *Collaborative* learning bases on communicative knowledge. In collaborative learning groups, participants exchange their ideas, feelings and information and come to a point where each participant focuses on the process as well as they arrive at knowledge acceptable by members of the group. *Transformative* learning occurs when the group is seeking for emancipatory knowledge. According to Cranton (1996), transformative learning groups focus on critical reflection in order to testify their expectations, assumptions and perspectives. Deciding the size of the group is an important factor on effective group learning. As Imel (1996) claims, there is a consensus on effectiveness of small groups. Groups with six or less members tend to be more productive than larger groups. Making subgroups in larger groups can be a good strategy in case of big size of the adult education target group.

2.4.5 Experiential Learning and Transformative Learning Theory

Jack Mezirow, in the 1970's, explained that the goal of adult educators must be to guide learners to transform, which means to grow and mature intellectually and as a result, change as a person through critical reflection on one's assumptions, beliefs and values (Mezirow, 1971). In the mid 1980's, David Kolb proposed that adult learning can be

processed at much deeper when content is more directly and deeply experienced than passively received (Kolb, 1984). He introduced the "experiential learning cycle" which includes four distinct stages of learning. According to Kolb (1984) the cycle can start at any stage, however, all stages are required for effective learning (see Figure 2.4):

- Concrete Experience - active learning
- Reflective Observation - thinking critically about the experience
- Abstract Conceptualization - linking the experience to the concepts underlying it
- Active Experimentation - testing out the learning in new situations.
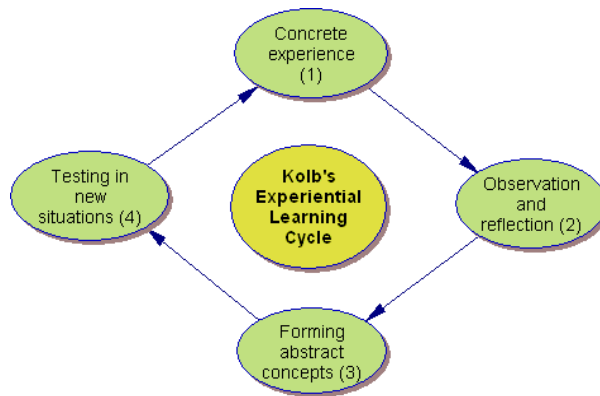
Figure 2.4 Kolb's experiential learning cycle (Learning Theories, 2010)

Experiential learning is much more of being active physically. It is being actively involved in one's learning overall. This refers to working up with knowledge/skills through experience, reflection, experimentation and application. When it comes to the relation among experiential learning and transformative learning theory it is being claimed that Kolb's model of experiential learning may be used as practical framework of the transformative learning theory (Cranton, 1994). If learning experiences can be selected to maximize discrepancies between learner's views and the experience and the experiences reflect real life settings, then transformative learning processes can be stimulated (Cranton, 1994). Of course, transformative learning processes require more than concrete experiences. Opportunities

causing reflecting on the experience, fitting them into currently held views, developing theories to explain it, if possible generalizing form it and applying the insights gained during the process are other integral parts of the whole process. As Kolb (1984, p. 41) stated *"The active/reflective dialectic … is one of transformation, representing two opposed ways of transforming that grasp or 'figurative representation' of experience – either through internal reflection, a process I will recall intention, or active external manipulation of the external world, here called extension."*

The combination of doing and reflecting has been the basis for educational practices for a long time (Cranton, 1984). Concrete experiences, followed by reflection, conceptualization and application clearly can stimulate critical reflection (ibid).

Cranton (2002) argues that transformative learning is spiral-like progression rather than linear process. Mezirow (1975) provides stages of transformative learning: it starts with a disorienting dilemma and finalizes with restored equilibrium. It seems that there are no specific teaching methods that directly lead to transformative learning. Still, we may count on strategies developed by different scholars. Cranton (2002) lists strategies as follows:

- A catalyst for transformation, *an activating event* is needed by films, documentaries, poems or short stories that shelter unusual perspectives. Readings presenting ideas from more than point of view are also good starters of the process. And of course nourishment of the process should be done by asking questions like: "Can we look at this situation from another perspective?" or "What assumptions bring this point of view?".

- Second strategy is called as *articulating assumptions*. Since our assumptions are related with our childhood, culture or community, Brooksfield's (1990) critical

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questioning may be useful. In critical questioning, learners are braced up to describe what they believe and how they end up with this belief. For instance, as a first question: "Do you believe there is a connection between language learning and intelligence?" as a second question: "How do you explain intelligence?" as a third question: "Do you think your thoughts you presented are based on your own experience or someone's experience you know?" as a fourth question: "Have you read or heard something that supports this view?". Cranton offers usage of learner autobiographies: "Tell the story of how you became as a ECE teacher". The content of this kind of material may be used as bases for questions like "How did you make this decision" or "What were your main assumptions?". Learners might list metaphors for environmental education as liberalizing of souls, getting rid of outsweepings or ancestral shelter. Metaphors can be unfolded by asking questions like "What are the similarities of getting rid of outsweepings and environmental education?".

- After articulating assumptions, learners are supposed to question their assumptions; this stage is called as *critical self-reflection*. Brookfield (1995) developed a technique as a tool to encourage critical self-reflection. Learners are asked about their best or worst experience specifically in a certain context, then they are given space to explain what happened, why this experience is was considered as the best or worst one, who was part of the experience and how it could end differently. Small groups discuss the event and help the learner to examine his/her assumptions in order to provide opportunity for self-reflection. Cranton (ibid) offers reflective journals for especially introvert learners to be used as a mean for critical self-reflection. Another suggestion

is facilitator's modeling. If the facilitator displays openness to questioning his/her own assumptions and perspectives, supports of the learners can be supported.

- Next step can be considered as difficult task "*openness to alternatives*". Pushing the self to accept other alternatives can be supported by role play activities. Learners should be able to put on shoes of others with opposing perspectives; this would strengthen learners' effort to be more open to alternatives. As Brookfield (1990) explains, critical debates may serve to similar aims. Debating an issue by defacing the opposite view of their own can be both difficult and inspiring in terms of thinking in a new way. Another astonishing technique can be writing letters from another person's point of view. Learner can write letters as he/she is the facilitator of the learning environment.

- Now, it's time to *revise assumptions and perspectives*. It is important to remember the role of the facilitator as partner of the learning. When the learner is ready to revise his/her reference points, facilitator may be useful by providing space to connect with each other. Building discussion groups, sharing participant's lists with contact details and providing opportunities for networking are some ideas to support the revision of assumptions and perspectives.

- Last stage of the process lets learners *act on their revised assumptions and perspectives*. Experiential learning projects, simulations, microteaching, field trips, keeping blogs about experiences including how the learner felt and how others reacted to their views are techniques that foster transformative learning experiences. It is important to let learners to prepare their action plans when they are finished with their learning experience. Simply providing time to write down three things they will

do can be an adequate step. Planning follow-up meetings to share how learners acted

on their transformation may be used as a polishing technique to close the loop of the

learning experience.

2.4.6 Role of the facilitator

Starting from Lindeman (1926), the teacher or instructor in group learning is being

called as a *facilitator*. This word usually brings to mind the person who fosters, assists,

supports and helps with learning tasks by sharing responsibility with learners. Williams

(1992) mentions about adult educators' role as assisting learners in "peeling the onion" of

theory and practice. Still, different perspectives about the role of the facilitator exist. Cranton

(1996) defines the facilitator's role in line with the knowledge which is aimed to acquire by

the group. That is to say, facilitator plays instrumental role such as developing exercises,

managing time and resources in cooperative learning groups, while in collaborative and

transformative groups facilitator takes place as an equal partner in the group. Hence, the

nature of group learning, power relations in groups and the role of the facilitator are

interconnected issues of group learning. Role of educator is discussed in this study in the

framework of *reformist perspective* offered by Cranton (1994). In reformist perspective,

educator's main responsibility is consciousness raising and learner awareness building.

Educator approaches education as learner empowerment through individual change. Educator

is defined as *co-learner* and in reformist education. She/he collaborates with learners, tries to

follow their experiences and lives. Educator participates in the process as an equal participant.

Another role of the educator is being *provocateur* by challenging, stimulating and provoking

critical thinking.

2.5 Summary

In this part of the study, literature related to EE, ESD, education for sustainability and transformative learning was reviewed. Early childhood education for sustainability and role of teachers in building sustainable societies were separately examined in order to understand main perspective of this research. Current state of pre-service EE and ESD training at universities and in-service EE and ESD training in Turkey were discussed to emphasize the insufficiencies and intervention areas in the field. And finally, components of transformative learning theory were discussed in terms of (a) 4 different perspectives of transformative learning (b) main terms and concepts of transformative learning theory (c) attempt to understand transformative learning further (d) using groups (e) experiential learning and transformative learning theory and (f) role of facilitator.

CHAPTER 3

METHODOLGY

This study aimed to explore early childhood teachers' in-service transformative learning experiences in the framework of sustainability. During the creation of the instructional in-service content, Transformative Learning Theory was used. Two data gathering and analysis methods (a mixed quantitative and qualitative model which is combind under sequential explanatory design) were used as research methodology in this research to analyze the data source and identify emergent themes of change and perspective transformation (Creswell, 1998). Learning Activities Survey (LAS) was conducted after the completion of 7-half-day in-service training with 24 participants. The study also included interviews with 6 participants (25% of the sample) in order to complement the strengths of each method (King, 1997). Assessment tool and interview format were developed by Kathleen P. King (King, 1997) and were adapted for the use of this research. The validity of the instrument was assured through follow-up interviews of participants as well as the triangulation of the data. The instrument covers both objective and free response questions with a parallel interview format.

3.1 Population and Sample Selection

The sample of this study was composed of 24 Early Childhood Education (ECE) teachers. Their volunteer involvement to the study was ensured by Sakarya Directorate of National Education (Sakarya İl Millî Eğitim Müdürlüğü) by (a) informing state pre-schools and pre-classes about the training and (b) asking for the names who want to participate in this

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study. Names of 25 teachers from 7 state pre-school and 6 pre-classes were provided to Sakarya Directorate of National Education. The training was held in a state pre-school which was assigned by Sakarya Directorate of National Education. Training venue was organized by trainer according to the needs of learning experience. (See Photo 3.1)

Photo 3.1 'Education is the Key for Sustainable Future' Training Venue

During the training, one of the participant's working province was changed and this participant had to leave the training. At the same time, another participant was appointed to the school in which the training was realized, so the number of the participants remained the same. Still, those participants mentioned above were not participated in the data collection process. At the second day of the training, a teacher working in one of the villages of Sakarya wanted to participate in the training due to fact that their school was not informed about the training. Researcher accepted her involvement to the process and she was informed about the

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first day of the training in detail. Her involvement to the data collection process was also provided. One of the participants handed the Learning Activities Survey without completely filling it, so the researcher left out with 24 fully filled-in Learning Activities Surveys.

One out of 24 participants was male, 23 participants were female. All of the participants had university degree. 12.5% (3 participants) were single, 87.5% participants were married. Fourteen participants (58.3%) were between the age of 25-29, 9 participants (37.5%) were between the age of 30-39 and 1 participant (4.2%) was between the age of 40-49. 29.2% of participants have experience as ECE teacher between 1-4 years, 45.8% of participants have experience between 5-9 years, 20.8% of participants have experience between 10-14 years and 4.2% of participants have experience between 10-14 years. Total amount of the in-service training participation of the participants was 154. Average participation to in-service training is 6.41 times.

Table 3.1 Demographic Distributions of Survey Respondents

Variable	n	Percent	Variable	n	Percent
Gender			**Age**		
male	1	4,2%	>21	0	0,0%
female	23	95,8%	21-24	0	0,0%
Marital Status			25-29	14	58,3%
single	3	12,5%	30-39	9	37,5%
married	21	87,5%	40-49	1	4,2%
divorced/separated	0	0,0%	50-59	0	0,0%
widowed	0	0,0%	60-69	0	0,0%
Education Level			70<	0	0,0%
high-school	0	0,0%	**Year of experience**		
university	24	100,0%	1-4	7	29,2%
master	0	0,0%	5-9	11	45,8%
Ph.D.	0	0,0%	10-14	5	20,8%
			15<	1	4,2%

N=24

3.2 Data Collection Instruments

King (2009) structured the assessment tool on the theoretical steps proceeded by Mezirow, Cranton and Brookfield. The original LAS study was conducted in 1996-1997 targeting continuing higher education students. Original LAS and Interview Form can be found in Appendix-A.

The adaptation of the instrument was the result of two steps. In the first step, both LAS and follow-up interview forms were translated into Turkish. During translation process, some explanations and examples added to some items, at the same time some items were modified. During the attempts to adapt the instrument it was aimed to emphasize the existence of sustainability in items due to fact that the training was mainly designed to cover sustainability and education for sustainability.

In the second step, both instruments and content of the training were submitted to a panel of fourteen educators, experts and researchers who are early childhood educators, adult educators, academicians and experts in the field of education for sustainability. Ten experts returned with their comments, researcher went over the comments and revised the instruments and training content accordingly, final version of the instruments (Appendix B and C) and training were produced.

There are mainly three sections in LAS. First section, by which the answer for the 1st research question is sought, identifies stages of perspective transformation and brief description of participants' experience. Second section, by which the answer for the 2nd research question is sought, includes determination of learning activities, persons/support and life changes as causes of perspective transformation experience. And the third section collects

information on demographic characteristics of the sample. All sections with related items and descriptions are presented in Table 3.2 as follows:

Table 3.2 Overview of Learning Activities Survey (LAS)

	Item	**Related research question**
First Section: Identification of stages of perspective transformation and description of participants' experience	1. Thinking about your educational experiences at this training, check off any statements that may apply.	1. What proportion of the sampled population of ECE teachers experienced a perspective transformation in terms of sustainability within the context of the training provided?
	2. Since you have been participating in this training, do you believe you have experienced a time when you realized that your values, beliefs, opinions or expectations had changed?	
	3. Briefly describe what happened.	
	5. Thinking back to when you realized that your views or perspective had changed, what did your being in this training have to do with the experience of change?	
Second Section: Determination of learning activities, persons/support and life changes as causes of perspective transformation experience	4. Which of the following influenced this change?	2. What could be the factors that facilitate perspective transformation among ECE teachers?
	6. (a) Would you characterize yourself as one who usually thinks back over previous decisions or past behavior?	
	6. (b) Would you say that you frequently reflect upon the meaning of your studies for yourself, personally?	
	7. Which of the following has been part of your experience at this training?	
Third Section: Demographic characteristics	8. Sex	1 & 2
	9. Marital Status	
	10. Prior education	
	11. Age	
	12. Total year of professional experience	
	13. Amount of participated in-service trainings	

In the first section of the questionnaire Mezirow's stages were paraphrased in 13 checklist items where respondents may select all that apply to them. Kathleen P. King (2009), designer of the Learning Activities Survey, specifically correlated perspective transformation

stages to Items 1a-l as can be seen in Table 3.3. Item 1m was placed for diagnostic and interpretation purposes.

Table 3.3 Correlation of perspective transformation stages to Items 1a-l

Stage 1 Disorienting dilemma	1a. I had a training experience that caused me to question the way I normally act. 1b. I had an experience that caused me to question my ideas about social roles. (Example of social roles includes how a teacher, a mother, a father or a child should act.)
Stage 2 Self-examination	1c. As I questioned my ideas, I realized I no longer agreed with my previous beliefs or role expectations. 1d. As I questioned my ideas, I realized I still agreed with my beliefs or role expectations.
Stage 3 A critical assessment of epistemic, socio-cultural or psychic assumptions	1 g. After the training, I felt uncomfortable with traditional role expectations (values, habits, behavior patterns).
Stage 4 Recognition of one's discontent and the process of transformation are shared	1e. I realized that other participants also questioned their beliefs.
Stage 5 Exploration of new roles, relationships and actions	1f. Before participating the training, I was thinking that I should be acting in a different way because of my usual beliefs and roles.
Stage 6 Planning a course of action	1i. I am planning to try to figure out a way to adopt these new ways of acting.
Stage 7 Acquisition of knowledge and skills for implementing one's plans	1j. I have an intention to gather the information I needed to adopt these new ways of acting.
Stage 8 Provisional trying of new roles	1h. I am planning to try out new roles so that I would become more comfortable or confident in them.
Stage 9 Building of competence and self-confidence in new roles and relationships	1k. I began to think about the reaction and feedback from my new behavior.
Stage 10 Reintegration of a new perspective into one's life	1l. I took action and I am fully adapted to these new ways of acting compatible with sustainability.

Second section of the instrument lists learning activities, persons/support and life changes that may be classified as the causes of perspective transformation experience. Again, respondents may select all that apply to them. The last section of the instrument was prepared

to collect demographic information. This also provides opportunity for the participants to be part of follow-up interview.

Follow-up interviews were conducted right after the initial analysis of data collected with LAS in order to enlighten the meaning of data that had been gathered. The interview questions are expanded version of the original survey questions in order to provide further explanations from the participants.

Validity of the Instrument

Validation of original instrument was done as follows: interviewed adult learners by using critical incidents and short answer formats, in three different institutions iterative pattern of repeated sampling, formative adaptation of the instrument as well as successive member-checking interviews were cycled (King, 2009). These steps are considered best approach to instrument development and validation in unusual contexts (Tashakkori & Teddlie, 2003). In each process, new refinements of Learning Activities Survey were reached. Kathleen P. King provided the instrument to panel of experts to be criticized as suggested by Gall, Borg and Gall (1996). Lastly, the instrument was piloted in its final format. As King emphasized (1997b, 2005) internal validity of the instrument was supported by a structured interviews. As an important note, during the developmental stage of instruments respondents provided their identifications to achieve matching in order to ensure the validity of instruments. It was reached to a conclusion that use of Learning Activities Survey and interview enables researcher to gather information about perspective transformations and educational experiences (King, 2009).

Reliability of the Instrument

Test-retest format was not considered as an appropriate method for the purpose of the study due to fact that this method requires having the instrument completed at different points in time and this could lead to reaching responses about different perspective transformation experiences (King, 2009). Thus, reliability question was chosen from a hermeneutical perspective (Gall, Borg & Gall, 1996). This means, while reaching to the final evaluation, several individual questions should be used. PT-Index was especially designed to serve previously mentioned purpose: decision of adult learner's achievement to perspective transformation could be made by evaluating responses to several items in the instrument. Reliability of the Learning Activities Survey was supported by the evaluation of separate items and development of a composite PT-Index (King, 2009).

In qualitative part, reliability can be introduced in several ways, one of the most popular ways is explained as usage of inter-coder agreements when multiple coders analyze and then compare their code segments to establish the reliability of the data analysis process (Creswell, 2007, p. 220). Within framework of this option, reliability is being calculated as follows:

$$\text{Intercoder agreements reliability} = \frac{\text{Number of coded events}}{\text{Number of agreed events} + \text{number of disagreed events}}$$

In this research, 80% agreement on codes was reached.

3.3 Procedure

Before the study began, varieties of procedures were completed. The researcher 1) applied for permission from Sakarya İl Milli Eğitim Müdürlüğü (Appendix D) 2) distributed information to early childhood education teachers to invite them to participate 3) contacted volunteer teachers, provided detailed information regarding the training programme and ensured that they complete the acquaintance form (Appendix E).

School principal of the training venue participated in the whole training as the observer. With the observer's inclusion the observer aimed to (a) receive her comments about both instruments and (b) receive her feedback about the training and participants during the training. At the end of the sixth day, researcher presented both instruments to the observer. Researcher also made pilot interview with the observer to make sure all questions were understandable. Both instruments were evaluated as appropriate for the aim of study by the observer. Mainly, by training observer, it was suggested that (1) interview form could be delivered to participants before the interview to let them think about items in advance (2) flow of the training could be presented to participants to enable them to remember details of the training. Both suggestions were taken into account by the researcher and the qualitative data collection procedure was completed accordingly.

Implementation of the training took 7 days consisting of 21 sessions, 28 hours in total. Implementation was realized during "In-service Training Period" defined by the Ministry of National Education. The sessions generally took 90 minutes. The training consisted of group discussions, games, role-playing, reading assignments, reflection writings, presentations and applications.

3.3.1 Overview of the Sessions

It was intended to apply this content to volunteer 25 in-service preschool teachers in a school and classroom environment on June, 2010 in Sakarya. The content was considered as "In-service Training" by Ministry of National Education. The approach of training applied in this research can be classified as experiential learning. The mixture of doing and reflecting at the same time are being described by the phrases like 'learning by doing', 'action learning' and 'reflection in action' (Cranton, 1994). Framework of Kolb's model of experiential learning was used in this research and this learning style was described as "unconventional structure of the training" by participants.

The cycle begins with concrete example, continues with reflection and observation of that experience, conduces to abstract conceptualization and arrives to application of insights in a new context. Experiences designed in this training were selected to maximize the potential discrepancy between learner's values or views and the experience. As Cranton (1994) implies, educators generally disregard reflection and abstract conceptualization processes. For the sake of building transformative learning experience, researcher of this study gave special attention to include these processes.

As mentioned in the literature research part of this study, Mezirow (1991) embedded his theory of adult learning in Habermas's (1984) theory of communicative competence. It's important to keep in mind that he did not systematically interpreted what Habermas or any other theorists say about adult learning. Mezirow's original model was structured by his observations of women returning to college (Cranton, 1994). Since researcher of this study composed in-service training content on Mezirow's perspective transformation, it is useful to mention about learning domains and types of reflection that were included in the training.

According to Habermas (1984) there are three forms of knowledge. *Instrumental knowledge* derives from an interest in controlling and manipulating the external environment and it requires knowledge about causal relationships between events. *Practical knowledge* included the interest in understanding each other and it leads to knowledge about social norms and cultural values. Lastly, *emancipatory knowledge* is derived from the interest of understanding ourselves, maintaining freedom and developing an autonomy related to self-knowledge. Mezirow (1991) described three learning domains based on Habermas's categorization of knowledge. Explanations of these domains are presented in Table 3.4. *"Reflection is a key concept in transformative learning theory."* (Cranton, 1994, p.48) Mezirow (1991) states that *"reflection is the process of critically assessing the content, process, or premise(s) of our efforts to interpret and give meaning to an experience."* (p.104). So, Mezirow (1991) categorized three types of reflection. Types of reflections, their explanations and types of questions that are critically assessing learners' interpretations of experience are presented in Table 3.4.

Table 3.4 Knowledge, Learning Domains and Types of Reflection

Knowledge: (Habermas)	Instrumental (casual explanation)	Practical (understanding)	Emancipation (reflection)
	Instrumental	Communicative	Emancipatory
Learning Domain: (Mezirow)	"Involves determining cause and effect relationships and learning thorugh task-oriented problem solving" (p.73)	"Learning to understand what others mean and to make ourselves understood as we attempt to share ideas through speech, the written word, plays, mov,ng pictures, television and art" (p.75)	"Emancipation from libidinal, linguistic, epistemic, institutional or environmental forces that limit our options and our rational control over our lives but have been taken for granted or seen as beyond human control" (p.87)
Reflection	Instrumental	Communicative	Emancipatory
Content (examination of the content or description of a problem)	What is the causal relationship between events?	What do others say about this issue?	What are my assumptions?
Process (checking on the problem-solving strategies that are being used)	How did I empirically validate the causal relationship?	How did I obtain consensual validation on this issue?	How do I know my assumptions are valid?
Premise (questioning the problem itself)	Why is this knowledge important to me?	Why should I believe in this conclusion?	Why should I revise/not revise my perspective?

Source: Cranton (1994, p.45, p.51), Habermas (1984), Mezirow (1991)

<u>First Day</u>

The main purpose of this day is to create an environment in which participants and the trainer start knowing each other and being familiar with the content. First half of the session began with the warm-up activity called "Eco-Bingo" (Appendix F). Then an activity called

"nine-dots" was introduced to participants to urge them to think out of the box during the training. After nine-dots activity, "data discussion" (Appendix G) activity was shared with participants. Participants discussed current situation of the earth by going over the data provided in groups consisting of 5 participants. They were also asked to decide whether the current situation is sustainable or unsustainable. And they were asked to find similar examples displayed in data discussion sheet from their own lives. Each group made a short presentation to explain what was discussed in their groups. Then ecological footprint survey prepared by World Wildlife Fund Turkey (Appendix H) was presented to participants in order to be filled in. Trainer directed participants to choose a nickname to be used during the training. Participants filled in the ecological footprint survey with their nicknames on them and handed them to trainer in order let the trainer to calculate their footprints to be shared in the second day of the training. The day was completed right after the completion of the "learning diaries" (Appendix I) with nicknames on them. Trainer also directed participants to organize "training café" without presence of the trainer in order to discuss their expectations and requirements from the trainer. Table 3.5 summarizes activities with expected learning outcomes and appendixes used in the first day of the training:

Table 3.5 Summary of First Day

	Activity	Expected Learning Outcome	Related Domain of Learning and Type of Reflection
Day 1	Eco-Bingo	Participants will familiarize with participants and educator	-
	Nine Dots	Participants will realize that they need to think out of the box	Emacipatory Learning - Premise Reflection
		Participants will review their usual point of views and assumptions	
	Data Discussion	Participants will compare and contrast current state of our planet with past and come up with a conclusion about it's sustainability by using data given	Instrumental Learning- Content, Process and Premise Reflection
		Participants will decide whether our way of living is sustainable or not by interpreting given data and their own experiences from real life.	
	Ecological Footprint	Participants will be eager to know the role of their consumption patterns on the planet	-

Second Day

Second day started with one of the energizer games. Participants received their filled in and calculated ecological footprint surveys which were distributed and filled in previous day. Trainer explained the logic and measurement technique of ecological footprint survey and made some conclusions: each of us have impact on earth, if whole world lived (consumed and produced waste) as this group lived then we had to have 2.5 planet earth, we had to have 1.5 more of our planet to carry on our systems. With this activity it was aimed to focus attention of participants to their individual roles on the earth. Since participants agreed on the idea that our way of living is unsustainable, next activity "reasons of unsustainability" (Appendix J) was introduced to them. This activity was consisting of two steps. In the first step, 9 reasons of unsustainability were given to participants and told them that they can use,

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remove, replace those reasons of our unsustainable system and put them in order according to their priority. In the second step, relations among reasons were analyzed deeply by a game consisting of "unsustainability reason stations" and one of the products of this activity was bracelets made by participants with "unsustainability beads" (See Picture 3.2) . At the end of the game participants receive trainer's "unsustainability reasons cross table" (Appendix K). The aims of these activities were (a) realization of reasons behind our unsustainable system (b) analysis of relationship among unsustainability reasons (c) approaching to the issue from holistic point of view by realizing that problem in one reason directly leads to problem in another reason (d) thinking about intervention areas while expressing relationship network among unsustainability reasons. Next activity is about advertisements and their effects on our consumption patterns. All groups were given advertisements printed in popular magazines and they were asked to analyze them according to relation between the product and the message given in the advertisement. After the finishing of presentations, participants were asked about relation between our values and advertisements. Aims of this activity are (a) deciding as if our needs are real ones or assumptions (b) stating factors affecting our values and consumption patterns (c) realizing direct effect of advertisements on our consumption patterns. Second day was completed with learning diaries and training café.

Photo 3.2 Unsustainability Reasons Bracelet

Following table (3.6) is a summary of conducted activities, their expected learning outcomes and appendixes used during activities:

Table 3.6 Summary of Second Day

	Activity	Expected Learning Outcome	Related Domain of Learning and Type of Reflection
Day 2	Ecological Footprint cont'	Participants will define ecological footprint and interprete their effect on planet's unsustainability	Instrumental Learning- Content, Process and Premise Reflection
	Reasons of Unsustainability and Unsustainability Reason Stations	Participants will realize reasons of unsustainability and analyze relation among those reasons.	Instrumental Learning- Content, Process and Premise Reflection
		Participants will realize that in our system a problem in one component ends up with another problem in another component.	
		Participants will notice intervention areas while discussing relations network.	Communicative Learning- Content, Process and Premise Reflection Emancipatory Learning- Content Reflection
	Advertisements	Participants will decide as if our needs are real ones or they are just assumptions	Instrumental Learning- Content, Process and Premise Reflection
		Participants will state factors affecting our values and consumption patterns	
		Participants will realize direct effect of advertisements on our consumption patterns.	Emancipatory Learning- Content, Process and Premise Reflection

<u>Third Day</u>

First and second days were designed to aware participants in terms of current situation in earth with reasons and within the scope of relations. In the third day, it was aimed to provide participants some inspiration regarding new patterns, assumptions, values and daily practices. The day started with the "life of a chair" activity. Within this activity it was aimed to (a) discuss production patterns of simple materials we use in our daily lives (b) realize that our production patterns are unsustainable, both producers and consumers have responsibility on this result (c) comparison of cradle-to-grave approach with cradle-to-cradle approach. Participants were asked to draw a chair's life in detail. Participants were supposed to start from getting out the raw materials and they would finish the process by explaining what happens to this chair when it turns to a waste. After the display of chair's production process, each group started to draw a "life of an apple tree". Groups were supposed to mention details of life within and around the apple tree. Comparison among "life of a chair" and "life of an apple tree" were made by using brainstorming method and it was realized that (a) nature itself is very unique knowledge resource for sustainable living (b) all production steps can be designed according to cradle-to-cradle thinking. Cradle-to-cradle thinking presentation prepared by James Hindson, presented in Green Pack Turkey Project Training of Trainers, was shared by trainer with participants to discuss this issue in detail. Reading assignment (Appendix L) regarding cradle-to-cradle thinking was also given to participants at the end of the day. In order to sum up concepts, facts, assumptions, taken granted patterns, a video film called "Story of Stuff" was shown to participants and together with the participants (a) cause and effect relations among production processes, current system and our basic assumptions

were found out (b) learning outcomes of the training in terms of cognitive and emotional perspectives were listed. Second reading assignment "technology prisons" (Appendix M) was distributed to participants at the end of the day. Table 3.7 displays all activities done during the third day.

Table 3.7 Summary of Third Day

	Activity	**Expected Learning Outcome**	**Related Domain of Learning and Type of Reflection**
Day 3	Life of a chair	Participants will discuss production patterns of simple materials we use in our daily lives	Instrumental Learning- Content and Process Reflection
		Participants will realize that our production patterns are unsustainable, both producers and consumers have responsibility on this result	
		Participants will compare cradle-to-grave approach with cradle-to-cradle approach.	
	Life of an apple tree	Participants will realize that nature itself is very unique knowledge resource for sustainable living	All learning domains and all reflection types
		Participants will notice that all production steps can be designed according to cradle-to-cradle thinking	
	Story of Stuff/Video Film	Participants will find out cause and effect relations among production processes, current system and our basic assumptions	All learning domains and all reflection types
	Cradle-to-Cradle Thinking/Reading Assignment	Participants will find out details of cradle-to-cradle thinking and its application to real life situations	Emancipatory Learning- Content, Process and Premise Reflection
	Technology Prisons / Reading Assignment	Participants will find out realities behind production processes	Instrumental Learning- Content, Process and Premise Reflection Communicative Learning- Process and Premise Reflection Emancipatory Learning- All reflection types

Right after feedback exchange regarding reading assignments and energizer game, fourth day started with an activity called "circles". All groups were asked to draw two illustrations presenting (a) current relationship among money, society and environment (b) relationship among money, society and environment in ideal conditions. Within this activity it was aimed to (a) emphasize interaction among society, economy and ecology (b) compare current and preferential interaction among society, economy and ecology (c) realize that one of those three components are being placed at the center of the system and this component has been "the economy" so far. Trainer explained the historical development of "sustainable development" and "sustainability" in time and she took participants' attention to the Figures 1.1 and 1.2 presented in the first chapter of this study. Training continued with a simulation of the current monetary system "trading game" (Appendix N). Main aims of this game are: (a) create discussion environment to urge participants understand aims of production and consumption, our current assumptions regarding the placement of the component "economy" in our present system, (b) create opportunity to approach "sustainability" issue with broader perspective. Activities of fourth day, their expected learning outcomes and appendixes used are summarized in Table 3.8 as follows:

Table 3.8 Summary of Fourth Day

	Activity	Expected Learning Outcome	Related Domain of Learning and Type of Reflection
Day 4	Circles	Participants will notice interaction among society, economy and ecology	All learning domains and all reflection types
		Participants will realize that one of those three components is being placed at the center of the system and this component has been "the economy" so far.	
		Participants will compare current and preferential interaction among society, economy and ecology	
	Trading Game	Participants will understand "real" aims of production and consumption, our current assumptions regarding the placement of the component "economy" in our present system.	All learning domains and all reflection types
		Participants will approach "sustainability" issue with broader perspective	

Fifth Day

First four days of the training was designed to build capacity of teachers in terms of sustainability. Starting from the fifth day, aim of the training was transformed into capacity development of teachers in terms of education for sustainability. First assignment of the day was called "we are building sustainable schools". Groups were directed to discuss how to build a sustainable school in terms of (a) curriculum and instruction program (b) physical conditions of the school and (c) school community consisting of teachers, school administration, working staff, and parents. All of the groups presented creative ideas about sustainable schools and this time they were asked to prepare rubrics (assessment tool) in order to decide on criteria of building a sustainable school. With application of these two activities, participants were able to discuss sustainable school models in terms of curriculum, physical conditions and school society, in addition to this, they were able to produce concrete

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assessment tool while composing sustainable schools. During these activities, "rubric guide" (Appendix O) and two different sustainable school rubrics (Appendix P and R) were shared with participants. In order to sum up the whole five-day training completed so far, an activity called "station" was applied. In this activity, participants were asked to express what was left with them in forms of expression "letter, poem, newspaper article and advertisement" by rotating the forms of expressions among them. At the end of the day, participants received another reading assignment entitled "ecological intelligence" (Appendix S). Summary of fifth day is presented in Table 3.9.

Table 3.9 Summary of Fifth Day

	Activity	Expected Learning Outcome	Related Domain of Learning and Type of Reflection
Day 5	We are building sustainable schools	Participants will discuss sustainable school models in terms of curriculum, physical conditions and school society and will build their own models	All learning domains and all reflection types
		Participants will produce concrete assessment tool while composing sustainable schools	
	Station	Participants will sum up the whole five-day training with what they've learned and how they feel	Instrumental Learning-Content Reflection Communicative Learning-Content Reflection Emancipatory Learning-Content Reflection
	Ecological intelligence / Reading Assignment	Participants will find out the new concept "ecological intelligence" developed by David Goleman	Instrumental Learning-Content, Process and Premise Reflection Communicative Learning-Process and Premise Reflection Emancipatory Learning-Content, Process and Premise Reflection

Sixth Day

First activity of the day was brainstorming about components of a sustainable lesson plan. With the guidance of the trainer, participants discussed characteristics of a sustainable lesson plan and they prepared a list of characteristics. In order to urge participants to make their own descriptions of sustainability and make them realize that the term "sustainability" can be and is being undertaken differently by each individual, institution, entity a game called "who told that we cannot fly planes" was introduced to participants. Each participant wrote her/his description of sustainability on a colored paper provided, then folded the paper to make a paper plane, with the sign of the trainer all planes were thrown to air, each participant caught a paper plane, unfolded it, read the description and wrote her/his comments on the plane, folded it and threw it to the air. This procedure applied a few times to make sure as much as descriptions and feedbacks to descriptions were exchanged. Next activity was called "sustainability eyeglasses". Paper eyeglasses and pre-school learning outcomes were distributed to groups. Teachers were guided to wear sustainability eyeglasses and they were told these eyeglasses help them to see sustainability side of any subject. Learning outcomes were divided among groups and groups were asked to fill in the lists regarding the existence of sustainability perspective on the specific learning outcome. Expected outcomes of these activities were (a) relating sustainability with pre-school learning outcomes prepared by Ministry of National Education (b) evaluating learning activities from sustainability perspective (c) informing participants on the academic research done on the subject matter. Participants received the academic study done by Gülay and Ekinci (2010) entitled "Analysis of Ministry of National Education's Program In Terms of Environmental Education". At the latest session of this day, teachers were grouped according to their working places. Since on

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the last day of the training teachers would conduct a micro lesson plan with all of the participants, they were given time and material (Green Pack) for preparations. Details of sixth day are presented in Table 3.10.

Table 3.10 Summary of Sixth Day

	Activity	Expected Learning Outcome	Related Domain of Learning and Type of Reflection
Day 6	Characteristics of a Sustainable Lesson Plan	Participants will decide on components and characteristics of a sustainable lesson plan	All learning domains and all reflection types
	Who Told That We Cannot Fly Planes?	Participants will make their own descriptions of sustainability	All learning domains and all reflection types
		Participants will realize that the term "sustainability" can be and is being undertaken differently by each individual/institution	
	Sustainability Eyeglasses	Participants will relate sustainability with pre-school learning outcomes prepared by Ministry of National Education	All learning domains and all reflection types
		Participants will evaluate learning activities from sustainability perspective	
		Participants will receive information about the academic research entitled "Analysis of Ministry of National Education's Program In Terms of Environmental Education"	

Seventh Day

Last day of the training started with micro lesson plan applications. 4 groups conducted lesson plans and exchanged feedbacks regarding applied sustainable lesson plans. In order to start discussing about sustainable projects, following activities were conducted: "traffic lights" and "assumption examination". Firstly, groups discussed about possible sustainable pre-school projects by using significance-possibility sheet (Appendix T). Points of the projects were calculated and names of the projects were transferred to traffic lights sheet (Appendix U) starting from the highest score to the lowest one. Groups decided on the

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projects which were very likely to be started soon and traffic light next to this project was colored in green. Projects that were seen as possible projects that need time and preparation were colored in yellow. Projects that were considered as not important and not possible were colored in red. In the assumption examination activity, each group chose one project that was categorized with green light and worked on that project by filling in the assumption examination form (Appendix V). Basic intent behind this activity was to perceive difficulties in realizing projects, to propose solutions to difficulties and to propose ways to increase sustainability component of a project. Summary of last day can be found in Table 3.11.

Table 3.11 Summary of Seventh Day

	Activity	Expected Learning Outcome	Appendix
Day 7	Micro-Teaching	Participants will reflect and apply what they've learnt by conducting a lesson harmonized with the concept of sustainability	All learning domains and all reflection types
	Traffic Lights	Participants will discuss possible pre-school sustainability projects in terms of their possibilities and their significances	Instrumental Learning-Content, Process and Premise Reflection
		Participants will decide on projects which very likely to be started	Communicative Learning-Content, Process and Premise Reflection
	Assumption Examination	Participants will perceive difficulties in realizing projects	All learning domains and all reflection types
		Participant will propose solutions to difficulties	
		Participants will propose ways to increase sustainability component of a project	

In the last session of the training, participants were received volunteer participation form (Appendix W); volunteer teachers who were willing to fill in LAS and participate in

interview completed the form and returned it to the trainer. 24 teachers filled in the LAS forms and 6 teachers were involved in interviews. At the end of the training, training venue was full of group discussion products displayed in walls of the training venue as displayed in Picture 3.3.

Photo 3.3 Training venue at the end of the training program

Researcher of this study made intense research to compose the training program by using different activities from different sources in addition to new activities designed by the researcher herself. Table 3.12 illustrates names of the activities with their sources:

Table 3.12 Activities of "Education as the Key to Sustainable Future" Training and their sources

Activity	Source
Nine-dots activity	Green Pack Turkey, 2007
Data analysis	Green Pack Turkey, 2007
Ecological footprint survey	WWF, 2010
Unsustainability reasons	Green Pack Turkey, 2007
Journey to unsustainability reasons	Researcher
Analysis of advertisements	Green Pack Turkey, 2007
Life of a chair	Green Pack Turkey, 2007
Life of an apple tree	Green Pack Turkey, 2007
Cradle-to-cradle thinking presentation	Green Pack Turkey, 2007
Story of stuff	Sürdürülebilir Yaşam Kolektifi, 2008
Circles	Green Pack Turkey, 2007
Trade Game	Christian Aid, 2010
We are building sustainable schools	Green Pack Turkey, 2007
Rubric for sustainable schools	Researcher
Who told we cannot fly planes?	Researcher
Sustainable lesson plan criteria	Researcher
Sustainability eyeglasses	Researcher
Significance-possibility sheet	University of Tennessee
Traffic lights	University of Tennessee
Assumption examination	University of Tennessee
Learning diary	Researcher
Reading assignment-technology prisons	Hürriyet, 2010
Reading assignment-cradle to cradle-fantasy or real?	Kocasinan, 2010
Reading assignment-ecological intelligence	Radikal, 2010

CHAPTER 4

RESULTS

This chapter presents results of the quantitative and qualitative data that explored the nature of perspective transformation experiences and educational contributors to those experiences. Two questions guided the study: (1) what proportion of the sampled population of ECE teachers experienced a perspective transformation in terms of sustainability within the context of the training provided? (2) what could be the factors that facilitate perspective transformation among ECE teachers? The results are presented in two main sections in line with research questions. In both sections, results are displayed as following: representation of results from quantitative data followed by results from qualitative data supported by quotations from interviews. The analyses were conducted by using SPSS 15.0 and Nvivo 8.0.

Since the structure of this study was constructed as sequential explanatory design, it was characterized as collection and analysis of quantitative data followed by collection and analysis of quantitative data (Creswell, Plano Clark, Gutmann & Hanson 2003). The sequence of analysis was conducted as follows: quantitative, then qualitative, so that quantitative results were more explained via the final qualitative analysis. These two methods were integrated during interpretation of data, while priority is given to quantitative data. Steps of sequential explanatory design were displayed in Figure 4.1.
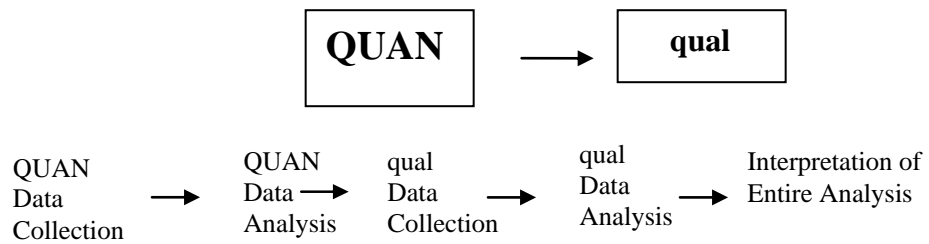
Figure 4.1 Sequential Explanatory Design (Creswell, Plano Clark, Gutmann & Hanson 2003, p. 225)

During the initial analysis of the data a PT-Index[2] was assigned to each completed questionnaire and the final analysis of qualitative data covered frequencies, proportions, coding of free responses and interviews.

Before conduction of interviews, researcher quickly went over the quantitative data in order to have an idea about themes. Follow-up interviews were conducted individually with 6 volunteer participants. Within interviews, participants explained their responses to Learning Activities Survey (LAS) in more depth. They also provided the opportunity to test the collected information from LAS. Before implementing interview form with volunteer participants, the researcher made a pilot interview with the training observer as mentioned previously in order to gather comments regarding the instruments and application procedure. Analysis of quantitative data was done with disconnected variables analysis method without missing data by using SPSS 15.0. Totally, qualitative data was consisting of 24 participants' answers.

Analysis of qualitative data was done with content analysis method in the framework of Mezirow's perspective transformation stages. Those ten stages illustrate full cycle of perspective transformation (King, 2009). Interviews were coded by two researchers:

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[2] Explanation of PT-Index can be found in the next parts of this chapter.

researcher of this study and a research assistant working in the field of science education. They both coded the data by using Nvivo 8.0 in terms of the list provided in Table 4.1. Themes came from reviewing the literature. According to Bulmer (1979) themes come from already-agreed-upon professional definitions, from researchers' values, theoretical orientation, and personal experience with the subject matter.

Table 4.1 Identified Themes

Stage 1-disorienting dilemma Being pessimistic Discomfort about the actions Concern	**Stage 2- self examination** Realization of the Self Self-evaluation Not being in agreement with beliefs or role expectations-Thinking in a different way
Stage 3 – critical assessment of internalized role assumptions Self-reflection Feeling uncomfortable about values, habits and ways of acting Critical approach Comparison	**Stage 4 – relating discontent with others** Discussion discontent with others Effect of the environment Not feeling lonely Request for further contact
Stage 5 – exploring options for new ways of acting Realization of new ways of relations and actions Using opportunities Seeing the future in a optimistic way Pushing the limits	**Stage 6 – planning course of action** Planning Designing projects
Stage 7 – acquisition of knowledge and skills Gathering information Research making	**Stage 8 – provisional trying of new roles** Effort to try out new roles and ways of acting
Stage 9 – building of competence and self-confidence in new roles and relationships Enlarging effect of new perspective Building competency and confidence New habit formation Encouragement-empowerment-self concept	**Stage 10 – reintegrating/restored equilibrium** **Adaptation to new way of acting which is** Harmonized with sustainability Making sustainability a lifestyle

Open coding phase of ground theory was used as procedure for analysis. Open coding consists of *"breaking down, examining, comparing, conceptualizing, and categorizing data"* (Strauss & Corbin, 1990, p. 61). The examination of data is done by sentence or paragraph, or by a holistic analysis of an entire document. During open coding process grounded theory researchers *"must include the perspectives and voices of the people"* whom they study (Strauss & Corbin, 1994, p. 274). While coding the qualitative data, Creswell's (2007) suggestions were taken into account and the procedure completed as follows:

- Both researchers sought agreement on code names and the way they code the data. To achieve this goal, two interviews were listened to and both interviews were coded independently.

- After coding two interviews, researchers met to examine their codes. Some "parent" and "children" codes were revised. Re-examination of the categories identified to determine how they are linked. (This was called as "axial coding" by Strauss and Corbin in 1994.)

- Each interviews coded independently.

- All codes were compared and then calculated percentage of agreement among both researchers (intercoder agreement).

- It was sought to establish an 80% agreement on codes since Miles and Huberman (1994) recommended an 80% agreement. Whole process repeated until the target was achieved.

- Finally, the researcher translated the conceptual model into the story line that will be read by others.

Results of the study were analyzed in terms of research questions provided previously in the first chapter of the study. Two methods (quantitative and qualitative) were integrated while making effort to answer both research questions.

4.1 Perspective Transformation Experience of ECE Teachers

In this part of the study, answers to first research question are sought: *What proportion of the sampled population of ECE teachers experienced a perspective transformation in terms of sustainability within the context of the training provided?*

Stages of Perspective Transformation

Item 1 of the instrument was designed according to the Mezirow's original ten stages of perspective transformation (King, 2009). All ten stages could be selected individually from a checklist. Participants were directed to select all those they have experienced during their adult learning experience. Those stages were paraphrased, for example, Mezirow's first stage "disorienting dilemma" was converted to a statement as "I had an experience that caused me to question the way I normally act." Checklist in item 1 easily reveals learner's identification with Mezirow's stages. For example if learner both marks 1a "I had an experience that caused me to question the way I normally act" and 1c "As I questioned my ideas, I realized I no longer agreed with my previous beliefs or role expectations", it can be concluded that learners reached the stage of a "disorienting dilemma" in Mezirow's perspective transformation schema. Proportion of the sampled population of ECE teachers' perspective transformation experience related with Mezirow's perspective transformation stages within the context of the training presented in Table 4.2.

Table 4.2 Percentage's of Mezirow's Perspective Transformation Stages-LAS

Mezirow's Perspective Transformation Stages	Variable Name	Label	Frequency	%
Stage 1 -Disorienting Dilemma	1a	No	0	0%
		Yes	24	100%
	1b	No	4	17%
		Yes	20	83%
Stage 2- Self-examination	1c	No	10	42%
		Yes	14	58%
	1d	No	17	71%
		Yes	7	29%
Stage 3-A critical assessment of epistemic, socio-cultural or psychic assumptions	1g	No	2	8%
		Yes	22	92%
Stage 4-Recognition of one's discontent and the process of transformation are shared	1e	No	5	21%
		Yes	19	79%
Stage 5-Exploration of new roles, relationships and actions	1f	No	12	50%
		Yes	12	50%
Stage 6-Planning a course of action	1i	No	8	33%
		Yes	16	67%
Stage 7-Acquisition of knowledge and skills for implementing one's plans	1j	No	7	29%
		Yes	17	71%
Stage 8-Provisional trying of new roles	1h	No	0	0%
		Yes	24	100%
Stage 9-Building of competence and self-confidence in new roles and relationships	1k	No	11	46%
		Yes	13	54%
Stage 10-Reintegration of a new perspective into one's life	1l	No	6	25%
		Yes	18	75%
Diagnosis and interpretation	1m	No	24	100%
		Yes	0	0%

N=24

Results of item 1 revealed that respondent's involvement patterns in stages occurred at varying degrees. Most occurred stages recorded as "I had an experience that caused me to question the way I normally act" (100%), "I am planning to try out new roles so that I would become more confident in them" (100%), "After the training I felt uncomfortable with traditional role expectations (values, habits and behavior patterns)" (92%) and "I realized that other participants also questioned their beliefs" (79%). Researcher also examined each respondent's journey through stages and concluded that 19 out of 24 respondents have unique transformative journey. Three of participants and 2 other participants had similar experiences in terms of Mezirow's perspective transformation stages. Least selected item was 1d "As I questioned my ideas, I realized I still agreed with my beliefs or role expectations" (29%). In following pages details of all stages with results from quantitative and qualitative analyses are presented.

Stage 1 – Disorienting Dilemma:

Results of 1a and 1b revealed that all stated that "I had an experience that caused me to question the way I normally act" and 20 of the participants (83%) agreed that "I had an experience that caused me to question my ideas about social roles."

Findings of interview coding revealed that during interviews 4 participants referred to concepts and themes related to stage 1 totally 21 times, distribution of references were summarized in the following Table 4.3:

Table 4.3

Stage 1-Disorientring dilemma-Interviews	Sources	References
Concern	4	7
Discomfort about the actions	4	6
Being pessimistic	4	8

"Why did I decide to have a child? What can leave to her in coming 50 years? Beginning of the learning experience was very discomforting. I am concerned, very concerned in terms of future."

While doing life of an apple tree activity I asked myself 'why didn't we observe nature' 'how could we so blind'. I realized that the natural balance was very well-designed. Our real intention should be maintaining this balance. Even though I was raised in village, near to nature, not being aware of these facts I mentioned hurt me a lot.

I think it is important to view this issue as 'better lose the saddle than the horse'. This view is a kind of comfort zone for me. I need to have this view due to fact that I was crushed by many facts. Why did not I think about them previously, why did not I listen to my husband and closed my eyes to the environment? I realized that I have been dealing only with my own simple problems.

As explained above, transformative learning starts with fears and concerns. Leaners live different dilemmas when they realize that their assumptions, values, beliefs and actions are not based on valid truths.

Stage 2 – Self-examination:

This stage includes self-examination. Results of Item 1c revealed that more than half of the participants stated that they no longer agreed with their previous beliefs or role expectations as they questioned their ideas. Or instead, as revealed in Item 1d, as they questioned their ideas, 7 of the participants (29%) realized they still agreed with their beliefs or role expectations.

According to interview findings, all respondents mentioned thoughts, beliefs and transformation experiences related with stage 46 times as displayed in Table 4.4:

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Table 4.4

Stage 2-Self examination-Interviews	Sources	References
Not being in agreement with beliefs or role expectations-Thinking in a different way	6	14
Realization of the Self	6	19
Self-evaluation	6	13

> While we were calculating our ecological footprints important facts came to a true picture. I realized that I was also a part of it (unsustainability). I just stopped and looked at myself. Why haven't I see this fact, why didn't I realized them, I evaluated myself, this moment was my revival.

Some of participants of transformative journey realized that they are no longer in agreement with their formative assumptions and they start questioning themselves and this somehow helped some of the learners to realize their own perspectives.

Stage 3 – A critical assessment of epistemic, socio-cultural or psychic assumptions:

A majority of the participants (92%) reached the stage of critical assessment of epistemic, socio-cultural or psychic assumptions by stating "after the training, I felt uncomfortable with traditional role expectations (values, habits, behavior patterns)".

Interview findings revealed that mostly "self-reflection" and "comparison" were mentioned as part of critical assessment of internalized role assumptions. Critical approach (9 times by 4 respondents) and feeling uncomfortable about values, habits and ways of acting (10 times by 3 respondents) were also evaluated as evidences of stage 3 as shown in Table 4.5.

Table 4.5

Stage 3-Critical assessment of internalized role assumptions-Interviews	Sources	References
Feeling uncomfortable about values, habits and ways of acting	3	10
Critical approach	4	9
Self-reflection	5	12
Comparison	5	10

"If I did not participate in this training, I would live my life as it was. By participating in this training I started thinking about my actions, I started questioning myself. …I realized that I should change myself and I began to change myself accordingly."

"This study provided realization of my own deficiencies."

Journey of transformation directs their learners to critically assess internalized role assumptions and this is generally done through self-reflection.

Stage 4 – Recognition of one's discontent and the process of transformation are shared:

Results revealed that 19 out of 24 participants (79%) realized that other participants also questioned their beliefs. And this statement was correlated to stage of "recognition of one's discontent and the process of transformation are shared".

Findings regarding the occurrence of stage 4 revealed that all respondents mentioned about discussion discontent with others over and over, 3 respondents included "not feeling lonely" in their expression 5 times, 3 respondents mentioned about effect of the environment and request for further contact 3 times each. See Table 4.6:

Table 4.6

Stage 4 -Relating discontent with others-Interviews	Sources	References
Discussion discontent with others	6	20
Request for further contact	3	3
Effect of the environment	3	3
Not feeling lonely	3	5

"I have started learning things from other participants I haven't known so far. This fact awakened the will of further research. I did not actually feel sufficient with thoughts of other participants. I inquired; I started changing right after if their thoughts reflect facts."

"I had the opportunity to hear things from other participants I haven't thought so far."

Discussing with others are main supporters of transformative learning experiences. Most of the participants stated that they no longer feel alone while they were trying to cope with their disorienting dilemmas.

Stage 5 – Exploration of new roles, relationships and actions:

Half of the participants thought that before participating the training, they were thinking that they should be acting in a different way because of their usual beliefs and roles. This result revealed that half of the participants reached the stage of exploration of new roles and relationships and actions.

Respondents referred to themes of exploration of new roles, relationships and actions 32 times. Distribution of themes were noted as follows: realization of new ways of relations and actions (16 times by 6 respondents), seeing the future in an optimistic way (11 times by 6

respondents), pushing the limits (4 times by 4 respondents) and using opportunities (1 time by 1 respondent). Results of stage 5 are displayed in Table 4.7.

Table 4.7

Stage 5 - Exploring options for new ways of acting-Interviews	Sources	References
Using opportunities	1	1
Seeing the future in an optimistic way	6	11
Pushing the limits	4	4
Realization of new ways of relations and actions	6	16

> Firstly I was terrified and I was very pessimistic. We cannot sustain like this. How can my child survive?… Later, with perception I gained through this training and research I made simultaneously, I realized that there are some options, possibilities. I thought that we can move on in more optimistic and hopeful way. I have positive feelings at the end of the training.

Learners of transformative experiences are in need of exploring options for new ways of acting. They started the process with fears, concerns; they continue the process in an optimistic way if they can explore new ways of relations and actions.

Stage 6 – Planning a course of action:

Results revealed that 16 of participants (67%) checked the item "I am planning to try to figure out a way to adapt these new ways of acting."

Findings of qualitative data in terms of stage 6 (see Table 4.8) revealed that 5 respondents mentioned about their plans 11 times. 2 respondents mentioned 3 times about their designs related sustainability projects.

Table 4.8

Stage 6-Planning course of action-Interviews	Sources	References
Planning	5	11
Designing projects	2	3

"In the first instance I am planning to meet with parents and I will share what I've learned with my students."

During interviews respondents explained their plans related with their newly defined assumptions over and over. They also mentioned that they are very excited and they are eager to realize their projects as soon as possible.

Stage 7 – Acquisition of knowledge and skills for implementing one's plans:

This stage requires acquisition of knowledge and skills for implementing one's plans. Results revealed that 17 of participants (71%) had an intention to gather the information they needed to adopt these new ways of acting in line with the requirement of this stage.

Findings of qualitative data in terms of stage revealed that during interviews 4 respondents remarked gathering information 5 times and 3 respondents mentioned about making research 3 times as displayed in Table 4.9.

Table 4.9

Stage 7-Acqusition of knowledge and skills-Interviews	Sources	References
Gathering information	4	5
Making research	3	3

"I want to start researching. I am planning to become a member of organizations working in this field (sustainability) on behalf of myself and my husband. I am planning to act with a group rather than by myself."

Research is another main component of perspective transformation. Participants wanted to know more about their invalid assumptions and they also wanted to replace them

with valid ones. More research and information helped them to validate their newly defined assumptions.

Stage 8 – Provisional trying of new roles:

This stage displays provisional trying of new roles. 24 of the participants (100%) were checked the item "I'm planning to try out new roles so that I would become more comfortable or confident in them".

According to findings of interviews, all respondents mentioned about effort to try out new roles and ways of acting 14 times.

Table 4.10

Stage 8-Provisional trying of new roles-Interviews	Sources	References
Effort to try out new roles and ways of acting	6	14

> We started evaluating ourselves. At the end of the day, I share everything I gained from this training with my husband. He also provides his comments. And we have some projects. We'll make an effort together. I used to do my best regarding recycling, but still I used to chuck out food leftovers. I wasn't able to think about alternative ways. With my husband, we'll do the following: we'll put a bucket of soil in our balcony. We'll throw our organic waste into this bucket of soil and we'll use this soil as organic compost, fertilizer for our trees in our garden. We have already started working in this area.

Even though most participants had their unique way of perspective transformation journey through different stages, all participants met in this stage fully. They all started to try out new roles and ways of acting. It can be concluded that participants were in need of acting differently at varying degrees.

Stage 9 – Building competence and self-confidence in new roles and relationships:

Thirteen of the participants (54%) stated that "I began to think about the reaction and feedback from my new behavior".

Interview findings revealed that themes regarding stage 9 mentioned 35 times as total. As shown in Table 4.11, enlarging effect of new perspective was stated by 5 respondents 15 times, encouragement-empowerment-self concept were cited by 5 respondents 11 times, building competency and confidence was stated by 3 respondents 5 times and new habit formation was mentioned by 3 respondents 4 times.

Table 4.11

Stage 9-Building of competence and self-confidence in new roles and relationships-Interviews	Sources	References
New habit formation	3	4
Encouragement-empowerment-self concept	5	11
Enlarging effect of new perspective	5	15
Building competency and confidence	3	5

"I am very excited. I feel that I am productive again. I know that I can take many steps for humanity; this fact excites me a lot. I am thrilled while I am talking."

"I read those (reading assignments) to my husband, to my house owner who lives in my building. I was so influenced that I thought we have to disseminate the content to everyone."

During training it was kept in mind that one of the main objectives of the training was to empower participants. Findings of quantitative data revealed that at the end of the training most of the participants found more power in themselves to review their assumptions, were more couragaeus to take actions.

Stage 10 – Reintegration of a new perspective into one's life:

This stage involves reintegration of a new perspective into one's life. Accordingly, the item "I took action and I am fully adapted to these new ways of acting compatible with sustainability" was checked by 18 of the participants (75%).

As displayed in Table 4.12, findings of qualitative measurement revealed that researcher of this study did not find any reference to stage 10 due to fact that all respondents mentioned about their plans rather than real actions fully harmonized with sustainability. 7 half day training could not be sufficient to urge participants to reintegrate restored equilibrium into full adaption to sustainability.

Table 4.12

Stage 10-Reintegrating-restored equilibrium-Interviews	Sources	References
Adaptation to new way of acting which is harmonized with sustainability	0	0
Reintegration of oneself with sustainability life style	0	0

"I started using less energy and less water. In home, I replaced bulbs with energy saving bulbs. I started noticing the product itself rather than the price while shopping. I don't buy too much food, I buy food as much as I need. I don't let food decay."

I started seeing things around me more consciously. There were some issues that I was reluctant to take actions due to fact that I did not consider them as important issues. Now they are crystallized. I will pass these issues to a higher position, I continue doing some research. I am trying to look everything from sustainability perspective. I am planning to make sustainability core principle of my own life.

I don't want to touch the products I have in my home. Right after the training I started doing some research in my home. I realized that I have an environmental education book, I've recently noticed that. I viewed the web addresses you (the trainer) have provided. Now, I don't use dishwasher unless loading it fully. I started reading labels of products. I actually started reading more thoroughly. I used to buy things because they

were cheap rather than I needed them. I won't do that anymore and I won't let that to be done as well.

None of the participants were checked the Item m which was placed for diagnostic and interpretation purposes. As conclusion, while identifying perspective transformation, it was reached that transformative learning varies among individuals (Cranton, 1994). Consistent with the literature on the subject matter, it was not aimed to reach a linear or hierarchical sequence. As Cranton (1994, p. 69) impresses, "all learners do not go through the same stages at the same time". Still, in the framework of this study, overall results in terms of stages are presented as follows:

- Transformative learning started by fear and concern, triggered by critical thinking, especially through self examination and critical assessment of internalized role assumptions.

- Relating discontent with others helped learners to continue their journey to transformation.

- When it comes to exploration phase, participants were able to see new ways of relations and actions; they become more optimistic about the future. And this situation directed some of the participants to make plans and to design some projects compatible with sustainability.

- It can be concluded that the training experience urged some participants to learn more. Seventy one percent of the participants wanted to gather the information they needed to adapt their new ways of acting to sustainable way of living. Interestingly, all participants have plans on putting effort to try out new roles and ways of acting. This theme was mentioned by all participants during interviews totally14 times.

- Only half (54%) of the participants focused on building of competence and self-confidence in new roles and relationships. When it came to interview results, 5 participants mentioned repeatedly about their effort to enlarge effect of new perspective.

- Even though three fourth of the participants agreed on the statement "I took action and I am fully adapted to these new ways of acting compatible with sustainability" results of qualitative measurement revealed that participant's actions are not full examples of "reintegration of a new perspective into one's life". Results of item 1 quantitative data is presented in Table 4.13:

Table 4.13 Summary of Quantitative Data-Mezirow's Perspective Transformation Stages

Mezirow's Perspective Transformation Stages	Item	Frequency	%
Stage 1 -Disorienting Dilemma	I had a training experience that caused me to question the way I normally act.	24	100%
	I had an experience that caused me to question my ideas about social roles. (Example of social roles includes how a teacher, a mother, a father or a child should act.)	20	83%
Stage 2- Self-examination	As I questioned my ideas, I realized I no longer agreed with my previous beliefs or role expectations.	14	58%
	As I questioned my ideas, I realized I still agreed with my beliefs or role expectations.	7	29%
Stage 3-A critical assessment of epistemic, socio-cultural or psychic assumptions	After the training, I felt uncomfortable with traditional role expectations (values, habits, behavior patterns).	22	92%
Stage 4-Recognition of one's discontent and the process of transformation are shared	I realized that other participants also questioned their beliefs.	19	79%
Stage 5-Exploration of new roles, relationships and actions	Before participating the training, I was thinking that I should be acting in a different way because of my usual beliefs and roles.	12	50%
Stage 6-Planning a course of action	I am planning to try to figure out a way to adopt these new ways of acting.	16	67%
Stage 7-Acquisition of knowledge and skills for implementing one's plans	I have an intention to gather the information I needed to adopt these new ways of acting.	17	71%
Stage 8-Provisional trying of new roles	I am planning to try out new roles so that I would become more comfortable or confident in them.	24	100%
Stage 9-Building of competence and self-confidence in new roles and relationships	I began to think about the reaction and feedback from my new behavior.	13	54%
Stage 10-Reintegration of a new perspective into one's life	I took action and I am fully adapted to these new ways of acting compatible with sustainability.	18	75%
Diagnosis and interpretation	I do not identify with any of the statements above.	0	0%

N=24

- During interviews, most repeated themes were "discussion content with others" (20 times), "realization of the self" (19 times), "realization of new ways of relations and actions" (16 times), "enlarging the effect of new perspective" (15 times) and "effort to try out new roles and new ways of acting". Please see Table 4.14 for summary of qualitative data.

Table 4.14 Summary of Qualitative Data-Mezirow's Perspective Transformation Stages

Stage 1-Disorientring dilemma	Sources	References
Concern	4	7
Discomfort about the actions	4	6
Being pessimistic	4	8
Stage 2-Self examination	**Sources**	**References**
Not being in agreement with beliefs or role expectations-Thinking in a different way	6	14
Realization of the Self	6	19
Self-evaluation	6	13
Stage 3-Critical assessment of internalized role assumptions	**Sources**	**References**
Feeling uncomfortable about values, habits and ways of acting	3	10
Critical approach	4	9
Self-inquiry	5	12
Comparison	5	10
Stage 4 -Relating discontent with others	**Sources**	**References**
Discussion discontent with others	6	20
Request for further contact	3	3
Effect of the environment	3	3
Not feeling lonely	3	5
Stage 5 - Exploring options for new ways of acting	**Sources**	**References**
Using opportunities	1	1
Seeing the future in a optimistic way	6	11
Pushing the limits	4	4
Realization of new ways of relations and actions	6	16
Stage 6-Planning course of action	**Sources**	**References**
Planning	5	11
Designing projects	2	3
Stage 7-Acqusition of knowledge and skills	**Sources**	**References**
Gathering information	4	5

	Sources	References
Making research	3	3
Stage 8-Provisional trying of new roles	**Sources**	**References**
Effort to try out new roles and ways of acting	6	14

	Sources	References
Stage 9-Building of competence and self-confidence in new roles and relationships	**Sources**	**References**
New habit formation	3	4
Encouragement-empowerment-self concept	5	11
Enlarging the effect of new perspective	5	15
Building competency and confidence	3	5
Stage 10-Reintegrating-restored equilibrium	**Sources**	**References**
Adaptation to new way of acting which is harmonized with sustainability	0	0
Reintegration of oneself with sustainability life style	0	0

Experience of Perspective Transformation

While designing Item 2, King (2009) decided to focus on mainly 3 functions: (1) improving the validity of the tool by summarizing and rephrasing Item 1; (2) assisting the respondent in completing the tool; and (3) focusing the items on one experience of perspective transformation. The question directs the participant to last two sections of the assessment tool if he/she did not experience perspective transformation. As presented in Table 4.15, all of the respondents (100%) agreed on that they have experienced a time when they realized that their values, beliefs, opinions and expectations had changed due to their participation in the training.

Table 4.15 Experience of Perspective Transformation-LAS

Item 2: Since you have been participating in this in-service training, do you believe you have experienced a time when you realized that your values, beliefs, opinions or expectations had changed?		
Label	Yes	No
Percentage	100%	0%

N=24

PT-Index: Item 3 and 5 were designed to gather free-responses. Those free-responses (item 3 and 5), items 1 and 2 are used by researcher to determine a score on a scale of one to three. This scale is called as "PT-Index" and it indicates whether learners had a perspective transformation. PT-Index=3 means learner had a perspective transformation related with the training. PT-Index=2 means learner had a perspective transformation which is not associated with the training and PT-Index=1 means learner did not have any perspective transformation experience (King, 2009).

Basic Description of Perspective Transformation Experience

Item 3 was designed to gather basic description of perspective transformation experience. Twenty three of the respondents (96%) provided free-responses related with the perspective transformation experience during training, only one respondent' answer was not evaluated as explanation of perspective transformation experience related with the training.

Indication of Adult Learner's Understanding of the Experience

Item 5[3] provides clear indication of the adult learner's understanding of the experience. As it was designed, researcher gathers this information by using items 1, 2, 3 and 5 together. Item 5 asks, "Thinking back to when you realized that your views or perspective had changed, what did your being in this in-service training have to do with the experience of change?" Researcher uses information from this item to determine a score for each respondent on a scale of one to three. Score 1 was assigned to unanswered item, score 2 was assigned to irrelevant answers, score 3 was assigned to relevant answers. All of the respondents (100%)

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[3] Since item 4 is related with the second research question, results of this item are presented in the following sections.

provided answers at varying degrees relevant perspective transformation experiences and they were scored with 3.

Based on items 1, 2, 3 and 5 in addition to qualitative data analysis, it can be concluded that the training entitled "Education is the Key for Sustainable Future" caused all members of sampled population of ECE teachers to a perspective transformation in terms of sustainability in different levels. It can be implied that this result has vital importance on reaching to a more sustainable society.

4.2 Facilitators of Perspective Transformation

In this part of the study, answers to second research question are sought: *What could be the factors that facilitate perspective transformation among ECE teachers?* In the second section of the instrument, individual learning activities and life changes as facilitators of perspective transformation were examined. Checklist of a support opportunities, classroom assignments and events of life changes such as marriage, divorce, loss of a job were provided. Respondents selected any of these items that contributed to their perspective transformation.

Facilitators of Perspective Transformation – Classroom Assignments

As King (2009) suggested, results of Item 4 was assessed in two major categories: classroom assignments and support. Classroom assignments were also categorized for the purposes of analyzing and interpreting the data as follows:

Category 1. Critical thinking activities: reading assignments, group projects, training activities

Category 2. Discussions: verbally discussing deep concerns about environment and future, introduction of deep and concentrated thoughts by participants and trainer

Category 3. Participant self-assessments: personal reflection writings, learning diaries, assessment and evaluation assignments, self-evaluation during training

Category 4. Miscellaneous learning activities: unconventional structure of the training and "other class assignments"

It is important to remind here that those four categories are not entirely mutually exclusive. List of class assignments were divided to simplify the examination. Still, for further understanding, results of each assignment were displayed in Table 4.16.

Table 4.16 Categorized Classroom Assignments - LAS

Category	Classroom Assignment	Frequency	Category Percentage
1 - Critical Thinking Activities	Group projects	18	31%
	Training activities	19	
	Reading assignments	12	
2 - Discussions	Verbally discussing deep concerns about environment and future	21	25%
	Introduction of deep and concentrated thoughts by participants and trainer	19	
3 - Participant Self-assesment	Assessment and evaluation assignments	12	32%
	Self-evaluation during training	19	
	Personal reflection writings	8	
	Learning diaries	11	
4 - Miscellaneous Learning Activities	Unconventional structure of the training	18	12%
	Other class assignments	1	

N=24

Learners who had experienced a perspective transformation cited the facilitators as verbally discussing deep concerns about environment and future, 88%; training activities, introduction of deep and concentrated thoughts by participants and trainer, self-evaluation during training, each 79%; group projects and unconventional structure of the training, each

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75%; reading assignments and assessment and evaluation assignments, each 50%; learning diaries, 46%; personal reflection writings, 33% and "other class assignments", 4%. Table 4.17 displays rate of occurrence from highest to lowest:

Table 4.17 Percentages of Grouped Learning Activities - LAS

Classroom Assignment	Frequency	%
Verbally discussing deep concerns about environment and future	21	88%
Training activities	19	79%
Introduction of deep and concentrated thoughts by participants and trainer	19	79%
Self-evaluation during training	19	79%
Group projects	18	75%
Unconventional structure of the training	18	75%
Reading assignments	12	50%
Assessment and evaluation assignments	12	50%
Learning diaries	11	46%
Personal reflection writings	8	33%
Other class assignments	1	4%

N=24

Qualitative Analysis Results related to Facilitators of Perspective Transformation – Classroom Assignments

As can be seen in Table 4.18, the interviews revealed that group projects, training activities, verbally discussing deep concerns about environment and future, unconventional structure of the training, introduction of deep and concentrated thoughts by participants and trainer, self-evaluation during training, assessment and evaluation assignments were main class assignment contributors to perspective transformation.

Table 4.18 Percentages of Grouped Learning Activities - Interviews

Classroom Assignment	Frequency	%
Verbally discussing deep concerns about environment and future	6	100%
Training activities	6	100%
Introduction of deep and concentrated thoughts by participants and trainer	6	100%
Self-evaluation during training	6	100%
Group projects	6	100%
Unconventional structure of the training	6	100%
Assessment and evaluation assignments	6	100%
Reading assignments	5	83%
Learning diaries	4	67%
Personal reflection writings	4	67%

N=6

Results of both quantitative and qualitative data support that verbally discussing deep concerns about environment and future group projects (category 2), training activities (category 1) , introduction of deep and concentrated thoughts by participants and trainer (category 2), self-evaluation during training (category 3), group projects (category 1) and unconventional structure of the training, (category 4) had great impact on adult learners.[4]

"Unconventional structure of the training made me come to training willingly and this structure took me inside of the training."

Facilitators of Perspective Transformation – Support

Support is another category that was assessed with the instrument. Participants were presented support of the trainer, challenge from trainer and support of a participant as choices and they were to select any of the items that contributed to their perspective transformation.

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[4] The results of classroom assignment "assessment and evaluation assignments" were different in comparative analysis of quantitative and qualitative data due to fact that respondents were given additional information regarding this item during interviews. This situation made a difference in selecting this item.

As Table 4.19 presents, 88% of respondents selected "support of the trainer", 42% of respondents selected "challenge from trainer" and 21% of respondents selected "support of a participant".

Table 4.19 Facilitating Transformation-Ranking of Support-LAS

Facilitating Transformative Learning-Support	Frequency	Percent
Support of the trainer	21	88%
Challenge from trainer	10	42%
Support of a participant	5	21%
Other person	5	21%

N=24

Qualitative Analysis Results related to Facilitators of Perspective Transformation – Support

The interviews specifically revealed that (1) "support of the trainer" and (2) "challenge from the trainer" followed by the (3) "support of a participant" were main contributors to perspective transformation. Table 4.20 can be analyzed for distribution of selections:

Table 4.20 Facilitating Transformation-Ranking of Support-Interviews

Facilitating Transformative Learning-Support	Frequency	Percent
Support of the trainer	6	100%
Challenge from trainer	6	100%
Support of a participant	5	83%
Other person	1	17%

N=6

Both instruments revealed that trainer was considered as main contributor to perspective transformation:

> I observed your role as a trainer and realized that you walk your talk. You believe in what you say. You made it (sustainability) as the main principle of your life. You affected us with this way of acting. This is very critical. In our culture we say 'do what the wise man says, don't do what he does'. You break this taboo. Your sincere approach

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gave us the impression of ability, encouragement and confidence. It's easy once you get the message from a person you respect that 'you can do something'.

Even though only 21% of participants agreed on another participant's support as a contributor to perspective transformation while responding LAS, interview results show that 83% of interviewees accepted "support of a participant" as a support to perspective transformation:

> I felt confidence when I realized that I am not the only one who thinks in this or that way. I am not feeling isolated anymore. My thoughts are not trapped in my mind anymore; they can be part of different people's lives. It was great to realize this fact; this training gave me the chance to live this feeling.

Facilitators of Perspective Transformation – Life Changes

Life experiences of change were also listed in the instruments due to fact that those kinds of occurrences may cause to transformative experiences (King, 2009). The respondent who selected "yes" to the following statement "since you have been participating in this in-service training, do you believe you have experienced a time when you realized that your values, beliefs, opinions or expectations had changed?" was also directed to answer following question: "was it a significant change in your life that influenced the change?". They instructed to check all items that apply, such as marriage, birth/adoption of a child, moving, divorce/separation, death of a loved one, change of a job, "other". None of the items (0%) were selected by respondents. According to interview results, parallel with quantitative measurement, none of the life changes were mentioned as possible cause for perspective transformation.

Reflection among Adult Learners

Item 6 was designed to gather information about reflection among adult learners (King, 2009). Both questions, "would you characterize yourself as one who usually thinks back over previous decisions or past behavior?" and "would you say that you frequently reflect upon the meaning of your studies for yourself, personally?" were replied in the affirmative by all respondents (100%).

Occurrence of Learning Activities

Results of item 7 show how often learning activities occurred in education setting and points out whether some of the learning activities are available more or less than others (King, 2009). Respondents were presented a checklist and they are to select any of the items which were present during the training. Results of this item can found in Table 4.21.

Table 4.21 Perspective Transformation Ranking of Learning Activities – LAS

Which of the following has been part of your experience in this training?	Frequency	%
Trainer's support	23	96%
Group projects	23	96%
Training activities	23	96%
Verbally discussing deep concerns about environment and future	20	83%
Unconventional structure of the training	20	83%
Introduction of deep and concentrated thoughts by participants and trainer	19	79%
Trainer challenge	17	71%
Self-evaluation during training	17	71%
Reading assignments	15	63%
Learning diaries	14	58%
Assessment and evaluation assignments	13	54%
Personal reflection writings	9	38%
Participant's support	4	17%

N=24

Occurrence of "trainer's support", "group projects" and "training activities" were recorded by 23 participants (96%). Twenty participants (83%) selected "verbally discussing deep concerns about environment and future" and "unconventional structure of the training". "Introduction of deep and concentrated thoughts by participants and trainer" was selected by 19 (79%) participants. Seventeen (71%) of the participants stated that "trainer challenge" and "self-evaluation" were parts of their training experience. "Reading assignment" was selected by 15 participants (63%), "learning diaries" was selected by 14 participants (58%), "assessment and evaluation assignments" was selected by 13 participants (54%), "personal reflection writings" was selected by 9 participants (38%) and lastly 4 of the participants (17%) selected "participant's support".

Second part of the Item 7 was placed to check if participants had experienced any events of life change. The results reveal that 1 participant (4,2%) selected "moving", 1 participant (4,2%) checked the item "change of a job" and 1 participant (4,2%) marked the option "other".

In conclusion, according to the results of this study, variety of contributors was recorded as facilitators of perspective transformation among ECE teachers. Specifically, both classroom assignments and support were noted as important contributors of perspective transformation. As it was discussed before, discussions (verbally discussing deep concerns about environment and future; group projects introduction of deep and concentrated thoughts by participants and trainer), critical thinking activities (training activities and group projects), self-evaluation of participants and unconventional structure of the training had important impact on transformative adult learning experience. It was recorded that support, the second

facilitator of perspective transformation, directed learners to encouragement-empowerment-self concept. Both instruments used in this research showed that support of the trainer was evaluated by respondents as main contributor to perspective transformation.

CHAPTER 5

DISCUSSION

In this chapter, a summary of current study in the framework of research questions, the research method and the major findings are presented. Subsequently, the major findings are discussed in terms of both quantitative and qualitative results. Then, policy and practical implementations and recommendations for future research are summarized. The last section abridges the major conclusions.

5.1 Key Findings

Key findings of the study are listed as follows:

- Sampled early childhood educators demonstrated that they have experienced transformative learning at varying degrees in relation to the in-service training provided. Respondents designated this result with Mezirow's stages as represented in the instrument and in their description of experiences.

- Journey of transformative learning differs among learners. Movement through stages does not necessarily have to be linear and learners do not necessarily complete one stage and then move to the next one.

- Sampled population experienced some changes in their perspective of their beliefs, assumptions and points of view as well as they transitioned to a more differentiated frame of reference which is related with sustainability.

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- Variety of contributors was recorded as facilitators of perspective transformation towards sustainability among ECE teachers. Both classroom assignments and support were noted as important contributors of perspective transformation. Pivotal facilitators of this process were discussions (verbally discussing deep concerns about environment and future; group projects introduction of deep and concentrated thoughts by participants and trainer), critical thinking activities (training activities and group projects) self-evaluation of participants and unconventional structure of the training, additionally support of the trainer and challenge from the trainer was evaluated by respondents as main contributors to perspective transformation.

5.2 Discussion

Transformative learning is mainly an experience of critical questioning of beliefs and assumptions as learners overview the framework which they have been viewing their world (King, 2009). Four stages of development were matched by King (2009) with Mezirow's 10 stages to explain learners' journey of transformation (Table 5.1). According to King (2009), explanation, the journey consists of (a) fear and uncertainty (b) testing and exploring (c) affirming and connecting (d) new perspectives.

Table 5.1 Comparisons Journey of Transformation and the original model

The Journey of Transformation (by K.P. King)	Perspective Transformation Stages (by Mezirow)
Fear and Uncertainty	Stage 1 Disorienting dilemma
	Stage 2 Self-examination
Testing and Exploring	Stage 3 A critical assessment of epistemic, socio-cultural or psychic assumptions
	Stage 4 Recognition of one's discontent and the process of transformation are shared
	Stage 5 Exploration of new roles, relationships and actions
Affirming and Connecting	Stage 6 Planning a course of action
	Stage 7 Acquisition of knowledge and skills for implementing one's plans
	Stage 8 Provisional trying of new roles
	Stage 9 Building of competence and self-confidence in new roles and relationships
New Perspectives	Stage 10 Reintegration of a new perspective into one's life

Source: (King, 2009, p. 92)

"Disorienting dilemma" for participants was participant's lack of awareness and knowledge regarding the unsustainable system in the world and their particular role in this system. This dilemma caused them to live fear and uncertainty about their future. Results of this research reveal that transformative learning experience started by fear and concern (4 respondents mentioned concern 7 times, 4 respondents mentioned discomfort about their own actions 6 times and 4 respondents mentioned about their pessimistic view towards future 8

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times). Through the training, participants began taking risks, trying out new perspectives related with sustainability, engaging in self-reflection as well as self-doubt sometimes. More than half of the participants stated that they no longer agreed with their previous beliefs or role expectations as they questioned their ideas. Themes regarding self-examination were mentioned 46 times during interviews. If learners can gain confidence, then they test and explore new options (King, 2004) as a person in private life and as a teacher in professional life. During the exploration phase, participants were able to see new ways of relations and actions, they became more optimistic about the future (6 respondents mentioned seeing the future in an optimistic way 11 times and 6 respondents mentioned realization of new ways of relations and actions 16 times). In the next stage, participants seek more information, start planning on how to use the knowledge and they try out to reach some new connections, synthesis regarding sustainability and education for sustainability. As an integral part of transformative learning the training experience urged some participants to learn more (stage 7). Most of the participants reported that they want to gather the information they needed to adapt their new ways of acting to sustainable way of living. They realized how they can connect their knowledge on new roles, relationships and actions with their own lives. Additionally, they moved to collaborative relationships with their peers and families. New connections and affirmations are mainly related with Mezirow's planning of new action, acquiring skills, trying new roles and building expertise and confidence. Most of the participants are planning to try to figure out a way to adopt these new ways of acting. As one of the most noteworthy result, all participants have plans on putting effort to try out new roles and ways of acting. However, only half of the participants focused on building of competence and self-confidence in new roles and relationships. Building plans and starting to put them

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into practice are integral parts of "journey of transformation". King (2004) especially notes that the "Testing and Exploring" stage is closely tied to the "Affirming and Connecting" stage (see Table 5.1). Since they are related to one another they can also be traveled through back and forth within their own stage and between the two of them. The timeline of last stage is different for every individual (King, 2004). Reaching to that stage may take days, weeks, moths or years. This stage requires the learners to reach beyond conceptual boundaries to see possibilities they haven't noticed before; learners are able to reflect and develop new ideas, view learning and meaning in new ways as well as reintegrate of the new perspective into their own lives (King, 2004). Reintegration of oneself with sustainability life style is the end point of closing loop. Most of the participants claimed that they took action and they are fully adapted to these new ways of acting compatible with sustainability. However, results of the interview analysis show that respondents' choices reflect the "taking action" part of the item and there is no evidence of "full adaption to new ways of acting compatible with sustainability". As discussed in chapter 3 of this study, duration of the study may be the main factor behind the absence of equilibrium into full adaption to sustainability. One suggestion for short-term transformative learning applications could be to separate item k "I took action and I am fully adapted to these new ways of acting compatible with sustainability" into two parts as "I took action compatible with sustainability" and "I am fully adapted to new ways of acting compatible with sustainability".

As Cranton (1994) explains, when it comes to practical applications, it is very hard to make distinctions between stages and it is possible to move back and forth between stages in addition to experiencing one stage at the same time. As King (2004) suggests, this whole process can be defined as "cycled through" as new ideas being tested, affirmed, and

connected, as result of this process new perspectives are built. As the learner completes the journey's cycle, they are encouraged with a vision of new possibilities for their professional work and their students (King, 2004).

5.2.1 Learner Empowerment-Support of the Trainer-Support of Others

King (2000) stated that learner empowerment is one of the predominant goals of adult education. Cranton (1994) adds another component to this argument by claiming learner empowerment is also specifically a goal for transformative learning. Empowered learner, as Cranton (1994) explains, feels free to participate in critical discourse while empowerment necessitates ability to assess evidence and engagement in critical reflection. An honest self-examination is important characteristic of transformative learning. It can be done if learner feels confident, secure, free, equal or possible supported by others (Cranton, 1994). So, it can be stated that learner empowerment is critical component of transformative learning. Mezirow (1991) explains core of transformative learning as uncovering distorted assumptions and he states that this could be very difficult and painful process for the learner. As a result of insufficiency of learner empowerment during the process of critical-reflection, learner may not want to continue the process (Cranton, 1994).

This in-service training can be evaluated as clear demonstration of empowerment in adult learning that supports transformative learning due to fact that all of participants stated at varying degrees that they received support and encouragement firstly from their trainers and secondly from their peers as they faced changes in their ways of thinking and acting. Interview results revealed that encouragement-empowerment-self concept were cited by 5 respondents 11 times.

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The literature demonstrates the role of educator as resource people, facilitators, counselors, mentors, models, reformers and activists (Brookfield, 1986; Cranton, 1994). Educator's role has been taken into account by many authors: developers of critical thinker (Brookfield, 1986), facilitator of self-directed learning (Candy, 1991), promoters of transformative learning (Mezirow, 1991). Role of educator is discussed in this study in the framework of *reformist perspective* offered by Cranton (1994) as mentioned previously in this research. In this perspective, trainer is both *co-learner* and *provocateur* during the process. The provocateur helps learners to become aware of distorted assumptions and help them handle with gaps among expressed values and their actions. If educator truly cares about the learner, it encourages further self reflection (Cranton, 1994). As mentioned before, majority of LAS respondents (88%) and all of the participants interviewed selected support of the trainer as one of the main contributors of perspective transformation. As result of educator's provocateur role, almost half of the LAS respondents and all interviewees perceived challenge from the trainer as one of the causes of perspective transformation.

One of the most used ways of providing challenge is formulating questions (Cranton, 1994). A climate of *critical questioning* can also help learners to ask questions to their own beliefs (Cranton, 1994). *"Skilled questioning is one of the most effective means through which ingrained assumptions can be externalized"* (Brookfield, 1987b, p. 92). Brookfield described critical questioning as fostering reflection rather than eliciting information. Strategies for effective questioning mentioned by Brookfield (1987b) are as follows: relate questions to events, situations, people and actions; work from particular to general to find out general themes; and explain ideas and experiences in an informal way rather than in an academic way. Asking Why? questions in addition to What? and How? questions urge learners to examine

issues more deeply; once learner adds why's to learning process, he or she questions a meaning perspective (Cranton, 1994).

As Brookfield (1987b, p.25) emphasizes *"asking important questions often comes more easily when we are surrounded by others who are doing this"*. As mentioned by Cranton (1994), critical reflection and assumption questioning should be supported with support from others in addition to support from the educator. By taking into account of Habermas' (1984) opinions Mezirow (1991) states that consensual validation is prerequisite of learning and it happens through free and full participation in critical discourse with others. Others also have the role of questioning and challenging learner (Cranton, 1994). Interview results show that majority of interview respondents (83%) perceived "support of a participant" as a contributor to perspective transformation, while one fourth of LAS respondents accepted another participant's support as a contributor to perspective transformation while responding LAS. Another important indicator of the role of 'others' is displayed in learning activities. Most of the learners (88%) who had experienced a perspective transformation cited verbally discussing deep concerns about environment and future as one of the main contributors. Also, selection of "introduction of deep and concentrated thoughts by participants and trainer" as well as "group projects" which were designed to promote discussion among group members indicate that interaction among participants and participants, participants and the educator are vital facilitators of perspective transformation.

Learners often seek support from their peers; particularly they identify themselves with the ones who go through the similar experience (Cranton, 1994). Results of the research revealed that 6 respondents mentioned discussion discontent with others 20 times and 3 respondents mentioned not feeling lonely 5 times. As Boyd (1989) explains that the learner

group *"can provide supportive structures that facilitate an individual's work in realizing personal transformation"* (p. 467). Brookfield (1987b, p. 29) explains role of others as *"trying to step outside of our physical body so that we can see how a new coat or dress looks from behind"*. Others also can help with improving alternative perspectives (Cranton, 1994). As it was frequently done in the training component of this study, brainstorming and group discussions assisted generating alternatives. While exploring alternatives and questioning assumptions, feedback of others may also play important roles toward transformative learning (Cranton, 1994).

As it was mentioned before, learner empowerment is perceived as pre-condition of self-reflection and transformative learning. It prevails with support from both educators and peers. Relating discontent with others helped learners to continue their journey to transformation. During interviews, most repeated theme was "discussion content with others". Relation among learner empowerment, educator support and others are explained by Cranton as increased freedom and autonomy as demonstrated in Figure 5.1.

```
┌─────────────────────┐   Through:
│   Initial learner   │   Freedom to participate
│                     │   Comfort
│    empowerment      │   Learner decision making
└─────────────────────┘
          │
┌─────────────────────┐   Through:
│   Learner critical  │   Questioning assumptions
│                     │   Consciousness-raising
│    self-reflection  │   Challenging assumptions
└─────────────────────┘
          │
┌─────────────────────┐   Through:
│   Transformative    │   Revision of assumptions
│                     │   Educator support
│      learning       │   Learner networks
│                     │   Action
└─────────────────────┘
          │
┌─────────────────────┐
│ Increased empowerment, │ Through:
│                     │   Critical self-reflection
│      autonomy       │   Transformative learning
└─────────────────────┘
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Figure 5.1 Learner Empowerment Through a Process of Transformative Learning (Cranton, 1994, p. 143)

5.2.2 Unconventional structure of the Training

Results of the research revealed that all of the interview respondents and three fourth of LAS respondents indicated unconventional structure of training as one of the main contributors of perspective transformation. As Mezirow (1991, p. 78) points out *"participation in rational discourse under ... ideal conditions will help adults become critically reflective of the meaning perspectives and arrive at the more developmentally advanced meaning perspectives."* It's been claimed that educator may have the role to foster

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equal participation in discourse and freedom from coercion which strengthens learner empowerment (Cranton, 1994). As listed by Cranton (1994) stimulating discussion, developing discourse procedures, avoiding making dismissive statements, not letting one person dominate and allowing quiet time may be evaluated as strategies to promote equal participation in discourse. Researcher of this study particularly tried to apply Cranton's strategies mentioned above and in previous sections to the training process.

In line with transformative learning theory, experiential learning was taken as the starting point while constructing the unconventional structure of training. As Aristotle stated *"For the things we have to learn before we can do them, we learn by doing them."* (Bynum and Porter, 2005, p.9) Within the context of Aristotle's statement, learners in this research may refer the experience as a "living textbook" due to existence of self-initiative and self-evaluation (Lindeman, 1961).

> I started realizing perspective change as soon as I came to the training and as soon I got to know you (the trainer). I discovered that I will be active during this training. Your classroom management style and curriculum you prepared made me think that way. I thought that I will be active and I will be able to contribute, this is very important. I used to participate in in-service trainings due to some obligations. I used to chat with my friends during in-service trainings. This time I wanted to listen to you rather than listen to my friend chatting with me. This place was the place where I was very active. Your training skills, the training program you mentioned at the introduction of the training, and the way we determined training rules together, they were all very important factors for me.

As NAEYC (1993, p.9) states "*Effective professional development experiences use an active, hands-on approach and stress on an interactive approach that encourages students to learn from one another.*" The concept of experiential learning requires hands-on experiences and has a cyclical pattern of learning from Experience through Reflection and

Conceptualizing to Action. In-service training created in this study revealed an example of experiential learning practice based on transformative learning theory. It was aimed to reach personal growth and development through concrete experience, reflecting on that experience, abstracting conceptualization and applying of the insights in a new context.

5.2.3 Individual Differences

This research is an evidence of the statement "each participants journey to transformation is unique". Nineteen out of 24 participants went through transformation stages by choosing different pathways. Remaining 5 participants constituted groups of three and two participants and they went through two different pathways. This pattern shows us that the process of transformative learning varies among people (Cranton, 1994). *"Adults are a highly diversified group of individuals with widely differing preferences, needs, backgrounds and skills"* (James, 1983, p.132). Cranton (1994) preferred to unfold this variety by explaining Jung's (1971) model of psychological types. The ones with extraverted attitude prefer interaction with people, events, situations and information, while introverted types have tendency towards indirect stimulation from the world which consists of inner set of processes. Jung (1971) also mentions about preferences in making judgments, by the use of logic (thinking) and by the use of values (feeling). Reality of senses and intuition were described by him as two ways of perceiving. So, Jung (1971) claims that every person has attitudes, preferences and perceptions in different ways and they work together in various ways. As an implication to transformative learning, Cranton (1994) provides following example: feeling types have tendency towards making changes in their values and their perspectives through

value-based judgments whereas thinking types are not necessarily the most likely to revise their meaning perspectives.

In short, some people have more tendencies to engage in critical reflection and transformative learning than others (Cranton, 1994). This statement was tested with LAS-Item 6 with questions "would you characterize yourself as one who usually thinks back over previous decisions or past behavior?" and "would you say that you frequently reflect upon the meaning of your studies for yourself, personally?". Responds to both questions revealed that all participants have tendencies to engage themselves in critical reflection. This factor may constitute one of the justifications behind transformative learning experiences.

5.3 Implications for Policy and Practice

This study's findings suggest that there is a need to revise approach to professional development of ECE teachers in terms of education for sustainability. First years of children are most important ones for developing attitudes and values that forms the basis of personality (Didonet, 2008). Therefore, if we demand that human beings respect nature and be parts of sustainable societies, we need to include every person especially young children by concrete and direct experiences. This can be done by transformation of their role-models "teachers". At present, only small proportion of decision makers in the field of education worry about the role of teachers in building sustainable societies. So, there is a need to look at and explore our education systems, transform them to support teachers, as well as their young students and future generations.

Perhaps one of the most important contributions of this study is transformation experience of ECE teachers in one week training through questioning assumptions, values,

beliefs and actions towards sustainable way of thinking, action planning and initiative taking.

Ministry of Education officials working in Sakarya visited the training twice, once during the

training and once at the end of training to gather comments of participants. Feedbacks of

teachers directed them to question regular in-service training mentality due to fact that almost

all teachers wanted to comment on the training provided. Their comments were video

recorded by Ministry officials and it was said that all comments will be taken into account:

- Providers of effective professional development experiences should have an appropriate

knowledge and experience base (NAEYC, 1993):

> Timing of the training was well-planned. Some of the trainings are being put in the
> middle of semester and they start at 6 p.m during week days. These factors cause real
> problems. In-service trainings should be planned during in-service training period (June
> and September) just like this training. In addition to this, in-service trainings should be
> conducted by educators who are competent in their fields; this factor motivates us to
> change our perspectives, gain new perspectives. Early childhood education has vital
> importance. It's boring to listen to a person who knows less than I know.

> "The educator worked cooperatively and methodically. She used time efficiently. Her
> attitude was very good example for our teaching profession."

- Cuseo (1992) emphasized on the effect of small groups by stating that small-group dynamics

may be instrumental in fostering social support and emotional ties among peers. And these

factors are known to have significant impacts on student learning:

> "Working in small groups was very effective for us. We could know each other better;
> we were comfortable while sharing our opinions."

- It could be stated that during training learning outcomes realized effectively due to fact that

fundamental of the training was based on an adult learning theory. NAEYC (1993) claimed

that *"effective professional development opportunities are structured to promote clear*

linkages between theory and practice".

> "I think our educator raised our awareness. This is also very important situation for the
> education we provide to children."

> "We learned a lot in this environment. We also want to disseminate what we've learned and we expect your (Ministry of Education's) support in this regard."

- As NAEYC (1993) suggests in position statement regarding professional development, effective professional development experiences contribute to positive self-esteem:

> "At the first session of the training, the concept "sustainability" did not mean anything to me. Now I do see that I can do many things. As an individual I can provide input as well. I see that I can contribute by guiding my students."

> "I can define this environment as a place where everybody can express herself/himself comfortably, think freely and learn actively. I think everybody is pleased. I am very pleased. We are expecting continuation of this (training)."

Professional development attempts include both pre and in service efforts. Thus, integration of sustainability into pre-service education can be one of the predominant factors on reaching more sustainable societies. Support throughout the professional application processes through in-service efforts is another inseperable factor of integrating sustainability into early childhood education through teachers. In addition to professional development of teachers, early childhood education curriculum is another point of intervention. It is also important to review and re-orient early childhood education curriculum if it's aimed to transform early childhood education teachers on the way to form sustainable societies. Parent education is also very important to take into account in education for sustaianability. Last but not least, schools should be transformed into more sustainable learning environments.

5.4 Recommendations for Future Research

This research confirms that perspective transformation experiences provide an appropriate and insightful framework on how to integrate sustainability into early childhood

education through in-service training. It was the purpose of this research to further the understanding of early childhood educators' perspective transformation experiences and contributors to their learning experiences on the way to reach more sustainable society. This research also provided a new way to provide professional development opportunities and examine current in-service training mentality. The findings of this research resulted in conclusions that could be taken into account by future researchers. First of all, perspective transformation learning experience that was planned for 7 half days could be conducted over longer period of time due to fact that perspective transformation may take days, weeks or even years (King, 2004). In addition to this, sample size of research can be expanded to allow seeing the results of the study vary with different groups of people. With bigger sample group, individual differences can be studied by cross tabulations and between chi squared test of significance between demographic groups and between PT-Index of 1 and 3 (King, 2009). Another recommendation for future research could be examining of actions derived from new perspective formation. Longitudinal effects of a longer training period are also another area of exploration. Attempt to follow changes in actions may offer opportunities to further researches in education for sustainability and education for sustainable development. Last but not least, this study can be applied to different grade level teachers as well as prospective teachers to create opportunity for comparing impacts of the study with broader perspective.

5.5 Conclusion

This study attempted to create an in-service training example that may be used by adult educators in the framework of transformative learning towards learning for sustainability. In this research additionally, it was aimed to explore the proportion of the

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sampled population of ECE teachers who experienced a perspective transformation in terms of sustainability within the context of the training provided and facilitators of perspective transformation among ECE teachers. Five major implications from research are presented as follows: (a) perspective transformation learning experiences include major shifts in learner's understanding of his/her life and world, (b) journey of transformative learning differs among learners, (c) sampled population experienced some changes in their perspective of their beliefs, assumptions and points of view as well as they transitioned to a more differentiated frame of reference which is related with sustainability, (d) both classroom assignments and support were noted as important contributors of perspective transformation, (e) discussions, group projects, critical thinking activities, self-evaluation of participants and unconventional structure of the training, support of the trainer, support from others and challenge from the trainer were evaluated by respondents as main contributors to perspective transformation.

Overall, it could be stated that the in-service training experience provided within this study contributed to the personal and professional development of early childhood teachers. The more we learn from this experience, the deeper we can integrate the concept of sustainability into our early childhood education system.

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Appendix A: Original Version of Instruments

ORIGINAL LEARNING ACTIVITIES SURVEY

This survey helps us learn about experiences of adult learners. We believe that important things happen when adults learn new things. Only with your help we can learn more about this. The survey only takes a short time to complete, and your responses will be anonymous and confidential. Thank you for being part of this Project; your cooperation is greatly appreciated.

1. Thinking about your educational experiences at this institution, check off any statements that may apply.

( ) a. I had an experience that caused me to question the way I normally act.
( ) b. I had an experience that caused me to question my ideas about social roles. (Example of social roles include what a mother or should do or how an adult or child should act.)
( ) c. As I questioned my ideas, I realized I no longer agreed with my previous beliefs or role expectations.
( ) d. Or instead, as I questioned my ideas, I realized I still agreed with my beliefs or role expectations.
( ) e. I realized that other people also questioned their beliefs.
( ) f. I thought about acting in a different way from my usual beliefs and roles.
( ) g. I felt uncomfortable with traditional role expectations.
( ) h. I tried out new roles so that I would become more comfortable or confident in them.
( ) i. I tried to figure out a way to adopt these new ways of acting.
( ) j. I gathered the information I needed to adopt these new ways of acting.
( ) k. I began to think about the reaction and feedback from my new behavior.
( ) l. I took action and adopted these new ways of acting.
( ) m. I do not identify with any of the statements above.

2. Since you have been taking courses at this institution, do you believe you have experienced a time when you realized that your values, beliefs, opinions or expectations had changed?
( ) Yes. *If "Yes" please go to question #3 and continue the survey.*
( ) No. *If "No" please go to question #6 and continue the survey.*

3. Briefly describe what happened.

4. Which of the following influenced this change? (Check all that apply)

Was it a person who influenced the change? ( ) Yes   ( ) No

If "Yes" was it… (check all that apply)

( ) Another student's support
( ) Your classmates' support
( ) Your advisor's support
( ) A challenge from your teacher
( ) Your teacher's support
( ) Other:_____

Was it part of a class assignment that influenced the change? ( ) Yes   ( ) No

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If "Yes" what was it? (<u>check all that apply</u>)
( ) Class/group projects
( ) Writing about your concerns
( ) Verbally discussing your concerns
( ) Personal journal
( ) Term papers/essays
( ) Nontraditional structure of the course
( ) Internship or co-op
( ) Deep, concentrated thought
( ) Personal learning assessment (PLS)
( ) Self-evaluation in a course
( ) Class activity/exercise
( ) Lab experiences
( ) Personal reflection
( ) Assigned readings
( ) Other: _____

Was it a significant change in your life that influenced the change?
( )Yes ( ) No

If "Yes" what was it? (<u>check all that apply</u>)
( ) Marriage
( ) Birth/adoption of a child
( ) Moving/separation
( ) Death of a loved one
( ) Change of a job
( ) Loss of job
( ) Retirement
( ) Other: _____

5. Thinking back to when you realized that your views or perspective had changed, what did your being in school have to do with the experience of change?

6. Would you characterize yourself as one who usually thinks back over previous decisions or past behavior? ( ) Yes( ) No

Would you say that you frequently reflect upon the meaning of your studies for yourself, personally?
( ) Yes ( ) No

7. Which of the following has been part of your experience at this institution? (Please check all that apply.)

( ) Another student's support
( ) Your classmates' support
( ) Your advisor's support
( ) A challenge from your teacher
( ) Your teacher's support
( ) Other:_____

( ) Class/group projects
( ) Writing about your concerns
( ) Verbally discussing your concerns
( ) Personal journal
( ) Term papers/essays
( ) Nontraditional structure of the course
( ) Internship or co-op
( ) Deep, concentrated thought
( ) Personal learning assessment (PLS)
( ) Self-evaluation in a course
( ) Class activity/exercise
( ) Lab experiences
( ) Personal reflection
( ) Assigned readings
( ) Other: _____

Which of the following occurred while you have been taking courses at this institution?
( ) Marriage
( ) Birth/adoption of a child
( ) Moving/separation
( ) Death of a loved one
( ) Change of a job
( ) Loss of job
( ) Retirement
( ) Other: _____

8. Sex: ( ) Female   ( ) Male

9. Marital Status: ( ) Single   ( ) Married   ( ) Divorced   ( ) Partner ( ) Widowed

10. Race: ( ) White, non-Hispanic   ( ) Black, non-Hispanic
                 ( ) Other
                 ( ) Hispanic   ( ) Asian or Pacific Islander

11. Currrent major:
( ) Allied Health   ( ) Nursing
( ) Business   ( ) Science/Engineering
( ) Computer Science   ( ) Social Sciences (Education, Psychology, Sociology)
( ) English   ( ) General Arts/Liberal Studies
( ) Other_____

12. Prior education:
( ) High school diploma/GED   ( ) Masters degree
( ) Associates degree   ( ) Doctorate
( ) Bacholors degree   ( ) Other_____

13. How many semesters have you been enrolled at this institution?
14. Age: ( ) Below 21   ( ) 21-24   ( ) 25-29   ( ) 30-39
         ( ) 40-49   ( ) 50-59   ( ) 60-69   ( ) Over 70

ORIGINAL FOLLOW-UP INTERVIEW

Name: Date:
School: Interviewer Initials:

This interview is part of research that included the survey you took. The research is about experiences of adult learners. We believe that important things happen when adults learn new things. Only with your help can we learn more about this. This interview should take half an hour to complete, and your responses will be anonymous. Thank you in advance for being part of this project; your cooperation is greatly appreciated.
The interview questions are designed to gather further information about the topics covered in the original survey, so some of them may sound familiar to you.

1. Thinking back over your education at your institution, have you experienced a time when you realized that your values, beliefs or expectations had changed?

2. Briefly describe the experience:

3. Do you know what triggered it? If so, please explain.

4. Was it a person who influenced the change?
a. ( ) Yes   ( ) No

b. If "Yes" was it… (check all that apply)

( ) Another student's support
( ) Your classmates' support
( ) Your advisor's support
( ) A challenge from your teacher
( ) Your teacher's support
( ) Other:_____

c. Was it part of a class assignment that influenced the change? ( ) Yes ( ) No

d. If "Yes" what was it? (check all that apply)
( ) Class/group projects
( ) Writing about your concerns
( ) Verbally discussing your concerns
( ) Personal journal
( ) Term papers/essays
( ) Nontraditional structure of the course
( ) Internship or co-op
( ) Deep, concentrated thought
( ) Personal learning assessment (PLS)
( ) Self-evaluation in a course
( ) Class activity/exercise
( ) Lab experiences
( ) Personal reflection

( ) Assigned readings
( ) Other: _____

e. Or was it a significant change in your life that influenced the change?
( )Yes ( ) No

f. If "Yes" what was it? (check all that apply)
( ) Marriage
( ) Addition of a child
( ) Moving/separation
( ) Death of a loved one
( ) Change of a job
( ) Loss of job
( ) Retirement
( ) Other: _____

g. Perhaps it was something else that influenced the change. If so, please describe it:

5. Describe how any of the above education experiences influenced the change:

6. What could have been done differently in the classes to have helped this change?

7. Thinking back to when you first realized that your views or perspective had changed:

a. When did you first realize this change had happened? Was it while it was happening, mid-change, or once it had entirely happened (retrospective)?

b. What made you aware that this change had happened?

c. What did your being in school have to do with it?

d. What did you do about is?

e. How did/do you feel about the change?

8. Do you have any questions?

Interviewer comments:

Appendix B: Adapted and Applied Version of Learning Activities Survey

ÖĞRENME ETKİNLİKLERİ ANKETİ

Sayın Katılımcı,

Aşağıdaki anket yetişkin öğrenenlerin deneyimlerinin ortaya konması amacıyla hazırlanmıştır. Sizin desteğinizle yetişkinlerin öğrenme deneyimleri hakkında daha fazla bilgi edineceğimize inanıyoruz. Anket 15 dakika içerisinde tamamlanacak şekilde hazırlanmıştır. Sizden <u>duygu ve görüşlerinize en yakın olduğunu düşündüğünüz seçenekleri</u> o seçeneğe ait boşluğa (×) işareti koyarak işaretlemenizi rica ediyoruz. Hiçbir soruyu cevapsız bırakmayınız. Araştırma sonuçları kesinlikle gizli tutulacaktır. Araştırmanın amacının gerçekleşmesi cevaplarınızın içtenliğine bağlıdır.
Katkılarınız için çok teşekkür ederiz.

1. Yaşadığınız hizmetiçi eğitim deneyimini düşünerek sizin için geçerli olduğunu düşündüğünüz önermeleri işaretleyiniz. (<u>Geçerli olan tüm cevapları işaretleyiniz</u>.)

( ) a. Yaşadığım eğitim deneyimi gündelik yaşamda gerçekleştirdiğim eylemlerimi sorgulamama yol açtı.

( ) b. Sosyal roller hakkında düşündüklerimi sorgulamama yol açan bir eğitim deneyimi yaşadım. (Sosyal rollere örnek olarak öğretmenin, anne veya babanın, çocuğun nasıl davranması gerektiği verilebilir.)

( ) c. Eğitim sonrasında düşüncelerimi sorguladıkça daha önce edindiğim kanaatlerimle veya toplum tarafından ortaya konan sosyal rol beklentileri ile hemfikir olmadığımı fark ettim.

( ) d. Eğitim sonrasında düşüncelerimi sorguladıkça hala kanaatlerimle ve toplum tarafından ortaya konan sosyal rol beklentileri ile hemfikir olduğumu fark ettim.

( ) e. Eğitime katılan diğer kişilerin de kendi kanaatlerini sorguladıklarını fark ettim.

( ) f. Eğitim öncesinde, alışılageldik kanaatler ve sosyal roller dolayısıyla daha farklı hareket etmem gerektiğini düşünürdüm.

( ) g. Eğitim sonrasında geleneksel sosyal beklentiler (değerler, alışkanlıklar, davranış şekilleri) hakkında kendimi rahatsız hissettim.

( ) h. Kendimi daha rahat hissetmek veya kendimden emin olmak adına sürdürülebilirlikle uyumlu yeni roller ve bu rollere dair yeni davranış biçimleri denemeyi düşünüyorum.

( ) i. Bu yeni davranış biçimlerine uyum sağlamak üzere yeni yollar keşfetmeyi planlıyorum.

( ) j. Bu yeni davranış biçimlerine uyum sağlamamı kolaylaştırmak üzere bilgi toplamak niyetindeyim.

( ) k. Hayata geçirmeyi planladığım yeni davranış biçimlerim hakkında diğerlerinden alacağım tepkiler ve geribildirimler ile ilgili düşünmeye başladım.

( ) l. Şimdiden harekete geçtim ve sürdürülebilirlikle uyumlu yeni davranış biçimlerine uyum sağladım.

( ) m. Yukarıdaki önermelerin hiçbiri benim için geçerli değildir.

2. Uygulanan hizmetiçi eğitim boyunca değerlerinizin, kanaatlerinizin, düşüncelerinizin ve beklentilerinizin değiştiğini fark ettiğiniz bir deneyim yaşadınız mı?
( ) Evet. Cevabınız evetse soru 3'ten devam ediniz.
( ) Hayır. Cevabınız hayırsa soru 6'dan devam ediniz.

3. Eğitim sırasında neler deneyimlediğinizi kısaca anlatınız.

4. Aşağıdakilerden hangisi 2. soruda bahsi geçen değişime sebep oldu? (Geçerli olan tüm cevapları işaretleyiniz.)

Değişime sebep olan bir kişi miydi? ( ) Evet ( ) Hayır

Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Başka bir katılımcının desteğiydi
( ) Eğitmenin desteğiydi
( ) Eğitmenin sizi başa çıkmanız gereken bir durumla karşı karşıya bırakmasıydı
( ) Diğer_____

Değişime sebep olan eğitim süresince verilen bir görev miydi? ( ) Evet ( ) Hayır

Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Grup projeleriydi
( ) Eğitim etkinlikleriydi
( ) Kişisel yansıtma yazılarıydı
( ) Okuma ödevleriydi
( ) Çevre ve geleceğimiz konusunda endişelerin sözlü bildirilmesiydi
( ) Öğrenme günlükleriydi
( ) Eğitimin geleneksel olmayan yapısıydı
( ) Katılımcılar ve eğitmen tarafından derin, odaklanmış düşüncelerin ortaya konmasıydı
( ) Eğitim sırasında verilen ölçme-değerlendirme görevleriydi
( ) Eğitim sırasında yaptığım öz değerlendirmelerdi
( ) Diğer_____

Değişime sebep olan özel yaşantınızda gerçekleşen önemli bir değişim miydi?
( ) Evet ( ) Hayır

Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Evlilik
( ) Doğum/evlat edinme
( ) Taşınma
( ) Boşanma/ayrılma
( ) Bir yakının vefatı
( ) İş değişikliği
( ) Diğer_____

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5. Görüşlerinizin veya bakış açınızın değiştiğini ilk fark ettiğiniz anı düşündüğünüzde bu değişim ile katıldığınız hizmetiçi eğitim arasında nasıl bir ilişki olduğunu düşünüyorsunuz? Lütfen açıklayınız.

6. Kararlarınız ve eylemleriniz hakkında geçmişe yönelik gözden geçirme süreçleri yaşar mısınız? ( ) Evet   ( ) Hayır
Yaptığınız çalışmaların kişisel olarak size ne ifade ettiğini sıklıkla düşünür müsünüz?
( ) Evet ( ) Hayır

7. Aşağıda yer alanlardan hangisi/hangileri yaşadığınız hizmetiçi eğitimin parçası oldu? (Geçerli olan tüm cevapları işaretleyiniz.)
( ) Başka bir katılımcının desteği
( ) Eğitmenin desteği
( ) Eğitmenin sizi başa çıkmanız gereken bir durumla karşı karşıya bırakması
( ) Grup projeleri
( ) Eğitim etkinlikleri
( ) Kişisel yansıtma yazıları
( ) Okuma ödevleri
( ) Çevre ve geleceğimiz konusunda endişelerin sözlü bildirimi
( ) Öğrenme günlüğü
( ) Geleneksel olmayan bir eğitim yapısı
( ) Katılımcılar ve eğitmen tarafından derin, odaklanmış düşüncelerin ortaya konması
( ) Ölçme-değerlendirme görevleri
( ) Öz değerlendirmeler
( ) Diğer _____

Aşağıda yer alanlardan hangisi/hangilerini eğitimin gerçekleştiği dönemde özel hayatınızda meydana geldi?
( ) Evlilik
( ) Doğum/evlat edinme
( ) Taşınma
( ) Boşanma/ayrılma
( ) Bir yakının vefatı
( ) İş değişikliği
( ) Diğer_____

8. Cinsiyetiniz: ( ) Kadın   ( ) Erkek

9. Medeni haliniz: ( ) Bekar   ( ) Evli ( ) Boşanmış   ( ) Dul

10. Eğitim durumunuz: ( ) Lise   ( ) Lisans   ( ) Yüksek Lisans   ( ) Doktora

11. Yaşınız: ( ) 21'den küçük ( ) 21-24   ( ) 25-29   ( ) 30-39
                ( ) 40-49   ( ) 50-59   ( ) 60-69   ( ) 70'ten büyük

12. Meslekteki hizmet yılınız: ( ) 1-4 yıl   ( ) 5-9 yıl   ( ) 10-14 yıl   ( ) 15 ve üzeri

13. Daha önce kaç farklı hizmetiçi eğitime katıldınız:

Appendix C: Adapted and Applied Version of Interview Form

ÖĞRENME ETKİNLİKLERİ GÖRÜŞME FORMU

Bu görüşme daha önce doldurduğunuz anketi de içeren araştırmanın parçasıdır. Bu görüşmede kullanılacak olan ölçek yarı-yapılandırılmış olarak tasarlanmıştır. Araştırma yetişkinlerin öğrenme deneyimi ile ilgilidir. Bu araştırma için size bazı sorular sorarak, görüşlerinizi ve düşüncelerinizi öğrenmek istiyorum. Görüşme soruları daha önce ankette belirtilenler hakkında daha ayrıntılı bilgi almak üzere tasarlandığından soruların bir kısmı tanıdık gelecektir.

Görüşmemiz yaklaşık yarım saat sürecektir. Görüşmemizin daha sonra analizlerini yapmak üzere ses kaydını alıyor olacağım. Söyledikleriniz bu araştırmanın raporlanması sırasında isim verilmeden kullanılacaktır. Bunun dışında bir amaçla kullanılmayacaktır. Görüşmeyi kabul ettiğiniz için teşekkür ederim. Başlamadan bana sormak istediğiniz her hangi bir soru var mı? Yoksa izninizle ses kaydını başlatarak görüşmeyi başlatabiliriz.

Görüşmeyi Yapan Kişinin Adı Soyadı:
Tarih:
Görüşülen Yer:
Görüşmenin Süresi:

1. Uygulanan hizmetiçi eğitim boyunca değerlerinizin, kanaatlerinizin, düşüncelerinizin ve beklentilerinizin değiştiğini fark ettiğiniz bir deneyim yaşadınız mı?

2. Kısaca neler yaşadığınızı anlatınız.

3. Bu durumu yaşamanıza etki eden neydi? Lütfen açıklayınız.

4. Aşağıdakilerden hangisi bu değişime sebep oldu? (Geçerli olan tüm cevapları işaretlemek üzere bu form görüşülen kişiye doldurtulur.)

a. Değişime sebep olan bir kişi miydi? ( ) Evet   ( ) Hayır

b. Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Başka bir katılımcının desteğiydi
( ) Eğitmenin desteğiydi
( ) Eğitmenin sizi başa çıkmanız gereken bir durumla karşı karşıya bırakmasıydı
( ) Diğer_____

c. Değişime sebep olan eğitim süresince verilen bir görev miydi?( ) Evet   ( ) Hayır

d. Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Grup projeleriydi
( ) Eğitim etkinlikleriydi
( ) Kişisel yansıtma yazılarıydı
( ) Okuma ödevleriydi
( ) Çevre ve geleceğimiz konusunda endişelerin sözlü bildirilmesiydi

( ) Öğrenme günlükleriydi
( ) Eğitimin geleneksel olmayan yapısıydı
( ) Katılımcılar ve eğitmen tarafından derin, odaklanmış düşüncelerin ortaya konmasıydı
( ) Eğitim sırasında verilen ölçme-değerlendirme görevleriydi
( ) Eğitim sırasında yaptığım öz değerlendirmelerdi
( ) Diğer_____

e. Değişime sebep olan özel yaşantınızda gerçekleşen önemli bir değişim miydi?
( ) Evet ( ) Hayır

f. Evetse, bu değişime sebep olan… (geçerli olan tüm cevapları işaretleyiniz)
( ) Evlilik
( ) Doğum/evlat edinme
( ) Taşınma
( ) Boşanma/ayrılma
( ) Bir yakının vefatı
( ) İş değişikliği
( ) Diğer_____

g. Belki de bu değişimin ardında başka bir sebep yatıyordu. Bu durum geçerliyse lütfen açıklayınız.

5. Değişime etki eden eğitim deneyimlerinizi açıklayınız.

6. Bu değişimin gerçekleşmesini kolaylaştırmak üzere başka neler yapılabilirdi? Hangi etkinlikler gerçekleştirilebilirdi?

7. Görüşlerinizin veya bakış açınızın değiştiğini ilk fark ettiğiniz anı düşündüğünüzde:

a. Bu anın gerçekleştiğini ne zaman fark ettiniz? Gerçekleşirken mi, değişimin ortasında mı, değişim gerçekleştikten sonra mı?

b. Bu değişimin gerçekleştiğini fark etmenizi ne sağladı?

c. Hizmetiçi eğitime katılımınızın bu değişimle nasıl bir alakası oldu?

d. Bu bağlamda ne yapmaya karar verdiniz?

e. Değişim hakkında ne hissediyorsunuz/hissettiniz?

8. Sormak istediğiniz bir şey var mı?

9. Görüşme sırasında sizi rahatsız eden bir durum ya da bir soru oldu mu? Lütfen açıklayınız.

Görüşme yapan kişinin yorumları, gözlemleri:

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Appendix D: Approval of Ministry of National Education

T.C.
SAKARYA VALİLİĞİ
İl Milli Eğitim Müdürlüğü

Sayı : B.08.04.MEM.4.54.00.05.04.321/ 11805
Konu : Seminer

VALİLİK MAKAMINA
SAKARYA

  Ortadoğu Teknik Üniversitesi Eğitim Fakültesi İlköğretim Bölümü Okul Öncesi Öğretmenliği Yüksek Lisans öğrencisi Şebnem FERİVER'in, Yrd.Doç.Dr.Çiğdem HASER'in danışmanlığında Sakarya İl'inden 25 okul öncesi öğretmenine Adapazarı Fatmana Okutan Anaokulunda 21-25/06/2010 tarihleri arasında **"Hizmette bulunan okul öncesi öğretmenleri ile sürdürelebilirlik için eğitim çerçevesinde dönüşümsel öğrenme deneyimi"** konulu tez çalışması ve **"Öğrenme Etkinlikleri Anketi"** ile **"Öğrenme etkinlikleri görüşme formu"**nu uygulamak istediği, İlköğretim bölüm Başkan Yardımcısı Yrd.Doç.Dr.Çiğdem HASER'in 30/04/2010 tarihli dilekçesinde belirtilmektedir.

  Söz konusu tez çalışmasının Adapazarı Fatmana Okutan Anaokulunda 21-25/06/2010 tarihleri arasında ilişik listede adı-soyadı ve görev yeri yazılı okul öncesi öğretmenlerine verilmesi, Müdürlüğümüzce uygun mütalaa edilmektedir.
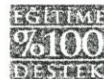
  Makamınızca uygun görüldüğü taktirde, tensiplerinize arz ederim.

Murat BAZICI
Milli Eğitim Müdürü

O L U R.
05.06.2010

Uğur ALADAĞ
Vali a.
Vali Yardımcısı

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Appendix E: Acquaintance Form

Tanışma Formu

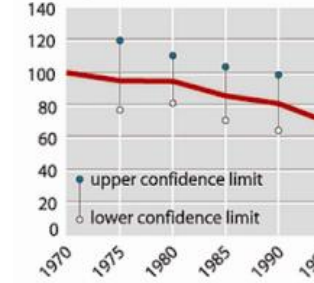|	
Ad Soyad :	
Görev Yeri:	
Adres:	
E-posta adresi:	
Cep Telefonu:	
Ne kadar süredir eğitimcisiniz?	
Geçtiğimiz üç yıl içinde aldığınız/verdiğiniz eğitimleri yazınız.	
En sevdiğiniz kitap hangisidir ve neden?	
Hobileriniz nelerdir?	

Appendix F: Eco-Bingo

Kim şiir okumayı seviyor?	**Kim öğretmenlik mesleğinin ilk 5 yılı içerisinde?**	**Kim yapraklarına ve görünüşlerine bakarak en az beş ağaç türünü tanıyabilir?**
Kim Türkiye'de yazların gittikçe daha sıcak olduğunu düşünüyor?	**Kim daha önce başka illerde de görev yaptı?**	**Kim daha önce en az bir evcil hayvan besledi?**
Kimin evinde kullandığı ampullerin neredeyse hepsi enerji tasarruflu?	**Kim korku filmi izlemeyi seviyor?**	**Kim bir müzik aleti çalabiliyor ya da şarkı söylemekten zevk alıyor?**
Kim yemek yapmayı seviyor?	**Kim daha önce en az iki hizmetiçi eğitime katıldı?**	**Kim alışverişe çıkınca ithal yerine yerli gıda satın almaya çalışır?**

Appendix G: Data Discussion
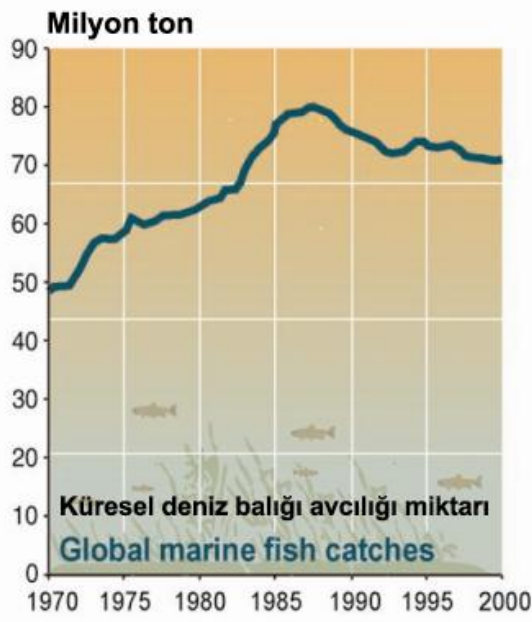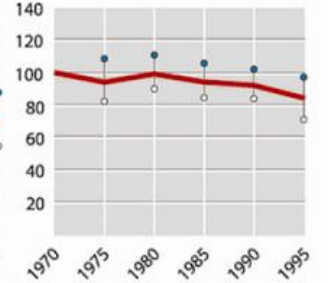
Dünya nüfusu - 1950-2202

Araba yolu artışı - 1950-2202

Dünya fosil yakıt tüketimi
1950 - 2002

Atmosferdeki karbondioksit
yoğunluğu, 1960-2002

Amerikan otomobillerinin
katettiği yol ve
karbon salınımları, 1970 - 2000

Dünya deniz balığı avcılığı, 1950 - 2002

1000 yıllık karbon salınımı
değişimi, karbondioksit
yoğunluğu ve ısı

Isı değişimi

Karbondioksit yoğunluğu

Karbon salınımı

Fosil yakıtlar
Alan kullanımı
değişimi

Kişi başına yıllık et tüketimi (kg)

ABD

Batı Avrupa

Brezilya

Çin

Kaynak: FAO

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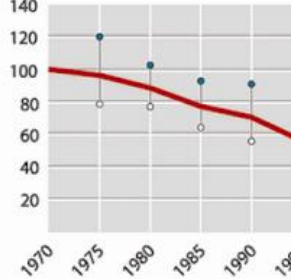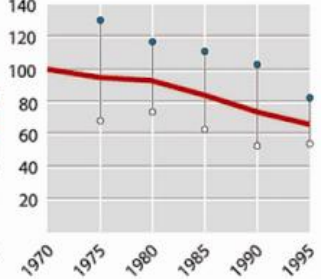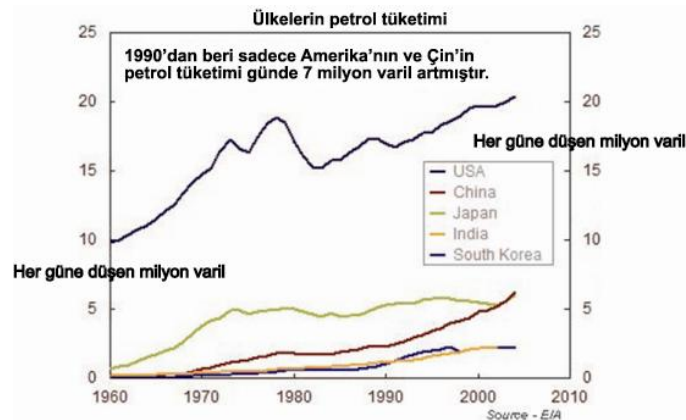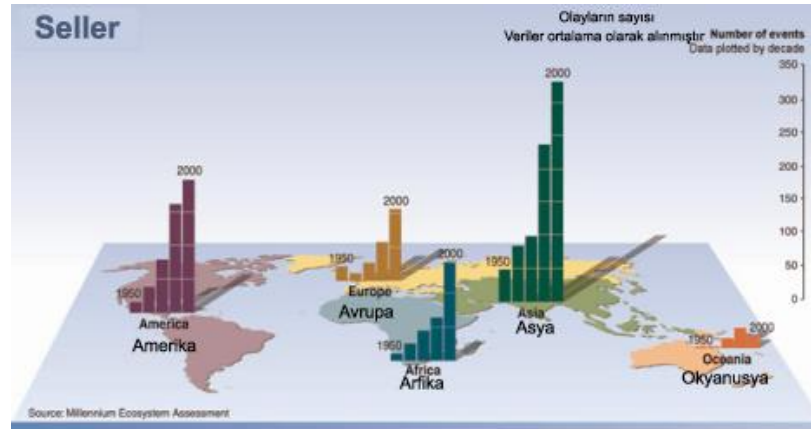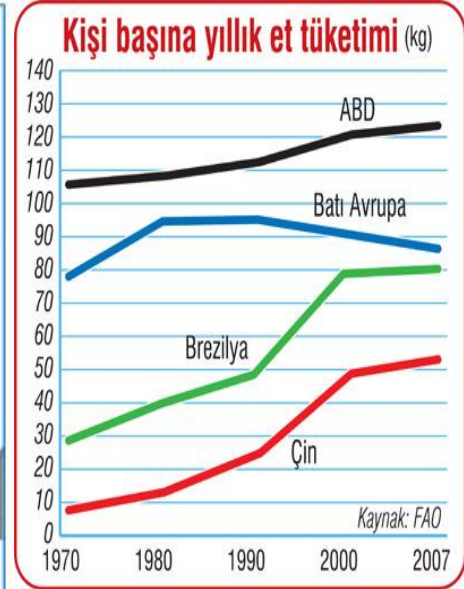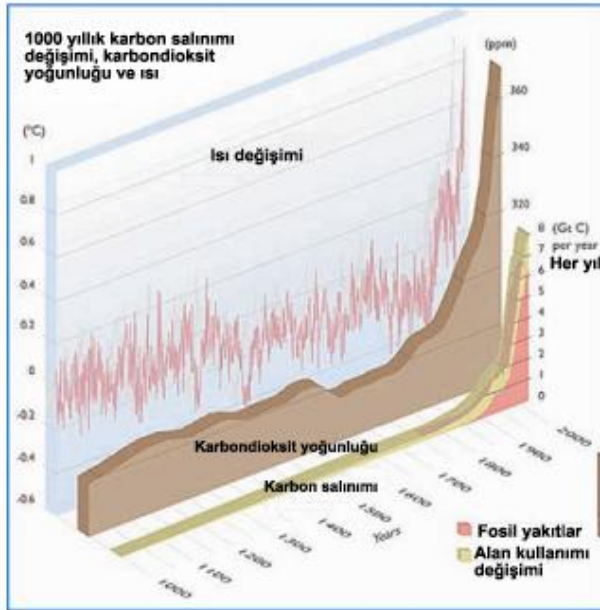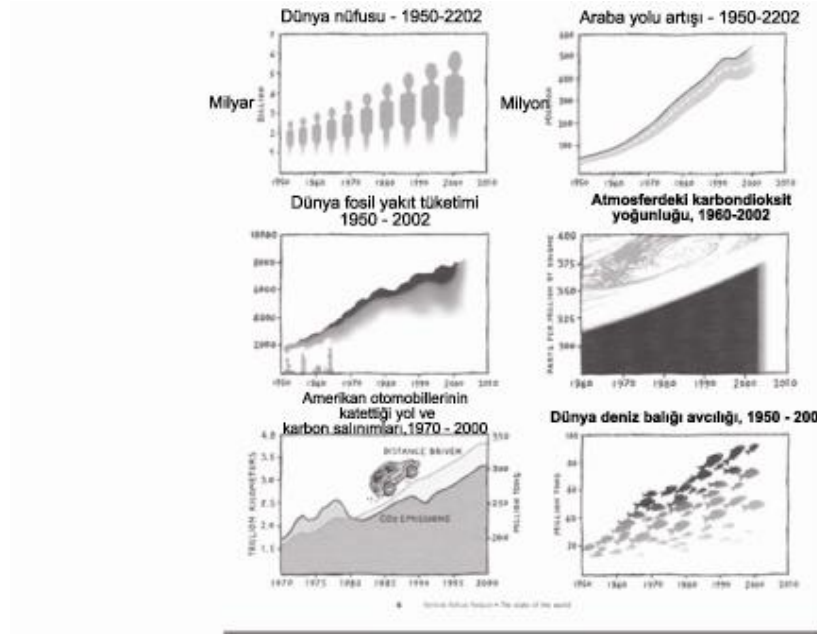
Appendix H: Ecological Footprint Questionnaire

1. Beslenme biçiminizi aşağıdakilerden hangisi en iyi tanımlar?
- ☐   Beslenme biçimimde et de yer alıyor.
- ☐   Vejetaryenim.
- ☐   Hayvansal hiçbir gıda (ör: süt ürünleri) tüketmiyorum.

2. Ne sıklıkla et ya da balık yersiniz?
- ☐   Günde bir kereden fazla
- ☐   Günde bir kere
- ☐   Haftada birkaç kez
- ☐   Haftada yalnızca bir kere
- ☐   Ayda üç kereden az
- ☐   Hiçbir zaman

3. Hangi sıklıkla organik et, sebze ve süt ürünleri satın alırsınız?
- ☐   Her zaman
- ☐   Çoğunlukla
- ☐   Bazen
- ☐   Hiçbir zaman

4. Tükettiğiniz organik et, sebze ve süt ürünlerinin yaşadığınız bölgede üretilmiş olanlarını tercih eder misiniz?
- ☐   Her zaman
- ☐   Sıklıkla
- ☐   Bazen
- ☐   Hiçbir zaman

5. Ulaşımınızı hangi araçla sağlıyorsunuz?
- ☐   Araba ya da motorsiklet kullanmıyorum. (Soru 8'e gidiniz)
- ☐   Motorsiklet (Soru 7'ye gidiniz)
- ☐   Araba (Soru 6'dan devam ediniz)

6. Aşağıdakilerden hangisi kullanmayı en çok tercih ettiğiniz ulaşım aracıdır?

- ☐   Küçük hacimli dizel araba

  örneğin Renault Clio 1.5 dCi ya da Volkswagen Polo 1.4 TDI

- ☐   Küçük hacimli benzinli araba

  örneğin Honda Jazz 1.2 i-DSI ya da Citroen C3 1.4i 16v

- ☐   Orta hacimli dizel araba

  örneğin Ford Focus 1.6 TDCi ya da BMW 320d

- ☐   Orta hacimli benzinli araba

  örneğin Vauxhall Vectra 1.8i 16v ya da Peugeot 307 Estate 1.6

- ☐   Büyük hacimli dizel araba

  örneğin Mercedes C-Class Saloon C320CDi ya da Land Rover Freelander 2 2.2 TD4

- ☐   Büyük hacimli benzinli araba

  örneğin Audi A3 3.2 V6 ya da Renault Grand Espace 2.0 Turbo

7. İşe gidiş-geliş dâhil kişisel kullanımınız için haftada kaç saatinizi arabada geçiriyorsunuz?

☐ 2 saatten az

☐ 2-5 saat arasında

☐ 5-15 saat arasında

☐ 15-25 saat arasında

☐ 25 saat üzerinde

8. İşe gidiş-geliş dahil kişisel kullanımınız için haftada kaç saatinizi toplu taşıma araçlarında geçiriyorsunuz?

☐ Toplu taşıma araçlarını kullanmıyorum.

☐ 2 saatten az

☐ 2-5 saat arası

☐ 5-15 saat

☐ 15-25 saat

☐ 25 saat ve üzeri

9. Kişisel amaçlarla otobüs, dolmuş gibi toplu taşıma araçlarında haftada kaç saat geçiriyorsunuz?

☐ Toplu taşıma araçlarını kullanmıyorum.
☐ 1 saatten az
☐ 1-3 saat
☐ 3-6 saat
☐ 6-10 saat
☐ 10 saatten fazla

10. Son bir yıl içerisinde, yurt içi kişisel uçak seyahatlerinizde kaç saat harcadınız?

☐ Hiç
☐ 3 saatten az
☐ 3-5 saat
☐ 5-15 saat
☐ 15 saatten fazla

11. Son bir yıl içerisinde, yurt dışına kişisel uçak seyahatlerinizde kaç saat harcadınız?

☐ Hiç
☐ 12 saatten az
☐ 12-25 saat
☐ 25-35 saat
☐ 35 saatten fazla

12. Ne tip bir evde yaşıyorsunuz?

☐ Müstakil ev
☐ Yarı-müstakil ev / ikiz ev
☐ Sıra ev
☐ Apartman dairesi

13. Evinizde kaç kişi yaşıyor? (18 yaş altındaki çocuklarınız hariç)

☐ 1
☐ 2

☐ 3
☐ 4
☐ 5+

14. Evinizde ısınmayı nasıl sağlıyorsunuz?
☐ Doğal gaz
☐ Mazot
☐ Elektrik
☐ Odun/kömür

15. Işıkları düzenli olarak söndürmeye ve cihazları bekleme modunda bırakmamaya özen gösteriyor musunuz?
☐ Evet
☐ Hayır

16. Evinizi hangi sıcaklıkta tutuyorsunuz?
☐ Serin (11-14ºC)
☐ Ortalama (14-17ºC)
☐ Ilık (18-21ºC)
☐ Sıcak (22ºC'nin üzerinde)

17. Evinizde bu enerji tasarruf sistemlerinden hangileri mevcut? (Size uyan tüm seçenekleri işaretleyin)

☐ Enerji tasarruflu ampuller

☐ Çatı yalıtımı

☐ Duvar yalıtımı

☐ Yoğuşmalı kombi

☐ Çift cam (Isıcam)

18. Son bir yılda aşağıdaki ev aletlerinden herhangi birini satın aldınız mı? (Size uyan tüm seçenekleri işaretleyin)

☐ Televizyon veya müzik seti

☐ Mobilya

☐ Çamaşır makinesi, bulaşık makinesi, çamaşır kurutma makinesi veya buzdolabı

☐ MP3 çalar, cep telefonu veya fotoğraf makinesi

19. Evcil hayvanınız varsa, son bir yılda yiyecek, veteriner masrafı ve benzeri için ne kadar harcama yaptınız?
☐ Evcil hayvan beslemiyorum.
☐ 0-250 TL
☐ 250-750 TL
☐ 750 TL ve üzeri

20. Son bir yıl içinde mücevherata ne kadar harcadınız?
☐ 0 TL
☐ 1-100 TL
☐ 100-200 TL
☐ 200 TL+

21. Son bir yıl içinde tadilat aletlerine ne kadar harcadınız?
☐ 0 TL
☐ 1-75 TL

☐ 75-125 TL
☐ 125 TL +

22. Son bir yıl içinde kişisel bakımınız için ne kadar harcadınız?
☐ 0-250 TL
☐ 250-750 TL
☐ 750 TL ve üzeri

23. Aşağıda belirtilen atıklardan hangilerini geri dönüşüme veriyorsunuz ve/veya ayrıştırıyorsunuz?
(Size uyan tüm seçenekleri işaretleyin)
Formun Üstü

☐ Gıda

☐ Kağıt

☐ Alüminyum (ör: kutu içecek)

☐ Plastik

☐ Cam

Appendix I: Learning Diary

Öğrenme Günlüğü
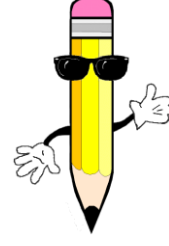
Tarih:

1.Bugün beni en çok düşündüren şeyler:

2. Bugün neler yaptım?

3. Bugün neler öğrendim?

4.Öğrendiklerimi nasıl kullanabilirim?

Appendix J: Reasons of Unsustainability

Sürdürülemezlik Nedenleri

Aşırı Nüfus	Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)
Eğitim konusundaki yetersizlik	Kadınlara adil davranılmaması
Kaynakların korunmaması, doğru kullanılmaması	Çoğu insanın yanlış değerlere sahip olması
Yaşam kalitesi hakkında medyanın ve reklamların yarattığı yanlış algı	Kaynakların ve zenginliğin adil olmayan dağılımı
Birçok insanın gözünde geleceğin önemli olmaması	

Appendix K: Unsustainability Reasons Cross Table
Sürdürülemezlik Nedenleri İrtibat Tablosu

Aşırı Nüfus

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Kadınlara adil davranılmaması

Kaynakların korunmaması, doğru kullanılmaması

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Kötü Yönetim

Kadınlara adil davranılmaması

Kaynakların korunmaması, doğru kullanılmaması

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Kadınlara adil davranılmaması

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Eğitim konusundaki yetersizlik

Kaynakların korunmaması, doğru kullanılmaması

Aşırı Nüfus

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Yaşam kalitesi hakkında medyanın ve reklamların yarattığı yanlış algı

Birçok insanın gözünde geleceğin önemli olmaması

Eğitim konusundaki yetersizlik

Aşırı Nüfus

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Kadınlara adil davranılmaması

Çoğu insanın yanlış değerlere sahip olması

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Çoğu insanın yanlış değerlere sahip olması

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Eğitim konusundaki yetersizlik

Yaşam kalitesi hakkında medyanın ve reklamların yarattığı yanlış algı

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Yaşam kalitesi hakkında medyanın ve reklamların yarattığı yanlış algı

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Kaynakların korunmaması, doğru kullanılmaması

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Kaynakların ve zenginliğin adil olmayan dağılımı

Birçok insanın gözünde geleceğin önemli olmaması

Kaynakların ve zenginliğin adil olmayan dağılımı

Aşırı Nüfus

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Kadınlara adil davranılmaması

Kaynakların korunmaması, doğru kullanılmaması

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Birçok insanın gözünde geleceğin önemli olmaması

Kötü Yönetim (kötü siyasi ve iş dünyası liderliği)

Kaynakların korunmaması, doğru kullanılmaması

Eğitim konusundaki yetersizlik

Çoğu insanın yanlış değerlere sahip olması

Yaşam kalitesi hakkında medyanın ve reklamların yarattığı yanlış algı

Kaynakların ve zenginliğin adil olmayan dağılımı

Appendix L: Reading Assignment/Cradle-to-Cradle Thinking

BEŞİKTEN BEŞİĞE – HAYAL Mİ, GERÇEK Mİ?

William McDonough ve Michael Braungart'ın *"Beşikten Beşiğe"* kitabının giriş bölümünün başlığı: *"Bu kitap bir ağaç değildir"*. Bu ünlü mimar ve kimyager aktarmak istediklerini o kadar net dile getiriyorlar ki.

Gündelik yaşamdaki şartlanmalarımız, medyanın beklenti ve isteklerimiz üzerindeki etkisi, yaşamın getirdiği yükümlülüklerimiz ve arzularımız bizi yaşama ve dünyaya çok daha dar bir bakış açısına sokabiliyor. Evet, bazen hipnoza giriyoruz sanki. Bir gözü açık uyku haline giriyoruz sanki. Bilmiyor değiliz, ama görünen aktif bilinçte olmadığımız bir hal. Özellikle çevre ile ilgili konular hakkında ilgisiz değiliz, ama aktif bir şey yapmak konusunda adını koyamadığımız bir hareketsizlik içindeyiz. Sadece biz Türkiye'de yaşayanlara özgü değil bu anlaması zor uyku hali, ama ülkemiz için sorun hale gelmeye başlayan çevre kirliliği uyanma vaktinin gelip geçtiğini hatırlatıyor.

 "Beşikten Beşiğe/Cradle to Cradle" mimar William McDonough ve kimyager Michael Braungart tarafından yazılan ve 2002 yılında yayınlanan bir kitabın adı olduğu gibi bir tasarım ve üretim yaklaşımının da adı aynı zamanda. Dünyada bir devrim yaşanıyor ve gönlüm Türkiye'nin bu çevre devriminin içinde yer almasını diliyor.

Beşikten Beşiğe her ürünün tasarım aşamasında tüm yaşamını ve kullanım ömrü sonunda ürünün nasıl değerlendirileceğini dikkate alan bir yaklaşım. Ürünün tüm malzemelerinin ve tüm üretim aşamalarının insan ve çevre sağlığını korumasını şart koşan, doğaya ve insana az zarar vermeyi değil tamamen yararlı olmalarını şart koşan bir sistem. Beşikten Beşiğe ürünlerinin kullanım ömürleri sonunda atık olmamaları gerekiyor. Bu kavrama göre atık esasında bir besin, aynen doğada olduğu gibi. Nasıl doğada bir ağacın ürettiği her şey geri dönüşebiliyor ve doğa için besin oluyorsa, bir ürünün tüm üretim aşamaları da doğa için besin üretmeli ve ürün de atılacağı zaman ya doğada ayrışmalı ve doğal sistemler için besin olmalı ya da üretim hatları için hammadde olmalı. Hiçbir fire söz konusu olmamalı, yani beşikten beşiğe bir ürünün hiçbir parçası dolgu sahasına giden bir atığa dönüşmemeli, doğaya kesinlikle zarar vermemeli. Üretim sisteminde geri dönüşüme tabi tutulacak olan malzeme ya hammadde özelliği %100 korumalı ya da doğada tamamen çözülmeli. Günümüzde Türkiye'de geri dönüşümde atıkların toplanması konusunda eksiklikler var. Dönüşmesi mümkün olan büyük miktarda atık hala dolgu sahalarına gidiyor. Ancak geri dönüşüm ile ilgili sıkıntı burada bitmiyor. Geri dönüşümden sonra işlenen malzemeler birbiri ile karıştığı içim hammadde özelliklerini yitiriyorlar. Eski arabaların araba çeliği, boyalardan ve diğer malzemelerden tam olarak ayrılamadığı için tekrar araba çeliği olarak kullanılamıyor; onun yerine örneğin binalarda kullanılan çelik hammaddesi olabiliyor. Plastikler birbirleri ile karışarak kimyasal özelliklerini gittikçe yitiriyorlar. Er ya da geç

ömürlerini bir dolgu sahasında tamamlıyorlar. Burada çevre zararına ek olarak büyük bir ekonomik kayıp meydana geliyor. Sıfır atık kavramını bile doğru bulmuyor Beşikten Beşiğe kavramın yaratıcıları McDonough ve Brungart. Atık kavramını yaşamımızdan çıkarmamız gerektiğini söylüyorlar. Onlara göre atık kötü tasarımın bir sonucu.

"Beşikten Beşiğe" kitabı gündelik yaşamda kullandığımız birçok eşya ve malzemenin sağlığımıza zararlı etmenlerine dikkat çekiyor. Geri dönüşüme göre tasarlanmamış malzemelerinin geri dönüşümle yeniden kullanıma kazandırılmaya çalışıldığında, yarardan çok sağlığa zarar verdiğini gözler önüne seriyorlar. "Oturduğunuz koltukta hareket ettiğinizde kumaştaki hangi maddeler ortaya çıkıyor, neleri soluyorsunuz?" diye soruyorlar. Günlük yaşamımızda etkileşimde olduğumuz yüzlerce binlerce madde var. Ve onların nelerden yapıldığı sağlığımız için farkında olduğumuzun üzerinde önemli. Bir eşyanın sağlığımıza ve çevreye etkisi sadece atık olarak sayıldığı aşamada değil, tasarım, üretim ve kullanım aşamalarında da çok önemli.

Atıkların yakılması sonucu çevreye yayılan dioksin kimyasalının etkileri konusunda yeterli bilgimiz var mı mesela? Klorla beyazlatılan kâğıt gibi ürünlerinde yakılmasında bu çok küçük oranları bile çok tehlikeli dioksinin salınmasına neden oluyor. Plastik üretimi, çelik üretimi gibi üretimler sonucu da ortaya çıkıyor. Dioksin *"insanoğlunun yarattığı en tehlikeli kimyasal"* olarak adlandırılıyor. Doğa çok uzun süre kalan, yağda çözündüğü için dokular tarafından emilip muhafaza edilen bu kimyasal gıda yoluyla yayılarak canlıları zehirlemeye devam ediyor. Farkında mıyız?

Odaklandığımız şeyi yarattığımıza inanan ikili, insanoğlunun içindeki potansiyele dikkat çekiyorlar. Bilgi, zekâ ve teknolojiyi kullanarak faydalı ürünler yaratabileceğimize inanıyorlar. Esasında inanmaktan fazlasını yapıyorlar; bunu nasıl gerçek olabileceğini gösteriyorlar. Beşikten Beşiğe kitabı 2002 yılında yayınlandı ama bu kavram 1990'lı yılların başında William McDonough ve Michael Braungart'ın New York'ta tanışmaları ve doksanlı yıllarda dünyanın farklı yerlerinde uygulamalar yapmaları ile oluşuyor. Kitap bu süreç ve tecrübeleriyle oluşuyor. William McDonough 1999 yılında Time dergisi tarafından "Gezegenin Kahramanı-Hero of the Planet" seçiliyor. Çevreye yönelik çalışmaları nedeni ile ödüller alıyor.

Bu ikili doğruluğuna inandıkları şeyleri söylüyorlar; ama söylemekle kalmıyorlar teknik bilgilerini de kullanarak bunların hayata geçirilebileceğini ispatlıyorlar. Örneğin yine1990'larda İsviçre'deki bir tekstil firması atık problemleri nedeni ile William McDonough'a başvuruyor. McDonough Michael Braungart'ı ekolojik kimyager olarak projeye davet ediyor. Bu fabrikanın tüm ürünleri ele alıyorlar ve sadece zararsız hammadde ve boyalardan üretilmek üzere yeniden tasarlıyorlar. Kullandıkları ana prensip: Atık=Gıda. Bu formül beşikten beşiğe kavramının temel taşı. Bu prensip ile fabrikanın ürünlerini ve üretim hattını yeniden tanımlarken tüm ürünlerin doğal malzemelerden oluşmasına ve atık olarak adlandırılabilecek her şeyin biyolojik yaşam veya sanayi üretimi için bir besin-hammadde olması sağlanıyor. Sonuçta fabrikanın atık suyu fabrikaya giren şebeke suyundan daha temiz hale geliyor. Yani atık sorununu çözmekle kalmıyorlar,

suyun kalitesini arttırmış oluyorlar. McDonough ve Braungart "Çözüm yasaklar ve denetim değil," diyorlar. Onlara göre "Çözüm doğru tasarım. Doğru tasarlarsan denetime gerek kalmaz." Üretim için enerjinin yenilenebilir kaynaklardan, özellikle güneş enerjisinden gelmesi önemli prensiplerinden bir tanesi. Aynı zamanda su kalitesinin korunmasının gerekiyor. Hatta "Korumak yeterli değil kalitesini arttırmalısınız," diyorlar ve bunu başarıyorlar.

Örnekler gerçekten çok ve etkileyici. Tasarladıkları binalarda çalışanlar arasında devamsızlık azalıyor mesela. Fabrika çalışanlarının idare ile olan ilişkilerinde düzelme oluyor. Binalarında dikkate aldıkları faktörlerin başında aydınlatmanın doğal ışıkla yapılması ve mekân için hava kalitesinin çok iyi olması geliyor. Binaların içinde yaşayanlara saygılı olması gerektiğine inanıyorlar. Ve binaların aynı zamanda içinde bulundukları çevre ile uyumlu olması gerektiğine. "Üretken olalım ve bu da iyi olsun," diyorlar. Tasarladıkları binaların ağaçlar gibi olması gerektiğine inanıyorlar. Bir bina kendi enerjisini sağlamalı, havayı ve suyu temizlemeli. Amerika Birleşik Devletleri'nde Oberlin Üniversitesi'nde tasarladıkları bina kendi atık suyunu doğal yollardan temizlediği gibi harcadığından daha fazla elektrik üretmeyi de başarıyor. McDonough ve Braungart Beşikten Beşiğe kavramını bir yaşam prensibi olarak moleküler seviyeden şehir planlaması seviyesine kadar taşıyorlar. Braungart bir kimyager olarak ürünlere giren her maddeyi moleküler seviyesine kadar incelerken McDonough sadece binaların değil şehirlerin beşikten beşiğe prensipleri ile tasarlanması için çalışıyor.

Hollanda'da beşikten beşiğe kavramını benimseyen şehir ve bölgeler var. Hollanda Hükümeti bu kavramı bir ülke politikası olarak sahiplenmiş durumda. Dünyanın diğer bir köşesinde, Çin'de bu kavram ile yeni şehirler planlanıyor. Çin bu yaklaşımı döngüsel ekonomi prensibi olarak yaşamına entegre etmek için büyük gayret gösteriyor. Onların çalışmalarından etkilenen ayakkabı firmaları tasarımlarında zehirli maddeleri çıkarıyorlar ve ürünlerini bu prensipler ile yeniden tasarlıyorlar. Bir ofis mobilyası firmasını tesislerini buna göre yeniliyor, yeni ürünler tasarlıyor, eski popüler ürünlerini bu prensiplere göre yeniden tasarlıyor. Dünyada binlerce firma şampuandan temizlik ürünlerine, inşaat malzemelerinden sanayi ara maddelerine, halıdan tekstil ürünlerine, paketleme malzemelerinden mobilyaya, yer kaplamalarından sörf cila tahtasına birçok ürünü beşikten beşiğe prensipleri ile üretiyor. Bu prensipler ile üretilen ve kullanılıp atılan kısmı tuvalete atılıp dönüştürülebilen bir bebek bezi bile var. William McDonough ve Michael Braungart'ın ortaklaşa kurdukları bir firmaları var ve çok dikkatli bir süreç ile beşikten beşiğe prensiplerine uyan firmalardan isteyenleri sertifikalandırıyorlar. Bu sertifikayı almış altıyüzü aşkın ürün var, ve binlerce ürünün de sırada olduğu biliniyor. Bu yeni tasarım ve üretim akımı ile üreticiler ve tedarikçileri kendilerini yeniliyorlar, tüm ürünlerini ve üretim süreçlerini teker teker yeniden ele alıyorlar. Kolay bir süreç değil. Ancak dünyanın karşı karşıya kaldığı çevre sorunlarının çözülebilmesi içinde böyle radikal ve kökten değişimler gerekiyor. İnsanoğlu özündeki kuvvet ve yaratıcı zekâsı ile gurur duyduğu çözümler yaratabiliyor. İsterse ve seçerse.

Birey olarak bilmemiz ne sağlayabilir? Michael Braungart iki önemli noktanın altını çiziyor. Birincisi birey olarak satın aldığımız ürünlerin özelliklerini ve kullanım sürelerinin sonundaki durumlarını üreticilerine sormak önemli bir momentum yaratıyor. Bu olumlu değişimleri tetikliyor. İkincisi bir değişimin gerçekleşmesi için ilgili herkesin konu hakkında bilgili olması gerekmiyor. Braungart Michael Gorbaçov ile olan bir konuşmasını paylaşıyor. Gorbaçov'a nasıl başarabildiniz diye sorduğunda, Gorbaçov "Bir konunun başarıya ulaşabilmesi için bir topluluğun %5'inin konuya inanması yeterlidir," diye cevap veriyor.

Haydi yüzde beşteki yerimizi almaya…
Zeynep Kocasinan

Appendix M: Reading Assignment/Technology Prisons

Teknoloji hapishaneleri intihara sürüklüyor

Hürriyet/Müfit Yılmaz Gökmen

30.05.2010

Bugünlerde dünyanın birçok ülkesinde Apple'ın yeni tablet bilgisayarı olan iPad çılgınlığı yaşanırken, diğer taraftan iPad dâhil sayısız teknolojik ürünü üreten işçilerde tam tersi bir ruh hali hâkim.

Geçtiğimiz günlerde piyasa değeri bakımından Microsoft'un tahtını elinden alan Apple, Çin'den gelen haberler yüzünden ağır eleştirilerle yüzleşmek zorunda kaldı. İngiliz, Independent gazetesinin elde ettiği belgelere göre, geçtiğimiz yıl 35 milyar euro gelir elde eden şirketin insanlık dışı şartlar altında işçi çalıştırılan fabrikalarından birinde, 11'inci intihar olayı yaşandı.

Apple'in tedarikçisi 102 fabrika arasında bulunan Shenzhen eyaletindeki Foxconn şirketine ait tesiste yaşanan intiharın ardından, gözler son 10 yıldır ABD'ye en çok teknolojik ürün ihracatı yapan Çin'deki fabrikalara çevrildi.

Apple, Çarşamba günü iPad'in üretildiği ve saati 35 sente (54.80 kuruş) çalışan 300 bin kişinin çalıştırıldığı fabrikanın inceleneceği açıklaması yaptı. Şirketin bu yıl yayımladığı Supplier Responsibility Progress raporu ise, inceleme yapılan 102 fabrikadan 60'ında işçilerin normal iş saatlerinin yarısından fazla çalıştırıldığını ortaya koydu.

Foxconn tesisinde, Apple ürünlerinin yanı sıra, önde gelen diğer bilgisayar şirketleri için de üretim yapılıyor. İntihar edenlerin hepsinin 25 yaş altı çalışanlardan oluştuğu fabrikada çalışan işçilerden biri Reuters haber ajansına, "Foxconn'da yönetim tamamen insanlık dışı. İşçilere insan muamelesi yapılmıyor" dedi.

Aynı fabrikada Temmuz ayında intihar eden Sun Danyong adlı işçinin ölümünü ABD merkezli China Labor Watch örgütü yayımladığı rapor ortaya çıkardı. Raporda, fabrikadaki binlerce işçiden sadece Apple ürünleri üreten işçilere tabure verildiği, diğerlerinin ayakta çalışmak zorunda kaldığı belirtildi.

Londra merkezli bağış derneği War on Want yetkilisi Simon MacRae, "ihracata dayalı ticaret anlayışında giyim ya da elektronik alanında çalışmanız bir şey fark etmiyor. Bu sektörlerin amacı en düşük ücrete en ağır şartlarda işçi çalıştırmak ve onların yoksulluktan kurtulmalarına mani olmak" dedi.

BİR TEK APPLE DEĞİL
Geçtiğimiz ay içinde, ABD merkezli sivil toplum örgütü National Labour Comittee, Çin'de Batılı elektronik markaları için üretim yapan KYE şirketinin fabrikalarındaki çalışma şartlarını göz önüne koyan bir rapor yayımladı.

Raporda, son yıllarda Çin'deki fabrikalarda son üç yıl içinde gizlice çekilen fotoğraflar yer alıyor. Resimlerde üretim hattı üzerinde yorgunluktan bayılma noktası gelen ve 10 dakikalık molada hemen uykuya dalan genç işçiler görülüyor.

KYE, çalışanlarını kontrolleri çok daha kolay olduğu için 18 yaş civarında, çoğunluğunu kızların oluşturduğu ve ülkenin dört bir yanındaki eyaletlerden gelen "öğrenci-işçilerden" seçiyor. Çin yasalarına göre 15 yaşın altında işçi çalıştırmak yasak. 16-17 yaşlarındakiler ise "yetişkin olmayan" işçi sınıfına giriyor ve günde sekiz saatten fazla çalıştırılamıyorlar. Ancak gözlemcilerin verdiği bilgiye göre, yaşları 14-15 arasında değişen yüzlerce çocuk günde 15 saat çalıştırılıyor.

TUVALETE GİTMELERİ YASAK

Çalışanların konuşması, müzik dinlemesi, cep telefonu kullanması ve çalışma saatleri içinde tuvalete gitmeleri yasak. Eğer kullanırlarsa, ceza olarak tuvaletleri temizlemeleri gerekiyor.

Son derece bakımsız yatakhanelerde ise her odada 14 işçi kalıyor. Duş olarak tanımlanan şey ise, kafalarından aşağı boşalttıkları bir kova sıcak sudan ibaret. Şirket yatak veya yorgan vermiyor. Bu yüzden işçiler bunları kendi paraları ile karşılamak zorunda. Ayrıca odalarda televizyon, telefon ve klima bulunmuyor.

ÇIKIŞ YOLU YOK

Nartional Labour Committee, raporunda Çin'de yaşayan 112 milyon göçmen işçinin haklarını elde etmesine engel olan nedenleri şöyle açıkladı:

"İşçilerin kendilerini korumaları için hiçbir güçleri yok ve bu yüzden yönetimler onlara istedikleri muameleyi uyguluyor. Yönetim işçilere kötü davranmaya, işçiler ise kötü muamele görmeye alışmış durumda."

"Birçok işçi yeni mezunlardan oluşuyor. Genelde küçük köylerden geliyorlar ve hayat tecrübeleri hiç yok. Politika ya da bireysel hakları hakkında bir şey bilmiyorlar. Eğitimleri onlara Çin halkının mutlu olduğunu, Batı dünyasının ise kapitalizm içinde çöktüğünü öğretiyor. KYE fabrikasında işe başlayan bir kişi burada geleceği olmadığını biliyor. Bu yüzden düzene uyarak kovulmamaya çalışıyor."

İşçilerin yasal tahkim ya da işyerinde uzlaşmaya varmak gibi konulardan haberi yok. Ayrıca para için çaresiz olmaları ve yönetimden çekinmeleri, ses çıkarmalarını engelliyor. Birçoğu hayatlarından memnun olmasa da bir çıkış yolu olduğuna inanmıyor. Bir tane işçinin sendika lafı ettiğini duyamazsınız."

Appendix L: Trade Game

Ticaret Oyunu

Giriş

Ticaret Oyunu, popüler bir üretim alıştırmasının değişiklik yapılmış halidir. Bu oyun küresel sistemimiz içindeki geleneksel yöntemi göstermek için oynanır: yani ticaretin, iş bölümünün, rekabetin üretimi arttırdığını, bir takas aracı olarak içinde değer taşıyan paranın bu süreçte rolü olduğunu, kaynakların düzensiz dağıtıldığını, organizasyon ve girişimcilik becerilerinin sonucu ya da bireyin/grubun başarısını etkileyebileceğini göstermektedir. İlerleyen aşamalarında oyun, ekonomiye dayalı bir tabanın var olduğunu göstermek için ve katılımcıların, ihtiyaçlarla istekler arasındaki farkı, 'sürdürülebilir' üretimi ve sosyal adaletin çeşitli unsurlarını düşünmesini sağlamak için kullanılabilir.

Hedefler ve Amaçlar

• Olumlu ve katılımcı bir yaklaşımla gerçekleştirilecek bu faaliyet aracılığıyla, sürdürülebilirlik konusunu geniş bir çerçevede açıklamak hedeflenmektedir.
• Üretim ve tüketimin amaçları, sahip olduğumuz varsayımlar ve ekonomik faaliyetlerin temelinde yatan geleneksel yöntemler konusunda katılımcılar arasında zorlu tartışmalar başlatmak hedeflenmektedir. Bu faaliyet, ihtiyaçlarla istekler arasında bir fark gözetilmediğini, ekoloji ve sosyal önceliklerin göz önünde tutulmadığını göstermektedir.
• Üretimin sürdürülebilirliği konusunu gündeme getirmek hedeflenmektedir.

Malzemeler

R1 Kurallar
R2 Şekiller için Belirlenen Ücretler
R3 Şekiller Ne İfade Ediyor

Makas, renkli kağıtlar, kalem, açı ölçer, cetvel, gönye, 'monopoly' oyununda kullanılan paralar

Özel Not • Hazırlık

Bu faaliyet için katılımcıların çalışacağı mekânı ve materyalleri dersten önce hazırlamak amacıyla en az yarım saat ayrılmalıdır.
Etkileşim düzeyine bağlı olmakla beraber bu faaliyet en verimli 15 ya da daha fazla katılımcıyla yapılır, daha az katılım olursa faaliyet etkisini kaybeder. Eğitmen, oyunun kurallarını (R1) ve *Şekillerin ne İfade Ettiğini* çok iyi bilmelidir.

Oda Düzeni

Sınıf, aynı anda altı grubun çalışabileceği ve birkaç masa koyarak her grubun kendi çalışma alanına sahip olabileceği şekilde düzenlenmelidir. Rahat hareket edebilmek için grupların çalışma alanları arasında mesafe bulunmalıdır; ancak bu mesafe, gruplardan birini fiziksel olarak tecrit edecek kadar da fazla olmamalıdır. Grupların her biri, A,B,C kategorilerinden birine dâhildir.

Her grup, tüccar birer milleti temsil etmektedir. Kendilerine birer isim verebilirler. Bu şekilde gruplar oluşturmanın amacı, kaynakların düzenli olarak dağıtılmadığı bir sistem yaratmaktır. Her gruba verilecek kaynak, büyük birer zarf içinde takdim edilmelidir; böylece katılımcılar odaya girdiklerinde,

kaynakların eşit dağılmadığını açıkça görmeyeceklerdir. (Aşağıda, kaynaklar kılavuzu gösterilmektedir.) Gruplar yerlerini aldığında oyunun kuralları (R1) iki kez yüksek sesle okunur ve gerektiğinde başvurulmak üzere duvara asılır. R1'deki talimatta "şekiller yapın" der. Bu faaliyet için 30 dakika ayrılmıştır. Bu aşamada eğitmen kurallarla ilgili hiçbir soruyu yanıtlamamalı, katılımcılara yön vermemelidir. Öğrencilere R3 gösterilmez. Sorulara cevaben eğitmen kuralları bir kez daha okur. Kurallara göre, üretim şekilleri (dünya çapında talebi temsil eden) dünya bankasına satılabilir.

Katılımcılardan biri dünya bankasından sorumlu olmak üzere görevlendirilir ve kalite kontrolcülüğü yapar. İstenen özelliklere uygun olmayan şekiller kabul edilmez ya da pazarlıkla düşük fiyattan kabul edilir.

KAYNAK KILAVUZU	
Aşağıdakilerden iki set olacak: **A** 1 makas 2 cetvel 1 pusula 1 gönye 1 açı ölçer 1 yeşil karton 6 banknot 4 kurşun kalem	**C** 2 yeşil kart 4 kırmızı kart 2 banknot 2 kurşun kalem 2 karton **B** 8 kırmızı kart 2 yeşil kart 2 banknot

Gruplar arasında ihtilaf çıkarsa, eğitmen ancak son çare olarak hakemlik yapar.
Bir süre sonra katılımcılar kafa karışıklığından birbirlerine bakınmaya başladıktan sonra bir grubun üyeleri, başka bir grubun üyeleriyle konuşmaya başlayacaktır. Kaynakların eşit dağılmamış olması, ticari faaliyeti başlatacaktır. Zaman geçtikçe bu ticari faaliyet, çok şamatalı ve çılgın bir hal alacaktır. Önceden belirlenen sürenin sonunda oyun bitirilir. Son anda devam eden alış verişlerin tamamlanabilmesi için beş dakika önceden katılımcılara haber verilir ve son dakikalar telaş ve genellikle heyecan içinde geçer. Katılımcıların gruplarına geri dönmeleri ve o anda ellerinde bulunanların listesini çıkarmaları istenir, bireysel ve grup içi rollerini düşünmeleri söylenir.
Katılımcılardan şunları düşünmeleri istenir:
• başarılı bir grup olduklarını düşünüyorlar mı?
• biriken nakit parayı ve kaynakları aralarında nasıl paylaşacaklar?
• oyun yeniden başlasa performanslarını nasıl arttırırlar?
Bunun için 5-10 dakika ayrılır. Kapsamlı bir tartışma yapmaya yetmeyecek bu süre içerisinde katılımcılar en azından yatışacaklar ve bazı gerçekleri, niyet ve düşüncelerini paylaşacaklardır.

R2 Şekil Ücretleri
Eğitmen kolay şekillere daha düşük, zor şekillere daha yüksek olmak üzere farklı ücretler belirleyecektir.

İlk turda bazı değişiklikler
Verilen çeşitli şekillerin miktarı açısından eğitmen tahtaya yeni bir fiyat yazarak, bu şekillerin hangi fiyattan satılacağını belirlemek isteyebilir.

Kırmızı ve yeşil kart bittiğinde gruplar bu durumu öğretmene bildirebilir ve karton alabilmek için dünya bankasına başvurmak üzere eğitmenden izin alabilirler (R3'te yeşilin, kırmızının ve kartonun ne kadar önemli olduğu açıklanmaktadır ancak bu bilginin o aşamada öğrencilere **söylenmemesi** gerektiği de yazılıdır.)

Eğer oyun ağır ilerliyorsa ya da oyun sonrasında ekstra teknolojik kaynakların etkisi üzerinde durulacaksa, dünya bankası aracılığıyla eğitmen oyuna makas ya da kalem gibi ekstra kaynaklar getirebilir.

Şekil 1: 1. raunttaki sonuçları yazmak için kullanılacak matris

Kaynaklar/Grup	Kırmızı Kart	Yeşil Kart	Karton	Araçlar	Nakit	Kısmen Bitmiş Şekiller	Kazancın Dağılımı
A							
B							
C							

□=Araçlar ve Makineler ◊= Kültür Bilgi

Gıda=Δ Enerji=○

(⌓ =Sağlık, Eğitim, Barınma ve Giyecek

Kırmızı Kart: Yenilenebilir kaynaklar Yeşil Kart: Yenilenebilir olmayan kaynaklar Karton :   'Çevresel' kaynaklar

R3 Şekiller Ne İfade Ediyor...
Oyun Sonrası Değerlendirme

Oyundan sonra yapılacak değerlendirmeye, en az oyuna harcanan süre kadar vakit ayrılması çok önemlidir. Bu son değerlendirmenin iki aşaması vardır.

1) Gruplar nasıl hissettiklerini ifade etmelidir. Genelde gruplar arasında gerginlik yaşanabilmektedir ya da sıkı pazarlıklar yapılabilmektedir; bunlardan bahsedip aralarında gülebilirler, konuşup suçu başkalarına atabilirler. "Birbirinizle iyi geçindiniz mi? Olanlarla ilgili hisleriniz nelerdir?" gibi sorular eğitmen tarafından sorulabilir. 'X' grupla ilgili ne düşündünüz? Bankacıyla aranız nasıldı?

2) Oyunun bazı özelliklerini ve olguları ortaya koymak. Bir matris üzerinde (Şekil 1'e bakın) eğitmen başlangıç ve bitiş pozisyonlarını şu başlıklar altında sorar:
Karton, Yeşil Kart, Kırmızı Kart, Araçlar, Nakit, Kısmen Tamamlanmış Şekiller, kazancın dağılımı.

İşte bu aşamada öğretmen öğrencilerin *varsayımlarını, niyetlerini ve başarı kriterlerini* inceler.

Başarı için kriterler: Gruplardan, ne açıdan başarılı, ne açıdan başarısız olduklarını beyaz kağıtlara yazmalarını istenir. Bu kağıtları duvara yapıştırılır ve bunları mukayese etmeye, karşı karşıya getirip tartışmaya başlanır. Başarı için genel kriterler neler: Daha çok üretim mi? Nakit mi? Nakitte yüzde artışı mı? Üste çıkmak mı? Sosyal olarak uyumlu ilişkileri gösteren kriterler var mı? "grup olarak çok iyi çalıştık ", "çalışırken yaptığımız espriler...", "hep ortalıkta koşuşturmamak", "çalışmak yerine birbirimize yaptığımız şakalar..." Eğitmen belli kriterleri gözetiyor olacak ve özellikle de *oyunun 'şekiller yapmak' için bazı görevler verdiğinin gruplar tarafından göz önüne alındığını* göstermeye başlayan unsurları değerlendirecektir.

Peki neden? Neden şekil yapmak!? Neden onca şekil?! Gruplar kendilerini ekonomiye mi uyduruyordu yoksa ekonomiyi kendi ihtiyaçlarına göre mi yönlendiriyorlardı? Bu konuyu daha önce hiç düşündüler mi? Oyunda belli bir hız var mıydı? Grupların takılıp kaldığı oldu mu? Bu durum gerçek hayata benziyor mu? Peki şekiller *neydi*? Ne kadar üretim yeterliydi? Gruplar birbirlerine adil davrandı mı? Rekabetten ziyade işbirliği var mıydı?
Bu aşamada öğretmen R3'ü (yukarıda) tanıtır: şekiller ne ifade ediyor.
Bunu önceden bilselerdi grupların ticaretle ilgili kararları değişir miydi? Bu, ne yaptıklarını ve bundan kaç tane yaptıklarını değiştirir miydi? Neden? Nakit mi daha önemli? Yoksa önemli olan hep daha fazlası mı?
Katılımcılardan, kart rengini ve şekilleri düşünmeleri istenir. Acaba öğrenciler neden farklı renklerin olduğunu merak ettiler mi? Kartonla çalışmak neden daha zor ve daha az kazançlı?

 Katılımcılara R3 verilir ve yorum yapmaları istenir. Bu kilit öneme sahip bir aşama:

Sadece kırmızı kartın sürdürülebilir ürünü temsil ettiğini bilselerdi, üretim sistemleri ya da ticari faaliyetleri başka türlü olur muydu? Gruplar ima edileni bilmiş olsalar bile, o değerli yeşil kartı (yenilenebilir olmayan kaynakları) sonra da kartonu (hayati çevresel işlevleri/çevresel sermayeyi) kullanırlar mıydı?
Teknolojinin rolü neydi?- özellikle açıölçer ve makas – Bunlar, kaynak (kart) kullanımını hızlandırdı mı? Kim faydalandı ve nasıl? Bu teknolojiye erişememenin fiyat üzerindeki etkisi ne oldu? Bu adil miydi? Bu düşük fiyat neye sebep oldu? Hileye mi? Rengi ne olursa oldun kart kullanımına aldırmamak mı?
Bu tartışma şöyle bir yönde ilerleyebilir; çevresel, sosyal ve teknolojik kısıtlılıkların, baskıların bilincinde olmamıza rağmen gerçek dünya koşulları, 'aydınlanmış' bir duruşa mı daha yakın yoksa bu oyuna mı. Oyunun sonunda, bir grup içerisinde gelirin dağılımıyla (çoğu zaman!) zıt özelliklere sahip olacak şekilde, gerçek uluslar arasındaki adaletsiz zenginlik dağılımına dikkat çekilebilir.

Appendix O: Rubric Guide

Not: Öğretmen Akademisi Vakfı tarafından hazırlanmıştır.

Puanlama Cetvelleri (Rubrik)

Genel olarak performansa dayalı değerlendirme çalışmaları puanlama cetvelleri (rubrik) ile değerlendirilmektedir. Bazı puanlama cetvelleri belli bir konuya yönelik çalışmaları ya da raporları değerlendirmek için hazırlanmakta, bazıları ise oldukça genel hazırlanmakta ve farklı durumlarda kullanılabilmektedir. Puanlama cetvelleri bütüncül (holistic) ve analitik (analytic) olarak sınıflandırılmaktadır. Kimi zaman kategorileri tanımlanmış cetveller yeterli olmakta, kimi durumlarda ise kategorilerin puanlarla ifade edilmesi gerekmektedir. Önemli olan yapılan değerlendirmede neyin ortaya çıkarılmaya çalışıldığının ve bunun en iyi hangi yaklaşımla yapılabileceğinin belirlenmesidir. Puanlama cetveli hazırlayan bir öğretmenin aşağıdaki işleri yapması gerekir:

1. Ölçme aracının ve puanlama cetvelinin kullanılma nedenini belirleme,
2. Nelerin derecelendirileceğinin tanımlanması (değerlendirmesi yapılacak süreç ve ürüne ilişkin olarak nelerin değerlendirme kapsamına alınacağının belirlenmesi gerekmektedir),
3. Ne tür puanlama cetvelinin kullanılacağının belirlenmesi (eğer öğretmen öğrencilerin ürünlerine yönelik genel bir değerlendirme yapacaksa bütüncül yaklaşım, ürün farklı yönleri ile incelenecekse analitik bir yaklaşım daha uygun olacaktır)
4. Taslak formun hazırlanması (yukarıdaki adımlara göre belirlenen temel ilkelere göre taslak form öğretmen ve öğrenci görüşleri alınmak üzere tasarlanır).
5. Taslak form üzerinde öğrenci, öğretmen görüşü alınması
6. Uygulama
7. Tutarlılık ve güvenirliğin belirlenmesi (Puanlama cetvelleriyle yapılan değerlendirmenin objektifliğini artırmak için aynı ürünün birden fazla öğretmen tarafından değerlendirilmesi ve sonuçların karşılaştırılması önemlidir. Tutarsız değerlendirme sonuçları tartışılarak ortak bir noktaya başlanmalıdır).

Puanlama Cetveli Örnekleri

Puanlama cetvelleri, gözlenen durumun "var", "yok" şeklinde puanlanmasını gerektiren gözlem formları (checklist), performansların genel niteliğine göre değerlendirmenin yapıldığı bütüncül derecelemeli ölçekler (holistic), ürünü ya da süreci daha detaylı, farklı açılarıyla ele alan analitik (analytic) derecelemeli ölçekler olarak üç kategoride düşünülebilir.

Gözlem formlarının kullanılmasını gerektiren en önemli durum gözlenecek değişkenin kalitesinden çok gözlenip gözlenmediğinin ortaya çıkarılmasıdır. Bu nedenle eğer gözlenecek nitelikte belli bir performans varsa ve bu performansın gözlenmesinin yanı sıra niteliği de önemli ise iki kategoride puanlama gerektiren gözlem formlarının kullanılması uygun olmaz.

Farklı formatlarda olsa da derecelemeli ölçekler için temel ilke değerlendirilecek boyutların tanımlanmış olması ve her boyutun hangi niteliklere göre değerlendirileceğinin belirlenmesidir.

Örnek 1. Laboratuvar çalışması için gözlem formu

Yapılacak işler	Gözlem fırsatı olmadı (Diğer önemli noktalar)	Gözlendi (Diğer önemli noktalar)
Kullanılacak araçları doğru seçti.		
Kullanılacak araçları temizledi.		
Kullanılacak kimyasal maddeleri doğru seçti.		
Kimyasal maddeleri doğru miktarlarda aldı.		
Malzemeleri doğru düzenledi.		
Gerekli güvenlik önlemlerini aldı		
Tüm kontrolleri yaptı.		

Örnek 2. Derecelemeli puanlama cetveli

Fikirlerin doğruluğu ve niteliği

1   2   3   4   5

Çok sınırlı araştırma, olgulara yönelik hiç materyal kullanılmamış   Olgulara yönelik bazı çalışmalar ve incelemeler gözleniyor   Geniş kapsamlı araştırma detaylar var ve olgularla ilişkili

Fikirlerin mantıksal gelişimi

1   2   3   4   5

Çok sınırlı araştırma, düzenlenmemiş fikirler, izlemesi zor ve karmaşık   Belli bir mantıksal sıra var, ancak geliştirilmesi gerekiyor   Mantıksal gelişme var, fikirler birbirleri ile ilişkili ve bağlı

Örnek 3. Kesirlere ilişkin puanlama cetveli

4	Çok iyi hazırlanmış bir diyagram kesirlerin anlaşıldığını göstermelidir. Açıklamalar uygun matematiksel bir dili içermeli ve sonuç doğru olmalıdır. Yazılı açıklama gözlemleri ve stratejileri içermeli sonuç net bir şekilde açıklanmalıdır.
3	Yanıt doğrudur ancak bir önceki kadar tam hazırlanmamıştır. Diyagram daha az doğrudur, kullanılan dil tam matematiksel değildir ve yanıt örüntüsü açık değildir.
2	Yanıtta yanlış bir çözüm veya çözümler vardır. Bazı düzenlemeler gözlenmektedir. Diyagram açık değildir, ancak yazılanlar yeterli sayılabilir.
1	Yanıt için kısmi bir çalışma vardır. Çözüm yoktur. Diyagram yoktur veya yanlıştır.

Örnek 4. Proje değerlendirme cetveli

	Yeterli değil	Kabul edilebilir	Oldukça iyi	Mükemmel
Amaç	Amaç açık değil	Yenilik yok sıradan	Amaç açık	Amaç açık proje uygun
Organizasyon	Zayıf, dağınık	Takip edilmesi güç, sıra yok	Birkaç basamak sırasız	İyi tasarlanmış, takip edilmesi kolay,basamak-lar sıralı
Dil kullanımı (Dil bilgisi, ifade bütünlüğü v.s)	Çok hata var (6'dan fazla)	Hata var (4-6)	Az hata var (2-3)	Hatasız
Kapsam	Gözle görülür bir çaba yok	Bazı ögeler tamamlanmış	Birçok öge tamamlanmış	Bütün ögeler tamamlanmış
Yaratıcılık	Çok az öge tamamlanmış	Çok az çaba gözleniyor	Bazı yeni fikirler var	Oldukça yaratıcı ve farklı bir proje
Genel değerlendirme	Okuması zor, özensiz	Bazı karışık bölümlere rağmen genelde düzgün	İyi el yazısı, temiz ve düzenli	Çok düzgün yazılmış ve özenle hazırlanmış

Örnek 5. Problem çözme becerilerini değerlendiren puanlama cetveli.

Problemi Anlama/Tanımlama

Anlamaya/tanımlamaya ilişkin kanıt yok ( )
Problemin tanımı/yorumu tamamen yanlış ( )
Problemin ana noktaları yanlış yorumlanmış ( )
Problemin detayları yanlış yorumlanmış ( )
Problemin detayları doğru yorumlanmış ( )
Problem tümüyle doğru yorumlanmış ( )

Problemin çözümü

Çözüm için bir çaba yok ( )
Çözüm için uygun olmayan bir yöntem belirlenmiş ( )
Çözüm için kısmen doğru yöntemler belirlenmiş, bazı temel hatalar var ( )
Çözüm için doğru yöntem belirlenmiş ancak bazı hatalar var ( )
Çözüm için doğru yöntem belirlenmiş ve problem doğru çözülmüş ( )

Appendix P: Sustainable Schools Rubric/Example 1

Sürdürülebilir Okul Kriterleri

Okul Takımı	Yetersiz	Kabul Edilebilir	Oldukça İyi	Mükemmel
• Okulun fiziksel ve teknik alanda görünümünde sürdürülebilirlik yönünde değişimler gözlenir. • Okul, toplumu öğrenme/öğretme süreçlerinin kaynaklarından biri olarak görür ve süreçlere dâhil eder. • Okul, toplumu faaliyetleri için çalışma sahası olarak kullanır. • Okul, toplum tarafından sorunların ve endişelerin tartışıldığı bir yer olarak görülür, faaliyetlerini bir tür "toplum-merkezi" olarak sürdürür. • Okul, sürdürülebilirlik konusundaki uygulamaları, fikirleri, bilgileri paylaşmak ve değiş-tokuş etmek üzere başka okullarla da işbirliği yapar. • Okul, sürdürülebilirlik bağlamında faaliyet gösteren, deneyim paylaşımına olanak sağlayan yerel, ulusal ve uluslararası ağlara üye olur. • Okul, sürdürülebilirlik alanında çalışan kurumlarla işbirliği yapmak üzere çalışmalar yürütür. • Okul takımı, herkesin korku duymadan yenilikçi düşünceler ortaya atabileceğini hissettiği bir okul ikliminin yaratılması için çabalar. Okul yönetimi bu konuda kolaylaştırıcılık rolü üstlenir. • Okul, herkesi demokrasi ve katılım pratiklerinin yapıldığı bir yer olarak görülür, herkesin karar verme süreçlerine farklı düzeylerde katılımları sağlanır. • Tüm toplum, özellikle ebeveynler öğrencilerin sürdürülebilirlik bağlamındaki kazanımları hakkında bilgilendirilir, okul gelişimine katkıları sağlanır. • Okul her sene yeni zorluklara başa çıkmak ve bu yönde geliştirilecek davranış biçimlerini kararlaştırmak adına okul gelişim planlarını gözden geçirir. • Okul, kaynakların doğru kullanımı konusunda örnek teşkil edecek uygulamalar yapar, bu uygulamaların sonuçlarını okul içindeki ve dışındaki toplumla paylaşır. • Okul takımı, sürdürülebilir okul kriterlerini birlikte belirler, okul vizyonunu bu kriterlere göre dizenler ve bu kriterleri iç değerlendirme aracı olarak kullanır.				

Okul Yönetimi	Yetersiz	Kabul Edilebilir	Oldukça İyi	Mükemmel
• Okul yönetimi, misyonuna ve yıllık planına sürdürülebilirlik bileşenini dâhil eder. • Okul yönetimi, öğretmenleri uzun vadeli sürdürülebilirlik çalışmaları için destekler, geleceğe yönelik bakış açıları geliştirmelerine yardımcı olur. • Okul yönetimi, öğretmenlerin sürdürülebilirlik alanındaki çalışmalarında gereksinimlerine cevap verebilecek bir süreç oluşturur. • Okul yönetimi, sürdürülebilirlik bağlamında öğretmenlere yansıtma, paylaşma ve araştırma yapmaları için okul saatleri dâhilinde yeterli zaman temin eder. • Okul yönetimi, sürdürülebilirlik unsurlarının uygulanması hususunda öğretmenleri, öğrencileri ve diğer çalışanları dahil edecek şekilde ihtiyaç tespiti yapmak üzere düzenli denetim yapar.				
Öğretmen	Yetersiz	Kabul Edilebilir	Oldukça İyi	Mükemmel
• Öğretmen, alışılageldik öğretme ve öğrenme süreçlerini zenginleştirmek ve yeniden çerçevelendirmek üzere sürdürülebilirlik için eğitim bağlamındaki fikirleri ve bakış açılarını inceler. • Öğretmen öğrencilerinin endişelerini, deneyimlerini, fikirlerini ve beklentilerini dinler ve bunlara değer verir, öğretmenin hazırladığı ders planları esnektir ve değişime açıktır. • Öğretmen, işbirlikli ve yaşayarak öğrenmeyi destekler. • Öğretmen, öğrenme öğrencini, kavram gelişimini ve kuram oluşumunu uygulamalı etkinliklerle destekler. • Öğretmen, öğrencinin katılımını kolaylaştırır, öğrencinin bakış açısı ve fikir geliştirmesi için içerik sağlar. • Öğretmen öğrencilere konulara farklı yönlerden yaklaşmaları için destek sağlar, kendilerini başkalarının yerine koymalarını sağlayarak empati geliştirmelerine yardımcı olur. • Öğretmen, öğrencilere farklı fikirleri tartışmaları için olanak sağlar. • Öğretmen, öğrencilerin gerçeğe dayalı bilgi ile değere dayalı düşünce arasındaki farkı ortaya çıkarmaları yönünde yardımcı olur, bu farkın ardında yatan sebepleri ve değerleri öğrencileriyle birlikte ortaya koyar. • Öğretmen, öğrencilerin kendi değerlerini				

	Yetersiz	Kabul Edilebilir	Oldukça İyi	Mükemmel
tartışma ve netleştirme çabalarına karşılıklı saygı, yansıtma ve anlayış ile destek olur. • Öğretmen, kendi değerlerini öğrencilerine empoze etmeme yönünde kendini zorlar, öğrencilerin kendi değer ve görüşlerini oluşturmalarına yardımcı olur. • Öğretmen, öğrencilerin kararlaştırdıklarını ve eylemlerini dikkate alır. • Öğretmen, öğrencilerin katılım kapasitelerini geliştirecek yöntemler (dinleme, düşünceleri ifade etme, sorumluluk alma, dayanışma ortaya koyma) seçer. • Öğretmen, öğrencilere yaş ve kapasitelerine uygun düzeyde karar alma süreçlerine katılım konusunda alan sağlar. • Öğretmen bahsi geçen kriterler doğrultusunda öğrencilerin gelişimini ölçüp değerlendiren yöntemler geliştirir.				
<u>Öğrenci</u>	**Yetersiz**	**Kabul Edilebilir**	**Oldukça İyi**	**Mükemmel**
• Öğrenciler belirli bir amaç ve senaryo ile çalışır, konulara alternatif yaklaşımlar sergiler. • Öğrenciler kararların kısa ve uzun dönemli sonuçlarını karşılaştırır ve farklı alternatifleri gözden geçirir. • Öğrenciler konuları ele alırken tarihsel boyutu akılda tutmak üzere geçmiş-bugün-gelecek arasındaki ilişkileri araştırır. • Öğrenciler, karar alma süreçlerine katılır, bu süreçlere deneyimlerini yansıtarak öğrenmenin gerçekleşmesini desteklerler. • Öğrenciler sürdürülebilirliğin gündelik yaşama aktarılması ve katılımcı demokratik süreçler konusunda deneyimli hale gelir.				

Appendix R: Sustainable Schools Rubric/Example 2

Okullarda Sürdürülebilir Gelişimin Değerlendirilmesi

Sürdürülebilir okullar, eğitim müfredatına, okul yerleşkesine ve topluma somut yarar sağlar.

Müfredat *(öğretim ve öğrenme)*	Okul Yerleşkesi *(değerler ve çalışma şekilleri)*	Toplum *(daha geniş çaplı etki ve ortaklıklar)*
☑ öğretme ve öğrenme ☑ öğrenci başarısı ☑ öğrenci refahı	☑ işletim ve sermaye giderleri ☑ öğrencilerin katılımı ☑ personel morali	☑ güven ☑ ebeveynlerin katılımı ☑ yerel etki
Okulların, öğrencilerin sürdürülebilir kalkınmayı daha iyi anlamalarını sağlayacak, sınıf içinde ve dışında uygulanabilecek bir müfredat ve öğretim-öğrenim yaklaşımı geliştirmelerini öneriyoruz. Böylece hem yaşadıkları hem de çalıştıkları ortamlara olumlu katkılarda bulunabilmek için ihtiyaç duyacakları değer ve becerilere sahip olurlar.	Okul içerisinde ve çevresinde sürekli bir gelişim sağlayacak politika ve uygulamaları ortaya koyabilmek için okulların sürdürülebilir gelişim performanslarını kendilerinin değerlendirmesini öneriyoruz.	Okulların iletişim araçları, verdikleri hizmetler, sözleşmeler ve önemli paydaşlarla ortaklıkları aracılığıyla, sürdürülebilir kalkınmayı destekleyecek yöntemleri tespit etmesini öneriyoruz.

Seviye ve alternatifler	Etki
Çok iyi Örnek teşkil eden, çok etkili	Okulun iyileştiğini ve toplumun geliştiğini gösteren kanıt Okul dışına yaymaya değecek şekilde eksiksiz geliştirilmiş ve kanıtlanabilir bir etki
İyi Ortalamanın üzerinde, etkili	Öğrenci performansının ve okulun çevresel performansının iyileştiğinin kanıtı Okul içinde güçlendirilip geliştirilmeye değecek kadar eksiksiz hazırlanmış ve kanıtlanabilir bir etki
Tatmin edici Temel düzeyde	Hazırlık var İyileşmenin ve daha fazla gelişimin kapsamı
Başlangıç aşamasında Göz önünde bulundurulmadı ya da yetersiz	Konuyla ilgili hazırlık yok ya da tam değil Üzerinde düşünülmesi gerekir, ilgili değil veya düşük öncelikli

Okula Ulaşım ve Trafik Kriterleri

Müfredat	Yerleşke	Toplum
❑ Okul, ulaşım ve trafik konularını işlemek, bu konuları okulda ve okul çevresinde faaliyetler düzenleyerek pekiştirmek için müfredatı kullanıyor mu? ❑ Mesleki gelişim, personelin okula ulaşımı ve trafik konularının müfredat ve müfredat dışı faaliyetlerle ele alınmasını sağlıyor mu? ❑ Okul, kendi ulaşım politikalarını ve tedbirlerini müfredat içerisinde önemli aşamalar ve konu başlıkları aracılığıyla kullanıyor mu? ❑ Okula ulaşım konusunu ele alan planlara öğretmenler ve öğrenciler katılıyor mu?	❑ Daha önce okula ulaşım konusunda denetim yaptınız mı? ❑ Okulun sebep olacağı çevresel etkiyi azaltmak ve daha sağlıklı bir yaşam biçimi teşvik etmek amacıyla, okul iyileştirme planınızda okula ulaşım konusuna yer veriliyor mu ya da yürüme, bisiklet, arabalardan ortak yararlanma ya da toplu taşım için performans hedeflerini içeren ayrı bir okula ulaşım planı var mı? ❑ Okul, ulaşım planını izliyor mu ve kararlaştırılmış performans hedeflerine ulaşmak için kaydedilen mesafeyi raporla sunuyor mu? ❑ Okul içerisindeki mesleki eğitimler, okul personelini, okula ulaşım planına katkıda bulunacak şekilde hazırlıyor mu? ❑ Okula gidip gelme planının idaresi, okulun sürdürülebilir gelişim koordinatörünün sorumluluğunda mı yoksa başka bir personelin görev tanımında mı yer alıyor?	❑ Okul, iletişim araçları, verdiği hizmetler, yaptığı sözleşmeler ve önemli paydaşlarla ortaklıkları aracılığıyla bu ulaşım kararları hakkında paydaşlar arasında bilinç uyandırıyor mu? ❑ Okulların, sürdürülebilir ulaşım modelleri oluşturma çabalarını destekleyecek yerel idarelerle ya da dış kurumlarla bağlantıları var mı?

Seviye			
Başlangıç aşamasında	Tatmin edici	İyi	Çok iyi
Ulaşım için bütüncül bir yaklaşımın okula nasıl faydalı olabileceğini henüz göz önüne almadık ya da daha yeni almaya başladık.	Okula ulaşımla ilgili uygulamalarımızı ve trafik konularını denetledik. Okulumuzun ulaşım planı hedeflerine ulaşabilmesi için, planın geliştirilmesi aşamasına öğrencileri, personeli ve toplumu da dahil ettik. Müfredatta ulaşım ve okula gidip gelme konularını işliyoruz.	Okulumuzun ulaşım planının uygulanmasında ve izlenmesinde öğrencileri ve personeli sürece dahil ediyoruz. Bunun, öğrencilerin başarılarını, okulun işleyişini ve performansını nasıl etkilediğini gösteren kanıtlar mevcut.	Ulaşımın sürdürülebilirliği ile ilgili öğrendiklerini kendi yaşamlarında uygulamaları konusunda öğrencileri, personeli ve halkı teşvik ediyoruz. Planımızı ve müfredatı düzenli olarak değerlendiriyor, güncelliyoruz. Bunun okulun ve toplumun gelişimine ne kadar katkısı olduğunu gösterecek kanıtlarımız mevcut. Uygulamalarımızı başkalarıyla da paylaşıyoruz

Seviyenizi açıklayın. Bir değerlendirme yazın. Hangi kanıt ya da veriyi kullandığınızı da belirtin.

Gelişme sağlamak için belirlediğiniz en önemli önceliğiniz neler?

Appendix S: Reading Assignment/Ecological Intelligence

İnsanoğlu bir kararın eşiğinde: Yeni bir uygarlık kurabilecek mi? 'Ekolojik Zekâ'nın yazarı Daniel Goleman'a göre yanıt: Muhtemelen, evet...

İSTANBUL - The New York Times'ın eski bilim muhabiri, iki defa Pulitzer Ödülü'ne aday gösterilen ve Amerikan Psikoloji Derneği'nin Yaşam Boyu Başarı Ödülü'nü alan Goleman, iş ilkelerini ve tüketim alışkanlıklarını değiştirecek yeni bir zekâyı hayatlarımıza sokuyor.

Goleman'ın ilk kitabı olan 'Duygusal Zekâ', tüm dünyada 5 milyondan fazla sattı. Üçlemenin ikinci kitabı 'Sosyal Zekâ'ydı ve şimdi de son kitabı 'Ekolojik Zekâ' Türkçe olarak da yayımlandı. Daniel Goleman'ın öne sürdüğü bu kavram geçtiğimiz günlerde Time dergisi tarafından 'Dünyayı Değiştiren 10 Fikir'den biri seçildi.

İnsanoğlu, bir kararın eşiğinde. Kentler oluşturup kültürler inşa ederken kullandığı zekâsını, bugün yeni bir uygarlık için kullanabilecek mi? "Yeşil" bir sıfat değil, bir fiil olabilecek mi? Yılların gazetecisi Bill Moyers, bu sorunun yanıtını Daniel Goleman'la birlikte arıyor.

Kitabını bitirdiğimde şöyle bir not aldım: Satın aldığımız ve kullandığımız şeyler genellikle gizli bir fiyat etiketine sahip. Ve eğer bu etiketi okumazsak, çocuklarımız bir felaketle karşı karşıya gelecek. Doğru mu?

Doğru. Üzücü olan nokta, mağazalarda gördüklerimiz, evlerimize aldıklarımız, her gün kullandığımız tüm o mallar, alıştığımız tüm o dost ürünler, çevre, sağlık, ekosistemler ve onları bizzat üreten kişiler üzerindeki etkileriyle ilgili gizli bir mirasa sahipler. Bu durum, ürünün içe-riğindeki malzeme üretildiği anda başlayan bir süreçtir. Üretimden, taşımaya, oradan kullanıma ve çöpü boylamasına giden bir süreç. Bu sürecin her adımında, bir ürünün tüm ömrünü kapsayan yeni bir metodoloji uygulanıyor. Buna yaşam döngüsü analizi adı veriliyor.

Ama bu yeni bir şey değil ki. Yani, uzun zamandır biliyoruz ki her birimiz zamanın kumları üzerinde karbon ayakizleri bırakıyoruz. Bu bahsettiğin şeyde yeni olan nedir?

Bence iki şey yeni. Bunlardan biri, yaşam döngüsü analizi herhangi bir noktadaki karbon ayak izinin çok ötesine gidiyor. Örneğin, bir cam şişeyi analiz ediyorlar ve üretiminde 1959 adım olduğunu görüyorlar. Her adımın çevre, sağlık ve insanlar üzerinde çok büyük etkileri var. Bu nedenle, öncelikle etkinin ne olduğuna dair daha geniş ve daha doğru bir bakışa sahip oluyoruz.

İkincisi, ki bu büyük bir gelişme, artık alışveriş yaparken bu bilgiye ulaşabiliriz. Yani, daha iyi karar vermek için enformasyonu kullanabiliriz.

Nasıl?

Harika bir web sayfası var. Adı GoodGuide. GoodGuide.com 200 veri tabanından yararlanıyor ve bunları bizim için özetliyor. Bir ürünün çevre sağlığını nasıl etkilediğini ve sosyal etkilerini, aynı türdeki diğer ürünlerle karşılaştırarak puan veriyor. 10 puan en iyisi, bir puan en kötüsü. Bu da bize radikal şeffaflık denen şeyi sağlıyor. Bir anda hepimiz karbon ayakizlerinden haberdar olduk. Şimdi de tam olarak hangi ürünün daha iyi olduğunu bilebileceğiz.

Markete gittiğimde elimde GoodGuide'ımı taşımamı ve bir şey almadan önce web sayfasına bakmamı mı istiyorsun?

Bunu bir defa yapman yeterli. Yani her hafta, her ay muhtemelen aynı şeyleri alıyorsun, ben öyle yapıyorum.

Ancak insanlar Wal-Mart'a bir nedenle gidiyor, o da en ucuz ürünü bulabilmek. Bu malın üretimi esnasında

Çin'de neler olup bittiği hakkında düşünmüyorlar. Walton ailesinin bu marketi inşa etmek için kestiği ağaçları düşünmüyorlar. Malı onlara satan kasiyerin ne kadar kazandığını düşünmüyorlar. En ucuz olanı almayı düşünüyorlar. Sorunun arkasındaki varsayımı sorgulamama izin ver. Bu varsayım, daha pahalı olanın daha iyi olduğu düşüncesi. Skin Deep isimli bir web sayfası kimyasallar açısından kişisel bakım ürünlerini değerlendiriyor. Bir şişe şampuanın içinde 50 bileşim var. Web sayfasında bunların her biri tıbbi bir veritabanında inceleniyor. Örneğin bu kimyasal, farelerde kansere neden oluyor mu? Şampuanlar, saç bakım ürünleri, rujlar gibi çeşitli ürünlerin ne kadar tehlikeli olabileceğini ve en güvenlisinin hangisi olduğunu değerlendiriyor. Örneğin bir bebek şampuanının.

Bu da bize daha iyi olanla ilgili bir karar verme şansı tanıyor. En iyi ve en kötü 10 şampuana baktım ve tahmin et ne gördüm. En pahalı olan şampuan, en kötüler listesinin başında geliyor. Yani, fiyat ile güvenliği her zaman eş tutamazsın.

Tüketim malzemesi üreten en büyük firmalar, neden oldukları en kötü etkinin ne olduğunu görmek için yaşam döngüsü analizini zaten kullanılıyor. Büyük bir deterjan firması, ürettikleri deterjanın ılık suda kullanılması gerekliliğinin çevreye verdikleri en kötü zarar olduğunu gördü. Ne yaptılar? Soğuk suda da aynı ölçüde iyi temizleyen bir deterjan ürettiler. Yani, bu düşünce biçimi şirketlerde de rağbet görüyor. Aslında, şirketler bu konuda tüketicilerden daha önde.

Yani yaşam döngüsü analizi yapılmış ürünler için bir pazar oluştuğunu mu söylüyorsun?
Bana göre bu biraz daha farklı. Ürünlerimiz ve aldığımız mallarla ilgili, ekonomide asimetri dediğimiz şey oluyor. Yani, satıcılar alıcıların bilmediği şeyleri biliyor. Yakınlarda ekonomide bir gerileme yaşadık çünkü 'toksik kazançlar' vardı. Bankalar ne olduklarını tam anlamadıkları şeyler satın aldılar ve bunlar zehirliydi.

Ve satıyorlardı da. Örneğin mortgage...
Kesinlikle, aynı zamanda da satıyorlardı. Evimize aldığımız şeyler için de durum böyle. Bir anlamda toksik ürünler satın alıyoruz. Çevre sağlığına zararlı ürünler. Ve bu konuda hiçbir fikrimiz yok. Sonra bir an geliyor ve devrimsel olan da işte bu radikal şeffaflık denilen şey doğuyor. Artık tüketiciler ürünün içinde ne olduğunu biliyor. GoodGuide'ı kullanınca iki muhteşem şey yapabilirsiniz. Birincisi, bir tıklamayla firmaya o markayı neden almadığınızı ya da onların ürününü neden tercih ettiğinizi söyleyebiliyorsunuz. Bu çok güçlü bir enformasyondur. Aynı zamanda tüm arkadaşlarınızı da bundan haberdar edebilirsiniz. Bu enformasyon yayıldıkça, ekolojik açıdan 'temiz' olmak pazar payıyla ilgili bir mesele haline gelecek. Ve şirketler bunun ayak seslerini duyuyorlar. Ve böylesi bir enformasyonu edinip daha doğru tercihlerde bulunma gerekliliği duyduğumuzda, üç şeyi de yapmak durumundayız. Bunlardan birincisi, satın aldığımız ürünlerin sebep olduğu etkiyi bilmek.

İkincisi, gelişmeleri desteklemek.

Ve üçüncüsü, ki en önemlisi de bu, enformasyonu paylaşmak. Tanıdığınız herkese anlatın. Çünkü bunun önemsenmesini sağlayacak şey budur. Bu konuya pazar payını değiştirebilecek kadar önem verilmesini sağlayacak budur.

Bunun böylesine önemli olmasının nedeni, şu anda şirketlerde 'sürdürülebilirlik' ile ilgili büyük bir farkındalık yaşanması. Bazıları, ahlaki açıdan doğru olduğu için böyle yapılması gerektiğini söylüyor. Diğerleri ise "Bana paradan bahset. Bunun üzerinden para kazanamayız" diyor. Ancak pazar payı değiştikçe, şirketlerdeki bu tartışmanın dayanak noktası da değişecek, çünkü artık doğru olanı yapmak pazara hâkim olmakla aynı anlama gelecek. İyi olanı yapmak, iyi iş yapmak anlamına gelecek. Sebep olunan tüm etkiler açısından bu, iş mantığı için radikal bir dönüşüm.

'Böcekler gibi düşünmelisiniz'
Enformasyonu paylaşmaktan bahsettiğinde, kitabında okuduğum bir bölüm aklıma geldi. Söylediğin şey beni şaşırtmıştı. Böcekler gibi düşünmemiz gerektiğini yazmışsın. Belki bu şekilde ifade edince söylediğin şeyi biraz basitleştirmiş oldum ama böceklerin 'kolektif akılları'ndan bahsediyorsun değil

mi?

Evet, öyle. Bütün ürünlerin sebep olduğu tüm etkileri tek bir kişinin bilmesine imkân yok. Tek bir kişi, neleri satın almanız gerektiğini bilemez. Bu bilgiyi tek bir kişi sizinle paylaşamaz. Bunu hep beraber yapmalıyız. Ne kadar çok paylaşırsak, iyileşmeye o kadar çok yaklaşırız.

Öncü karıncalar, en güçlü feromon izini takip eder. Burası, yiyeceğin olduğu yerdir. Bence bizim için de aynısı geçerli. Yani bu konuda her birimizin birer uzman olması gerekmiyor.

Açıkçası kitabın beni üzdü.

Öyle mi? Neden?

Çünkü 'yeşil'i bir serap olduğunu yazıyorsun. Yeşil diye sunulan şeylerin çoğunun bir yutturmaca olduğunu söylüyorsun. Bense burada The New York Times'ın yeşil zekâ dediği şeyi geliştirmek için didiniyorum. Ve yeşil ekonomiyi destekliyorum.

İçini rahatlatayım o zaman. Yeşile atılan her adımın yararı vardır. Fakat yeşil şeylere duyduğumuz çekim, ekolojik etkiler konusunda bilinçlenmenin başladığı bir geçiş dönemi, ancak bu bilinçlenme henüz kesinlik, derinlik, kavrayış ve açıklıktan yoksun. Endüstriyel bir ekolojistin itiraf ettiği gibi 'Çevre Dostu' terimi asla kullanılmamalı. İmal edilen her şey sadece görece böyledir.

Endüstri çağı... Büyük büyük annem için hayatı hayal edemeyeceği ölçüde rahatlatan çağ...

Kesinlikle. Ve bugün bize gizli bir bedel ödetiyor. Kireçtaşının ve bazı kimyasalların 48 saat çok yüksek bir sıcaklıkta ısıtılmasıyla elde edilen beton 1820'lerde bulundu. Camı da benzer bir işlemle elde ediyoruz. Kumu, kostik sodayı ve başka maddeleri karıştırıyor, 24 saat boyunca ısıtıyoruz. Yani çok büyük bir enerjiden bahsediyoruz. Büyük annelerimizin hayatını kolaylaştıran bu parlak fikir, bugün ne yazık ki küresel ısınmanın başlıca nedenlerinden biri.

Geçen gün manava gittim. Bana verdikleri plastik torbayla eve döndüm. Seninle görüşeceğimi bildiğim için kendimi suçlu hissettim çünkü plastik torbalar hakkında hepimizin bildiği şeyleri ben de biliyorum. Yok olması 500 ila 1000 yıl sürüyor.

Kesinlikle. Evet.

Sonra keşke kesekâğıdı isteseydim diye düşündüm. Ama kitapta kâğıdın da tercih edilmemesi gerektiğini okudum.

Evet, işte sorun burada. Doğa, insanın imal ettiği hiçbir ürünü sevmiyor. Doğanın işleyişinde atık yok. Markete her gidişinde aynı bez torbayı kullanırsan, yani 1000 kesekâğıdı ya da 1000 plastik torba yerine bir bez torba kullanırsan doğa bu işten kârlı çıkar.

İşte yüzde 100 organik pamuk tişörtüm. Verdiğim para gerçekten içime oturmuştu. Ta ki kitabını okuyana dek.

Ben de onlardan bir tane satın aldım. Organik pamuk kullanılması çok iyi. Çünkü böcek ilacı kullanmadıkları ve çevreyi zehirlemedikleri anlamına geliyor. Suya karışarak sudaki canlıların ölümüyle sonuçlanan kimyasal gübreler kullanılmıyor. Olumsuz taraf ise boyalı bir tişört olması. Tekstil boyalarının çoğu zehirlidir. Aslında boyahanelerde çalışan işçiler arasında lösemi oranının daha yüksek olduğunu uzun zamandır biliyoruz. Yani demek istediğim, bugün tamamen saf olan neredeyse hiçbir ürün yok. Ama bunu umursarsak belli bir noktaya varabiliriz.

Benim deneyimim, insanların genelde sadece enformasyonla eyleme geçmedikleri yönünde. Bazı duygusal yatırımlara da ihtiyaç duyuyorlar.

Doğru. Bence saklı etkiler, özellikle endüstriyel kimyasalların sevdiklerimiz üzerindeki etkileri hakkında daha çok bilgi sahibi oldukça, bu zehirleri ailemizin içine sokmak istemeyeceğiz. Evlerimize sokmak istemeyeceğiz. Bence en büyük duygusal yatırım bu. Küresel ısınma bir adım daha ileriye yönelik bir tehdit. Ama önemsediğim kişilerin sağlığı şu ana dair bir tehlike. Sen bir bilim muhabirisin. Biz Amerikalıların ekolojik zekânın mesajına gerçekten kulak verdiğimize bir muhabir olarak seni ikna edecek herhangi önemli bir kanıt var mı? Yani, satın aldığımız ve tükettiğimiz ürünlerin gizli maliyeti hakkında düşünmeye başladık mı? Şirketlerin dümen kırdığına dair hiç gerçek bir kanıt var mı? Oldukça umut verici bulduğum noktalardan

biri nesil farkı. Sen ve ben plastiklerin sevildiği, tüketimin el üstünde tutulduğu bir çağda büyüdük. Saklı etkilerinin farkında değildik. Gençler, yani küresel ısınmanın gölgesi altında büyüyen insanlar, dünyayı korumak için ellerinden geleni yapma konusunda çok daha istekli. Ayrıca, sosyal ağları da hünerle kullanıyorlar. Gereken değişimi yaratacak bilgi paylaşımının ardındaki motor bence budur. Ve bu değişim, şirketler tarafından sadece tercihen uygulanabilir bir şey olmayacak, onlar için zorunlu hale gelecek.

Appendix T: Significance-Possibility Worksheet

ÖNEM-İMKÂN ÇALIŞMA KAĞIDI

Proje:

			ÖNEM		
DÜŞÜK	1	2	3	4	5 YÜKSEK

Toplam Puan:

			İMKÂN		
AZ	1	2	3	4	5 ÇOK

Proje:

			ÖNEM		
DÜŞÜK	1	2	3	4	5 YÜKSEK

Toplam Puan:

			İMKÂN		
AZ	1	2	3	4	5 ÇOK

Proje:

			ÖNEM		
DÜŞÜK	1	2	3	4	5 YÜKSEK

Toplam Puan:

			İMKÂN		
AZ	1	2	3	4	5 ÇOK

Proje:

			ÖNEM		
DÜŞÜK	1	2	3	4	5 YÜKSEK

Toplam Puan:

			İMKÂN		
AZ	1	2	3	4	5 ÇOK

Proje:

			ÖNEM		
DÜŞÜK	1	2	3	4	5 YÜKSEK

Toplam Puan:

			İMKÂN		
AZ	1	2	3	4	5 ÇOK

Appendix U: Traffic Lights

TRAFİK LAMBALARI

Proje: Toplam Puan:		Proje: Toplam Puan:	
Proje: Toplam Puan:		Proje: Toplam Puan:	
Proje: Toplam Puan:		Proje: Toplam Puan:	
Proje: Toplam Puan:		Proje: Toplam Puan:	
Proje: Toplam Puan:		Proje: Toplam Puan:	

Appendix V: Assumption Examination

VARSAYIM MUAYENE TABLOSU

Seçilen Proje:

1. Projenin önüne çıkabilecek engeller:	2. Bu bir varsayım mı?	3. Bu varsayımın temeli nedir?	4. Bu varsayımın doğrulama kaynağı nedir?	5.Bu engelin bir problem teşkil etmesini önlemek için neler yapılabilir?	6. Bu proje nasıl tekrar ele alınabilir? Somut fikirlerinizi yazın.
1)					
2)					
3)					
4)					
5)					

Appendix W: Volunteer Participation Form

Gönülü Katılım Formu

Bu çalışma, Dr. Refika Olgan ve Şebnem Feriver tarafından yürütülmektedir. Çalışmanın amacı, okul öncesi öğretmenlerinin tamamen yeni bir bakışı içselleştirmelerine yardımcı olacak özel bir mesleki deneyim yaşamalarına yardımcı olmaktır. Bu çalışmayla yetişkin eğitimcilerinin okul öncesi öğretmenlerine yönelik sürdürülebilirlik için eğitim bağlamında bir dönüştürücü öğrenme deneyimi yaşatmalarına yardımcı olacak bir hizmetiçi eğitim modelinin oluşturulması ve bu çalışmada oluşturulmuş olan dönüştürücü öğrenme deneyiminin katılımcıların perspektif dönüşümleri üzerindeki etkisinin araştırılması hedeflenmektedir.

Çalışmaya katılım tamimiyle gönüllülük temeline dayanmaktadır. Ankette ve mülakatta, sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Anketi doldurmanın yaklaşık 15 dakika alması, mülakatın ise 30 dakikada tamamlanması beklenmektedir. Cevaplarınız tamimiyle gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayımlarda kullanılacaktır.

Anket ve mülakat, genel olarak kişisel rahatsızlık verecek soruları içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda çalışmayı uygulayan kişiye, çalışmadan ayrılmak istediğinizi belirtmeniz yeterli olacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Okul Öncesi Öğretmenliği Bölümü öğretim üyelerinden Dr. Refika Olgan (Tel: 0312 210 36 71; E-posta: rolgan@metu.edu.tr) ve/veya Şebnem Feriver (Tel: 0532 364 15 75; E-posta: sebnemferiver@gmail.com) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad   Tarih   İmza

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